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Wood Green.—CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Lordship Nursery, Wood Green, N., close to Wood Green Station, on TUESDAY NEXT, January 5, at 12 o'Clock precisely, without reserve, by order of Mr. Hughes, who is relinquishing the business, the erections of Twelve GREENHOUSES, containing about 8500 superficial feet; 3000 feet of HOT-WATER PIPING, principally 4-inch; thousands of BRICKS, PIT; also the Stock; 3000 Maidenhair FERNS and PTERIS, DRACÆNAS, UFENSIAS in TRADE, &c.

May be viewed day prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C.

N.B. The Nursery TO BE LET at a low Rent. Apply to the Auctioneers.

Wednesday Next.

Consignment of CAMELLIAS, AZALEAS, FICUS, and other PLANTS from Belgium; 600 Standard and other ROSES, from an English Nursery, of the best named sorts; a choice assortment of Hardy Home-grown LILIES and BULBS, embracing all the leading varieties; a consignment of CYPRIPEDIUMS and SARACENIAS, from New Jersey: TUBEROSES, LILY OF THE VALLEY, SPIRÆAS, BEGONIAS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, January 6, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Thursday Next.

600 Lots DUTCH BULBS—FINAL SALE.

Important to Gentlemen, Florists, and Others.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on THURSDAY NEXT, January 7, at 12 o'Clock precisely, 600 Lots, comprising thousands of named and mixed HYACINTHS, TULIPS, CROCUS, NARCISSUS, and other Dutch BULBS, lotted to suit Large and Small Buyers.

On view morning of Sale, and Catalogues had.

Friday Next.

CATTLEYA MOSSIÆ, White LÆLIA ANCEPS, and ODONTOGLOSSUM ALEXANDRÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Shuttleworth, Carder & Co. to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, January 8, at half-past 12 o'Clock precisely, a fine importation of CATTLEYA MOSSIÆ, in splendid condition, and full of leaf; ODONTOGLOSSUM ALEXANDRÆ, in fine condition—the best type, and extra fine masses; White LÆLIA ANCEPS, with good heads, from the same importation as those that have just flowered—fine pieces; and a quantity of Established and Semi-established ORCHIDS.

On view morning of Sale, and Catalogues had.

Monday Next.—(Sale No. 7054.)

EXTENSIVE IMPORTATIONS from Japan' &c., 5000 splendid Bulbs of LILIUM AURATUM, 1500 L. KRAMERI, 3700 L. LONGIFLORUM, 1400 L. SPECIOSUM ROSEUM and ALBUM; a beautiful Consignment of 300 IRIS, in 20 vars., all in the finest possible condition; also 5000 "PEARL" TUBEROSES, TIGRIDIAS, and GLADIOLI, hardy CYPRIPEDIUMS, 3000 Pampas-grass PLUMES from America; a consignment of PLANTS and BULBS from Germany, 1000 LILY of the VALLEY clumps, Dutch BULBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., as above, on MONDAY NEXT, January 4, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7055.)

ROSES, FRUIT TREES, BULBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, January 6, at half-past 12 o'Clock precisely, 1000 first-class Standard and Dwarf ROSES, including most of the leading varieties; FRUIT TREES, of sorts; SHRUBS, CONIFERS, Hardy BORDER PLANTS, in quantity; several hundred lots of BULBS for present planting, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7057.)

CATTLEYA VELUTINA.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, January 7, a number of strong plants of CATTLEYA VELUTINA, in fine condition.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale 7057.)

VALUABLE IMPORTATIONS of ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, January 7, at half-past 12 o'Clock precisely, a splendid importation of CATTLEYA MOSSIÆ, in finest possible condition; also a very fine lot of the best type of ODONTOGLOSSUM ALEXANDRÆ, together with CATTLEYA WARNERI, ONCIDIUM MARSHALLIANUM, ARPOPHYLLUM MEDIDIUM, CATTLEYA CITRINA, LYCASTE CRUENTA, and many other valuable ORCHIDS.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS IN FLOWER, will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 20, and he will be glad if Gentlemen desirous of entering Plants for this Sale will please send particulars as soon as possible.

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S. S., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

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A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

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To the Trade.

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200 WALNUT TREES, 6 to 14 feet.
A few thousand strong MANETTI.

No reasonable offer will be refused.

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Some of the best sorts, well trained and strong.

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Splendid sound firm Bulbs, 6/-, 9/-, 12/-, and 18/- per dozen, 45/- to 100/- per 100; Double TUBEROSES, extra fine, 10/- and 12/- per 100; Giant LILY of the VALLEY, Imported Crowns, 5/- 6d. and 6/- 6d. per 100; ditto, immense Clumps, 12/- and 15/- per doz.; SPIRÆA JAPONICA, 3/- and 4/- per dozen; GLADIOLUS BRENCHLEYENSIS, 8d. per dozen, 4/- 6d. per 100; AZALEAS and CAMELLIAS, English grown, from 18/- to 42/- per dozen. All other Plants and Roots equally cheap.

MORLE AND CO., 1 and 2, Fenchurch Street, E.C.

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MORRISON BROTHERS, Nurseries, Aberdeen.

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Last year Mr. A. H. M'DOWALL, Seedsman, Stranraer, N.B., offered Three Prizes for the Best Crops of TURNIPS grown from his NEW SWEDE, "M'DOWALL'S CONQUEROR." These were for the Best 25, 10, and 5 Acres. This Seed has become a favourite in the district, and the sale of it is yearly increasing. The Competition has now taken place, the Judges being Messrs. Alexander Rankin, Aird; John M'Master, Culhorn Mains; and James M'Adam, Stranraer. The following are their awards:—

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2d. For the best 10 Acres—Mr. Hunter, Garthland, Stoneykirk; and Mr. A. Milvain, Cardrain, Kirkmaiden, their crops also being equal, weighing 31 tons, 10 cwt., 2 qr., 9 lb. per statute acre.

3d. For the best 5 Acres—Mr. Peter Wither, Awhirk, with a crop weighing 29 tons, 14 cwt., 1 qr. per statute acre. A Third Prize was also awarded to Mr. A. K. Muir, Merchant, Whithorn, his crop being so nearly equal to that of Mr. Wither, weighing 29 tons, 12 cwt., 2 qr. per statute acre.

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Stranraer, January 2, 1886.

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A LIST of all hardy Pines sent free on application.

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WM. ETHERINGTON, Manor House, Swanscombe, Kent.

WHOLESALE SEED CATALOGUE.—Our Catalogue of Garden and Flower Seeds, Novelties, and Bulbs for Spring Planting, is now ready, and may be had on application. All our Customers should have already received one by post, and they will oblige by advising us if not to hand.

The above also includes List of a few choice Lilies just to hand from Japan—L. auratum, L. longiflorum, L. Hansoni, &c.

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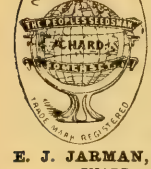
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BEECH, Common, 10 to 12 feet.
,, Purple, Pyramids, 9 to 12, and 12 to 14 feet.
BIRCH, Silver, 12 to 14 feet.
,, Purple, 14 feet.
CHESTNUT, Horse, 14 to 16 feet.
,, Horse, Scarlet, 12 to 14 feet.
,, ,, Double, 10 to 12 feet.
ELMS, English, 10 to 12 feet.
,, Guernsey, 10 to 12 feet.
LIMES, 10 to 12 feet, 12 to 14 feet, and 14 to 16 feet.
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LIQUIDAMBAR, 6 to 8 feet.
ASH, Mountain, 10 to 12 feet.
MAPLE, Norway, 14 to 16 feet.
OAKS, American, 12 to 14 feet.
,, English, 10 to 12 feet.
PLANES, 14 feet and upwards.
POPLAR CANADENSIS NOVA, 12 to 15 feet.
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LARCH, Weeping, 6 to 10 feet.
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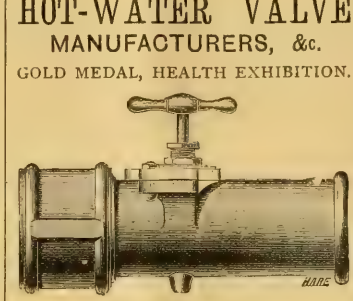
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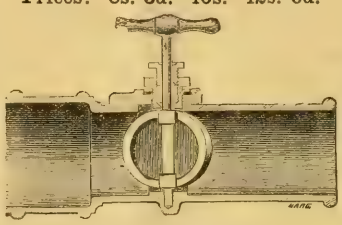


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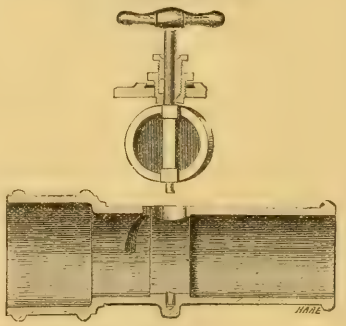
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THE

Gardeners' Chronicle.

SATURDAY, JANUARY 2, 1886.

THE ISLES OF SCILLY.

IT is still usual in converse with one's fellows to hear these islands spoken of under the term "Cassiterides." That, however, very much more was comprehended under this word than this little archipelago, "amongst wild waves set," is unquestionable. It may be, perchance, that the Phœnicians used these islands as a depôt, to which the tinners could convey their metal, and whence they might load their barks, thus deceiving other voyagers on the self-same quest. But the narrative of Diodorus Siculus would more particularly apply to St. Michael's Mount or Love Island. Assuming that the Phœnicians came to Britain—a fact which, as Mr. Freeman shows, is not at all needful to be believed—this latter conjecture is the most probable, even when we admit the remote possibility in historical, or rather chronicular, times, of the 140 parishes between Scilly and Cornwall. We shall never know the truth of this matter, but whether fondly regarded as remnants of Arthurian Lyonnesse—

> "A land of old upheaven from the abyss
> By fire, to sink into the abyss again"—

or as set for æons of æons in a hostile sea, these islands appeal to all that is not commercial or humdrum in our composition. Their later history, if not one of doughty deeds and men, is still brimful of a certain kind of interest. Like the Highland Crofters the Scillonians have from time to time done battle long and bravely with imminent poverty and hunger. The old-time inhabitants sounded the vasty deep with confidence, and they were as intrepid smugglers and pirates as ever garnered or lost a contraband harvest. But seldom, if ever, has the repulsive crime of wrecking branded their good name. The present generation, by the pursuit of more peaceful arts, have sadly deteriorated. The old prowess only lives in the active tongues of the laid-by veterans, or their wives, who sorrow that they have lived to see their flesh and blood degenerate. One would expect to find, on taking up a local history, something very different from the history of any county on the mainland. Such, of course, is the case, but nevertheless we have the same principal figures in the shape of the everlasting Romans and castle-destroying Roundheads. During the Roman occupation the islands were used as a penal settlement, and we read of two bishops being sent here for favouring the Priscilline heresy. When Mr. Augustus Smith leased the islands in the stead of the Godolphins, who had been lessees from Elizabeth's reign, he reduced the inhabitants by a rigid Draconian code. The pulling out of a feather from a peacock's tail, was an offence punishable by banishment.

This turning of the tables initiated more prosperous days for Scilly. Up to Mr. Smith's arrival periods of great scarcity and want had been painfully frequent; and the value of the property was but a very small tithe of what it is now. The rent paid to Edward I. was 300

puffins, which would be equivalent to about 6*s.* 8*d.* In the reign of the third Edward the monks resident in Tresco, an island once held by the Vikings, and in Leland's account the largest of the group, removed to the mother abbey of Tavistock, two secular clergy being deemed sufficient for such "still vexed" and thriftless islands. In 1539 all the property in Scilly belonging to the monastery was added to the lands of the Duchy of Cornwall. During the European wars of George III. the islanders, owing to the number of pilots required, and to the numbers of ships waiting for convoy up Channel, had a thriving time. Some of the old inhabitants declare, most likely with the exaggeration of oft-repeated tales, that old Grimsby harbour was so thick with ships that one could cross the bay dry-shod. These stirring times ended, kelp-making and ship-building became the staple occupations. The former trade has of course disappeared; of the latter only few traces remain. But in market gardening, conjoined with better farming, the inhabitants have at length found, even with the heavy dues for freightage, a less ephemeral source of income. To the culture of early vegetables has been added of late years, Narcissus growing, both for the sake of the flowers and the bulbs, of which more anon.

Geologically, the islands are interesting, but space will only allow me to mention that softer rocks intervene between the granite of the islands and mainland—*teste* "The Wolf;" and that the granite is extremely liable to decomposition. The shores are covered, with the exception of some beaches of shining white sand, by a coarse detritus of the granite. This granite sand is occasionally agglutinised into a kind of sandstone. The soil is a black peat, with a very large proportion of sand, which one has only to run through one's fingers in order to understand what a capital soil for bulbs it is.

The chief interest to most horticultural visitors is, of course, the gardens of Tresco Abbey. These have been described and illustrated, and not once only, in your columns, so there is no need to retrace old ground. But one point has not been brought out with sufficient emphasis, namely, the freedom from all artificiality that pervades the whole scene. Many writers have insisted on the number and variety of the trees, shrubs, and plants, that there bud out fair and submissive yielding sweet fragrance to the threatful winds. But with all this there is

> "That which all faire workes doth most aggrace,
> The art, which all that wrought, appeared in no place."

Some of the natural groupings and interwreathings of different flowers and leaves—as, for instance, the way in which a Fuchsia often grows up in the centre of a Veronica, two rivals beauties joining "in joyous amitie" instead of disdaining, each the other—are miracles of loveliness. How true it is that flowers are silent workers, preachers and teachers. All, from the gloriously attired Lily to the starry white petals of the hedgerow Stichwort, strive and radiate upwards to their ideal. Oh, that we might drive hence and for ever all vain and deluding joys, and bury our worst selves in our gardens, sowing on them good seed, and graft every rampant selfish aim with benevolence. Thus would we bring a suitable offering to the Creator of the flowers. We can by plucking a flower, root and branch, from the crannied wall, hold in our hand, if we would but understand, the knowledge of "what God and man is," yet we may not know,

> "Nor may flowers
> Know, by what happy name the hovering hours
> Baptize their new born heads with dew and flame."

Albeit, the allegories of flower and leaf are plain enough, if we would only halt to read them, the while the human machinery of the sordid world clanks on. Perhaps the above sentences are out of place: but, pardon, courteous reader, I will not offend in like sort again.

A hedge running down one side of a square plot, wherein are planted all manner of bulbs, was as changeful as anything of the kind could possibly be. Component parts of it were Correa virens, Myrsine undulata, Edwardsia microphylla, Elæagnus, Viburnums, Veronicas, and Fuchsias. The frilled edge of the Myrsine, the grey, buff, and bronze of the reverse of the foliage of it, the Correa, and the Elæagnus, the Fern-like frondescence of the Edwardsia, the bright glazed green of the Viburnums, and the gay flowers of the Veronicas and Fuchsias were all patent, and several beauties which coalesced to form one beautiful cynosure, Instead of a lake, or "the cristal running by," as Spenser translates the "praetereunte lymphâ" of Horace, kindling eyes wander from island to island, round which the waves of ocean flow, dumb or flash their white crests like seabirds' wings. Every little niche in the walls where vegetation is possible, is filled with Mesembryanthemums, Haworthias, Sedums, or something of like nature. The dwelling-house is built on a natural cairn of rock, which has been made into a dainty garden, delighting sight and mind. Fuchsias and Agapanthi give a fresh lease of youth to the old Abbey ruins. It used to be an old insular custom to duck the witches in an iron chair from the pier head of St. Mary's: a better plan now would be to throw such beldams into a rampant clump of Puya chilensis, it would serve for the ordeal of pin-pricking as well. Probably, Scilly is the only place in Cornwall where Tree Ferns have stood out for long periods. [Not so, as we shall shortly show. ED.]. They are growing under the shade of Alders and round their bases, and in other places is Fern-garnished rockwork. This delightsome grove is called "The Wilderness," why, unless to throw dust in the eyes of the Storm Fiend, is hard to say. It would be both easy and pleasant to touch on much else that is beautiful and rare; one further beauty, however, must suffice. It is a line of Fourcroya longaeva extending the whole breadth of the garden. Fountains (the word expresses the appearance exactly) of flower arise from the crowns of many. The flowers over, bulblets are formed on the pendulous sprays of the scape, which hang on for months and keep up the same effect. Lines of such plants can be tolerated. From what has been said, the reader will be able to judge that it is not only the assemblage, of what the guide-books inaccurately call "tropical vegetation," that renders these gardens so attractive and so revivifying to spent energies, but also the natural and non-artificial arrangement of everything.

The Narciss growing was at first somewhat of a venture. Nobody would have dared to prophesy, five years ago, that about every three ladies out of five would take their revenge on the youth who preferred his own image to their charms, by wearing the posthumous emblem of his existence in the bitter cold winds of February and March. Yet so it is. Will what appears a fickle caprice endure as a fashionable *furore?* This is a question frequently put by the islanders. If they are answered to the effect that there will always be a demand for the flowers, although that demand may fall to a very low ebb, and that it will be a hard matter to overstock the market with their bulbs, the visitor will find that he has only told them their own opinion. Owing to the earlier ripening of the bulbs than in Holland, the Scilly growers have every reason to expect cheerfully that their bulbs will, *ceteris paribus*, be preferred, and that if produced in sufficient quantity would probably supersede those from Holland. That the other conditions need be no stumbling block to their success is abundantly proved by the samples that can be seen in Mr. Smith Dorrien's storehouses.

At present both the Narcissi and Daffodils are chiefly cultivated for the sake of their flowers. With the exception of Mr. Smith Dorrien, no one on the islands can be said to be growing on a large scale. This gentleman began with one large field, and has since brought fresh pieces under cultivation annually. The original field is now rapidly attaining to the permanent appearance it is intended to assume. Since the chiefest and in most seasons the only enemy to be dreaded is the force of the wind, the ground has been divided into rather narrow strips by Escallonia macrantha hedges. This Escallonia is of incalculable value in Scilly. The growth is both dense and rapid, and the foliage seems quite impassive either to the salt spray or strength of the gales. The dark glossy green of the leaves, and the soft pink of the flowers (there is never a day in the year but that some may be picked) complete a *summum bonum* of beauty and utility, as far as non-edible natural products go. Other plants used for hedges in the islands are the Tamarisk and the Myoporum lætum. The former has beauty enough, but is of straggly growth; the latter is peculiar, and extremely vigorous, but has to yield place to the Escallonia. Until the hedges grew up reed screens were used as wind-breaks. The reeds, over which, on unclouded days, the wind weaves a glancing warp and woof of shine and shadow, are obtained in quantity from a lake curiously large for so small an island. *Vagabond.*

[An account of the Narcissus trade will be found in the *Gardeners' Chronicle*, at p. 346, March 14, 1885. ED.]

(*To be continued.*)

New Garden Plants.

CŒLOGYNE STELLARIS, *n. sp.**

A MODEST but nice Cœlogyne, in the way of testacea, but with green sepals and petals, a white lip, the side laciniæ of which are provided with sepia-brown stripes interrupted by white ones, the mid-lacinia with a sulphur blotch and two dark brown spots. The raceme has several bracts, which are partly retained during the time of blooming. The bulb is blunt, fusiform, tetragonous, with four principal blunt ribs and several adventitious ones. Leaves as in Cœlogyne plantaginea, but smaller. The dimensions of the plants are nearly those of the named plant. It is lovely in the eyes of a botanical Orchidist. Mr. James O'Brien has kindly sent me a very good specimen—a fine proof of his intelligence. It was obtained from Sydney Courtauld, Esq., Bocking Place, Braintree, who does not know whether it came from Borneo or from Singapore. Luckily, I can say that it is Bornese. It was discovered by the excellent Veitchian veteran, Mr. Thomas Lobb. It is well known that this model of a collector prepared lovely dried specimens. Among these was this Cœlogyne. My late dear friend, Mr. John Veitch, presented me with a proof. What may have been the same plant flowered ten years before with my diligent correspondent, Mr. John Barber, Old Hall, Spondon. I had but a single flower—this and a sketch were kept. I never got more materials.

Something much like it, but with Pear-shaped bulbs, as the added sketch shows, was sent me by Mr. A. D. Berrington. I also had but a single flower, and could, of course, not come to a decision. *H. G. Rchb. f.*

* *Cœlogyne stellaris*, n. sp.—Pseudobulbo pyriformi fusiformi obtusangulo tetragono costis obtusis adventitiis nonnullis, diphyllo: foliis petiolatis oblongis acutis papyraceis, pedunculo pluriflore, porrecto bracteis lanceis ovaria pedicellata æquantibus anthesi; nunc servatis, nunc dejectis; sepalis tepalisque lanceis acutis, sepalis supra nervum medium carinatis, labello trifido, lacinis lateralibus semiovatis apice antrorsum triangulis acutis lacinia mediana cuneata oblonga acuta minutissime serrulata, carinis a basi geminis minute serrulato-ciliolatis ad apicem laciniæ anticæ carina breviori interjecta, carinula utrinque una extus in lacinia mediana; columnæ androclinio integro marginato. *H. G. Rchb. f.*

MICROSTYLIS BELLA, *n. sp.**

Nearly 2 feet high, with very large, wide, cuneate-oblong and undulate leaves, and a raceme with numerous flowers not much smaller than those of Microstylis Josephi. Sepals and petals pale purple with green tips. Lip purple with very long sagittate ears, and nine nearly equal small imbricating teeth at the top. The cushion in front of the column is very dark blackish-purple, and adorned with scattered brilliant white hairs. Column light green, with retuse-linear, angular shanks. It is very easily distinguished from Microstylis Rheedii by the small imbricating teeth at the top of the lip, and by the half round swollen callosity in front of the column being slit in the middle, and marked with the already mentioned inconspicuous but brilliant hairs. I like it very much. I never saw any Microstylis of this group so large as this A drawing by the Rev. C. S. P. Parish, representing a variety of Microstylis Rheedii, comes next to it. It was sent from the Sunda Archipelago by M. Auguste Linden and M. Auguste de Rhonne, collectors for the Compagnie Continentale d'Horticulture. *H. G. Rchb. f.*

[SPATHOGLOTTIS AUGUSTORUM †

This is a very fine novelty. It has very large shining egg-shaped bulbs, of a reddish-brown and greenish-brown hue. The leaves are cuneate oblong acute, plaited, very broad for the genus. The strong peduncle is crowned by a nearly capitate inflorescence. Bracts light green, very broad, very strong, not half the length of the stalked ovaries. Sepals and petals light lilac, darker at the base. Lip tripartite, lilac, white at the base; side parts oblongo-square, retuse, median part long, unguiculate, oblong, bilobed at the top. Callus stipitate, nearly tetragonous at the top, yellow, with purple spots and white hairs. It is quite lovely. It is a Sondaic discovery of two Lindenian travellers, Asiatic pioneers, Mons. Auguste Linden, and Mons. Auguste de Rhonne. It is quite a pleasure to name this plant, a mimicry of some Phalænopsid, in honour of both collectors, with the eager hope that they may make numerous discoveries, some of which, indeed, I know already. *H. G. Rchb. f.*

EUCOMIS ZAMBESIACA, *Baker, n. sp.*‡

This new species is interesting geographically, as adding another of the familiar characteristically Cape genera to the flora of the mountainous region of Tropical Africa. It is intermediate in character between two Cape species, both well known in cultivation—Eucomis punctata and E. undulata. It was first collected by Sir John Kirk in 1859, on the Livingstone Expedition, in the Zambesi highlands at Mambane, at an elevation of 6000 feet above the sea-level. The box in which this part of the collection was contained somehow went astray, and did not reach Kew till the latter end of 1883. The same plant was sent from Lake Nyassa to Sir Charles Strickland, and flowered by him at Hildenley in August, 1883; and we have also received it from Mr. R. J. Lynch, who flowered it at the Cambridge Botanic Garden this present autumn. It comes nearest to E. punctata, but the leaves are firmer in texture and unspotted, the raceme is shorter and denser, and the pedicels uniformly shorter. There are altogether seven distinct species of the genus now known at the Cape, and this makes an eighth.

Bulb large, globose. Leaves lorate, subobtuse, firmer in texture than in E. punctata and undulata, above a foot long when fully developed, 2 inches broad at the middle, scarcely at all crisped, not spotted or striped on the back. Peduncle cylindrical, terete, unspotted, 6 or 9 inches long, ½ inch in diameter. Raceme moderately dense, 4—8 inches long, 2 inches in diameter; pedicels all erecto-patent, ½—¾ inch long; lower bracts ovate, central lanceolate; leaves of the coma 12—20, oblong, acute, membranous, crisped, 1—1½ inch long. Perianth green, ½ inch long; segments oblanceolate-oblong, obtuse. Stamens half as long as the perianth; filaments lanceolate. Style as long as the globose ovary. Capsule globose, obtusely trigonous, ½ inch long and broad, loculicidally 3 valved. *J. G. Baker.*

CONTINENTAL NOVELTIES.

PHLOX DRUMMONDI COCCINEA FL. SEMIPLENO.—This novelty (fig. 1), which will be sent out by Messrs. Haage & Schmidt, Erfurt, is one of the



FIG. 1.—PHLOX DRUMMONDI COCCINEA FL. SEMIPLENO.



FIG. 2.—PAPAVER HOOKERI.

numerous varieties of this popular annual, and we do not doubt but that it will soon gain admirers. It is probably the first variety introduced with double and semi-double flowers; and it has the advantage of growing more compactly than the old scarlet single flowered variety. The trusses and the individual flowers are equal in size to those of the dwarf compact varieties. The doubleness of the flowers is formed by an addition of four to six petals in the tube of the flower, which, according to the weather, is sometimes more or less full; it also happens that double and single flowers are found on the same truss. It is obtained constant from seed.

PAPAVER HOOKERI.

This novelty (fig. 2) is another of the good things sent out by Messrs. Haage & Schmidt, Erfurt, in 1885. It is a native of Northern India, and in growth resembles P. Rheas, but is a more robust grower, and has leaves that are more laciniate than those of that species. The blooms, which are as large as those of P. somniferum, are sometimes single and at others double, the shades of colour varying from rose to purple and crimson. It would make a good border plant or for planting amongst dwarf shrubs,

TREES AND SHRUBS SUITABLE FOR THE SEASIDE.

(*Continued from p. 780, vol. xxiv.*)

TREES.—Those enumerated at the conclusion of my last communication may be considered as the standard or screen trees, while inward from them the Norway Maple, Huntingdon Willow, evergreen Oak, Service tree, Elder, Cupressus macrocarpa, Alder, Birch, and Thuia gigantea may be used, the more sheltered nooks being planted with strong bushy trees of the Oak, Beech, Hornbeam, Ash, and Goat Willow.

The Norway Maple is an almost invaluable tree for resisting the sea gales, and has been successfully used in such situations along most parts of the mainland of Great Britain. In its native country, the shores of the Baltic and west coast of Norway, it attains large dimensions, while in this country its handsome appearance and hardy nature have already placed it high in the estimation of planters.

Cupressus macrocarpa.—A grand future is, beyond doubt, in store for this tree. As a seaside tree it is unrivalled, Its beautiful evergreen foliage, graceful appearance, and rapidity of growth, render it perhaps the most valuable for this purpose that has yet been introduced.

Alnus glutinosus.—In wet, boggy portions of the ground the Alder is of great service, and, although in such situations it may not attain to its usual size and produce such a quantity of timber as it does when placed under more congenial circumstances, still it stands the sea blast well, and fills, by thriving in such positions, a place that could not advantageously be occupied by any other tree.

Willows.—Several species of Willow—notably the Huntingdon and Bedford—have also been planted with success on the seashore, and where, when allowed ample room for ramification, they produce a pleasing effect, that has gained for these trees a celebrity for waterside planting that is quite their own.

Quercus Ilex, the Evergreen Oak, is another tree which experience has proved to be of great value in maritime woods. It has, however, one drawback—it transplants badly, but this, as in various other trees, notably Pines, may be greatly obviated by frequent removal whilst in the nursery borders.

The Elder, although of but little value as a timber tree, withstands the sea breezes as well as, if not better than, most trees and shrubs, and should therefore be extensively used in the getting up of shelter along the coast. At Farnley, in Lancashire, where the wind is frequently blowing with hurricane force, and where wrecks are, unfortunately, too common, stands a solitary Elder tree, the large proportions of which render it a conspicuous object on the dry, dreary plains of sand, and where it is visible for almost a mile in every direction. Although the Oak and Ash appear somewhat "scraggy" and ill grown when exposed to the direct sea breeze, still they are useful for planting as a mixture, and being tenacious of life, and useful as shelter they ought to be cultivated wherever the situation is suitable.

Coniferæ.—In addition to the Cupressus above-mentioned the following do well:—Abies grandis, A. Nordmanniana, A. nobilis, A. Pinsapo, Picea Menziesii, A. canadensis, Picea clanbrasiliana, Cupressus Lawsoniana, and Araucaria imbricata; but none of these should be planted along the outer margin, but where partial shelter is secured by the belts of trees already described. Within 100 yards of the seacoast on this estate, only sheltered by a narrow strip of deciduous trees, the Araucaria seems quite at home. This may also be said of Pinus Cembra and P. excelsa, Cedrus atlantica, and Cryptomeria japonica. At Bodorgan, in Anglesey, and where only within a few yards of the sea, Pinus insignis is simply amazing, indeed, I know of no place where its merits as a sea-side tree are better shown, for a more wind-beaten district than that of Anglesey would certainly be difficult to name. As an ornamental tree it is also all that could be desired, the intense green foliage, of not too stiff a type and compact habit of growth, rendering it particularly attractive.

SHRUBS.

With the aid of the above excellent shore trees almost any kind of evergreen planting may be carried out, and we will now direct attention to such shrubs as have been found, in every sense of the word, as suitable for sea-coast gardens and lawns. First on the list comes the well-known Tamarisk, of which

* *Microstylis bella*, n. sp.—Pseudobulbo cylindro conico: foliis cuneato-oblongis acutis undulatis (evolutis 4.); racemo elongato supra pedunculum angulatum medio unisquamatum; bracteis linearilanceis ovaria pedicellata non æquantibus; sepalis tepalisque lineari-ligulatis obtuse acutis; labello longe sagittato, apice subæqualiter novemdentato, dentibus imbricantibus minoribus; pulvinari ante columnam semirotundo incrassato basi media triangulo sulcato; pilis lucidis minutis supra pulvinum sparsis; columnæ auriculo retusiusculis. Ex Sondæ ins. a dom. Augusto Linden, *H. G. Rchb. f.*

† *Spathoglottis Augustorum.*—Pseudobulbis ovoideis; foliis cuneato oblongo ligulatis acutis plicatis; racemis bracteis herbaceis oblongis apiculatis excavatis magnis, ovaria pedicellata levissime puberula vix dimidia æquantibus; sepalis oblongis acutis tepalis sublatioribus, labelli partitionibus lateralibus ligulatis retusis, partitione mediana unguiculata apice oblonga emarginata angusta ungue basi utrinque, auricula parva triangula callo utrinque triangulo, medio sulcato, postico umbonato in basi unguis, descendente in ligulam elevatam apice abruptam supra unguem ad medium, fasciculo pilosum minuto utrinque in callo; columna clavata. *H. G. Rchb. f.*

‡ *Eucomis zambesiaca*, Baker, n. sp.—Bulbo globoso; foliis loratis firmulis subobtusis planiusculis pedalibus et ultra dorso concoloribus impunctatis; pedunculo elongato cylindrato impunctato; racemo subdenso oblongo-cylindrato pedicellis brevibus erecto-patentibus; comæ foliis 12—20 oblongis crispatis; perianthio viridulo segmentis oblanceolato-oblongis; filamentis lanceolatis; stylo ovario æquilongo; fructu subgloboso obtuse trigono.

there are several species, all equally valuable as ornamental seaside shrubs. For rather damp sandy soil they are indispensable, but they may be planted on higher and drier ground with about equal success. The commonly met with Tamarix gallica is in most situations a vigorous growing shrub of graceful and pleasing outline, the long feathery branches terminating, during summer, in loose open panicles of small pinky flowers, somewhat after the style of that sweet little garden plant, Polygonum vaccinifolium. Tamarix or Myricaria germanica, the German Tamarisk, is a useful plant for the sea-coast, and may best be described as a dwarf form of the foregoing, with longer leaves. This and T. tetrandra, a Caucasian shrub, associate well, and are worthy of attention.

For the most exposed spots no shrub, however, do we find better adapted or more ornamental than the Sea Buckthorn, Hippophae rhamnoides, for even the strongest saline winds have but little effect upon it, unless, indeed, it be to show off the beautiful silvery appearance of its foliage. Then, in autumn, the bright orange-coloured berries that are usually borne in the richest profusion, give to the plants a remarkably handsome appearance, and render them well adapted for even the most conspicuous portions of the grounds.

Various species of Euonymus, or rather varieties of E. japonicus, have been found suitable for the seaside garden—indeed, along the Welsh coast one is frequently surprised to see into what fine healthy specimens the normal dark green form and its variegated varieties not unfrequently grow. The Laurustinus and Portugal Laurel also do well, but require protection from direct sea-blasts, which, however, they well repay by the former's abundance of bloom and the latter's deep green and at all times cheerful-looking foliage. Arbutus Unedo, the Strawberry tree, is a fit companion for the latter, and delights in a breezy, high-lying, and dry soil. For its ornamental fruit, as well as evergreen foliage, it is worthy of a fair trial, and should be allotted a position where its characteristic features can best be seen. The Lilacs are also good subjects for the seaside, as also the Spanish Broom, Laburnums, Hydrangea hortensis, and Fuchsia Riccartoni, but these are all the better for being placed in somewhat sheltered corners, where their abundance of bloom will create a feeling of both delight and surprise. The Mountain Ash, Bird Cherry, and white Beam tree have all recommendations of their own, and should find suitable places amongst the others. On that wind-swept headland, the Great Orme, one cannot but feel surprised at the manner in which Pyrus aria behaves, for there, growing along the limestone cliffs, without, one would imagine, a particle of soil, and exposed to the full fury of the blast, it seems quite at home. Growing on the same headland, its only British station, and in similar situations to the latter, Cotoneaster vulgaris was at one time pretty abundant, but it is now, like its companion, Epipactis ovalis, become well nigh extinct through the too pressing attention of visitors.

Seeing, some days ago, several bushes of the Myrtle flowering luxuriantly in the grounds attached to the University College at Bangor, I was reminded how well this plant is adapted for maritime situations. That the seashore is a favourite resort of some plants that would not survive an ordinary winter inland is well exemplified by the above plant, which, although one of our most ornamental flowering plants when favourably placed within sea influence, is yet when grown even a mile inland so susceptible of frost as to be almost beyond cultivation. In the Tree Purslane, Atriplex halimus, will also be found a really valuable seaside shrub that is totally indifferent to the salt spray, and which, from its dwarf, evergreen nature and silvery scaly leaves, is also more or less ornamental.

Lycium europæum, the Box Thorn, with its spathulate leaves and pink or reddish flowers, has also been found of value on the sea-coast, and may be introduced without fear of harm. Amongst the Barberries several species may be recommended, the best undoubtedly being Berberis Darwinii, the small spiny foliage being well adapted for resisting even the most furious gales. To see it at Bodorgan, in Anglesey, planted and thriving even on the most exposed parts of the shore and where the full force of the wind is almost unbroken, does one good, and calls to remembrance that one at least of our most ornamental flowering evergreen shrubs finds a congenial home where almost lashed by the salt spray.

Ribes sanguineum, various species of Cytisus, Spartium junceum, Fabiana imbricata, the Banksian Rose, Baccharis halimifolia, or the Tree Groundsell; Daphne Mezereon, Vincas major and minor, Ruscus aculeatus and the St. John's Wort, Hypericum calycinum, all do well, but particularly well where a fair amount of shelter from direct sea influence is afforded.
A. D. Webster, Penrhyn Castle.

ABIES CONCOLOR.

The true variety from Colorado, of which there are only small plants in this country as yet, is described by Professor Sargent, in a letter before us, as the best, handsomest, and hardiest of all the Firs. It is remarkable that Colorado has given us the best Spruce (Picea pungens = Parryana glauca), and the best Fir (Abies), A. concolor.

SYRINGA JAPONICA.

We hear great things of this shrub. Professor Sargent speaks of it as by far the best of the new flowering things. We shall look out for it with interest, and shall probably publish an illustration of it at an early date.

PROLIFERATION IN FERNS.

(Continued from p. 789, vol. xxiv.)

PROLIFERATION AND VARIATION. — A further aspect, equally as interesting as any of the preceding, from which the subject of proliferation in Ferns deserves to be examined, is in regard to the influence it appears to exercise on the modification of specific types. The limited character of my survey, confined as it is to the Tropical American flora, will to some extent, as it has hitherto, affect the consideration of this aspect, but nevertheless, though the purview is thus limited, the general and universal rule, judging again from what I have seen in cultivated species from other regions is, I believe, quite in accord with my limited field and forest experiences. An attempt to give the chief features of this experience will not be uninstructive. Whether it be the exclusive agency or not in effecting the result, there is abundant evidence that, where firmly established, proliferation is accompanied by more or less of modification and variation in the type, and, in my experience, this is greatest in those species in which it is most firmly, and by inference has been longest, established. It is not confined to any one of the several states which the proliferate feature presents. I shall adduce instances in nearly all the forms, and these, too, not limited to a section of the family, but spread widely over it.

I have intimated that this evidence is seen to some extent among cultivated plants, but, from obvious circumstances which necessarily limit its presence in such small and selected assemblages of species, it is then seen only slightly as compared to the examples witnessed in the greater freedom and absence of selection of the wild state. I shall only instance well known and generally widely diffused species, most of which are among the most polymorphous of types. To one of them, as an instance of proliferation among Filmy Ferns, I have before adverted—Trichomanes pinnatum, Hedw. This species is known, owing to the large number of states it presents, by several synonyms. Some of these states, though the variation is quite obvious, do not differ from each other much, and cannot be regarded as more than forms; that is, they are in the earlier stages of differentiation; others are distinct, well-marked varieties, and a few may be accepted as having reached the status of subspecies. All are terrestrial plants that grow on the banks of streams, over which they ramble freely in large or small communities; others, and these the most distinctly differentiated states, are scattered singly over forest floras. The former, occupying the moister situations, exhibit proliferation permanently, and are more prostrate in their habit of growth; the latter, which only casually exhibit the feature, have acquired a stiff and generally erect habit of growth. But as a species it is well distinguished, and the general features are so characteristic that there is no possibility, whether proliferous or not, of mistaking the identity in any of the conditions. The most advanced of the different states in the evolution of new form and physiognomy, is that in which the fertile fronds have become quite simple, standing erect like long lances, while the barren ones, when any are present, which is infrequent, still retain the typical pinnate and spreading sub-prostrate habit.

A similar instance of wide, or even wider, variation is found in Asplenium rhizophorum, L. Of this there are probably ten or a dozen quite distinct and well marked states; some of which are so definitely differentiated and fixed in character as to present relatively little variation of aspect in the members which compose them, as a sub-type; others again, while also marked by a distinct and unmistakable individualism, vary more or less in subordinate features among their members. This species is distinguished by a great range in cutting and size in the different states, passing from simple pinnate, with quite entire pinnæ, to multifidly decompound, and from a few inches to 2 or 3 feet in length of frond. All, without exception, are proliferous at the end of the long slender whip-like naked extension of the primary rachis. As in the previous case, there is no chance of mistaking the affinity of any of the sub-types of this group, they all agree so well, however much and clearly individualised otherwise in the common typical features. All grow under much the same physical and atmospheric conditions, either in shade or open, exposed to more or less direct sunlight, not showing any very decided preference for wet places, but always strictly limited in range to very humid regions.

A third instance is the group of which Aspidium triangulum, Sw., may be taken as the centre and type. This embraces Aspidium Plaschnictrianum, Kze., and Aspidium rhizophyllum, Sw., together, on the one hand, and Aspidium viviparum, Fée, on the other, the former being simple, or in part simple and part pinnate, and the latter uniformly bipinnate; these, like the first group described, vary in the constancy of the possession of the proliferous feature. In some, as, for instance, the central plant, A. triangulum, Sw., it is, so far as I have noticed, constantly absent; in others it occurs at the end of the fronds, the bud taking the place of the terminal pinnule; in others, again, at the end of a more or less elongated stiff or pliant terminal tail. The proliferous states of this, too, are generally prostrate in their habit of growth; but there are two or three partial or complete exceptions to that rule. The non-proliferous are more or less erect. The acquisition of proliferation seems to have introduced into this group new and diverse directions in the modification then in progress of type, and to have hastened the thorough disruption of what I conceive was the old specific form. The idea which the states now suggest is that two different types have crossed and mingled their forms to the perplexity and confusion to the present-day observer. The new elements of diversity are as trails across the scent, so that the connections cannot be traced step by step with the same confidence in this case as in those previously described. As a consequence the different states of this group, or, at least, the most distinct and settled in character of them, have attained a generally admitted higher status than has, by the general agreement of botanists, been accorded to the members of the other equally polymorphic types. No one, however, whether we take a broad or narrow view on the question of what constitutes a species, would venture to question the close and intimate alliance of the several states, though owing to the diversity of men's views a difference of opinion might arise as to the precise rank to which each was entitled.

Passing on now to another genus, we come to another of those striking instances in Polypodium reptans, Sw, and P. asplenioides, Sw., which are the poles likewise of a generally admitted single type. I may here remark, that these are cases of the variation of proliferation in one and the same species which in citing such cases might have been instanced in an earlier part of this paper. In both the prostrate or subprostrate states are generally proliferous, while the erect are generally non-proliferous; but to both exceptions occur. As mentioned under P. reptans, the two conditions, accompanying corresponding conditions of habit and spore-production or its absence, occur on the same individual plant, the fertile erect fronds being non-proliferate, while the prostrate barren ones are gemmiferous and radicant. P. reptans and P. asplenioides, as the two extremes of the type, are fairly constant, especially so the latter. It is in the intermediate conditions that the great variety of form occurs. Though numerous, few of the forms are at all fixed or definite, and it is almost impossible to determine, in some

instances, their limits, or to which of the two primary states they should be ascribed. They vary, too, in the involucres being clearly developed in some, thus removing the species to Nephrodium, while in others there is no trace of any.

All the foregoing are instances of frond proliferation, and chiefly of the radicant state of that form. In my experience there is less variation in those species that produce the buds in the axils or other parts of the surface of the fronds, but the instances in any form of the feature known to me are few in which there is no variation, and these few are chiefly species in which proliferation is not a uniform condition; for in many it only appears in an odd plant occasionally, and in some is very rare. In such cases the feature as rarely operates as a reproductive agency, and consequently as a tendency in variation its influence is very slight. The operative influence which proliferation exercises in modifying types is naturally in proportion to the degree in which it is manifested in any species, and the circumstances of the situation and environment favouring its success as a reproductive agency. When all or a larger proportion of the fronds are proliferous, and nearly every bud succeeds to adult life to reproduce itself again, and this is carried on *ad infinitum*, there we should naturally expect to find the greatest evidence of modification. This is so in those cases which I have cited, in all of which, in the whole or most of the forms which constitute each proliferation is constant and constantly successful. It is probable, too, that in these species there are two influences in operation affecting the question, each most likely modifying the other; that in the progeny derived from spores being of one character, and that in those which have resulted from buds of another. Possibly in one of the two forms of reproduction the tendency to variation runs stronger than in the other, and this influence, by their interaction in descent, is modified by the other. On such a suggestion one can only speculate, for, from its nature, no evidence is derivable from plants growing in a wild state.

ROOT PROLIFERATION.

I will close this part of the subject with two or three instances of wide variation in root proliferation. In an earlier page I have mentioned that owing to its terrestrial origin this form of proliferation no doubt exists in many cases in which it has not been detected, as, to determine its presence, the plants have generally to be pulled up and their roots examined. In some of the smaller species the threadlike roots from which the plants spring have sometimes been mistaken for unusally slender rootstock, but beyond being the origin from whence it sprang, this thread is no part of the true rootstock, which the buds in time develope, and that invariably is much stouter, and in some cases immensely so. Of instances of root proliferation quite as prolific in the variety of forms as any of those of frond proliferation, already detailed, the most striking is that of Asplenium auritum, Sw. It covers, in fact, exactly the same range of variation as is found in Asplenium rhizophorum. The extremes are simply the pinnate state of A. auritum, in which the pinnæ are quite entire, and the decompound very finely and multifidly cut A. fœniculaceum. The gradations in any extensive set of specimens between these extreme ranges are so slight and almost imperceptible, as to leave no line of demarcation whatever between what (and with good reason, looking at the extremes alone) are usually accepted as two good species, viz., A. auritum and A. fragrans. A. fœniculaceum, which I instanced as one of the extremes, being the most finely divided state of the latter. Let me say here, however, that in this and several other instances it is just as well, as a matter of simple practical convenience, without regarding too closely the scientific significance, to recognise the extremes as separate species, and group the forms with one or the other in accordance with the tendency of their affinity, especially where custom, which became established in the absence of complete material to show the connecting links of the unbroken chain, or before the fact of the evolution of species was more than suspected, has hitherto recognised the distinction. As well as in the wide variation of form, so also in the variation of size, this case of auritum resembles those preceding. In location of growth, it is one of that intermediate class, which are neither terrestrial nor epiphytal strictly. The plant grows chiefly in light *débris* on rocks, only occupying trees to which they have not the power to cling when vegetable matter is provided for them by the decay of other plants. In situations favourable to extension, A. auritum forms extensive patches by root proliferation alone. Nephrolepis cordifolia, presents an allied instance of considerable variation accompanied, though not in all the forms, by root tuberation.

With regard to the presence or absence of tuberation in the different forms, it may be due to modified constitutional character or physical conditions, either acquired or lost in the course of time. At any rate I never noticed that the stronger states possess tuberation, which the weaker do not, and that where it is present the character of the situation of growth required by the particular form is such as to afford a covering of soil for the roots, in which the tubers are produced, and that those forms which are usually less robust, that grow only or chiefly on the surface of the ground, or on or among rocks or stones, are devoid of them. I allude, of course, only to clearly distinguished definite forms, which have unvarying and permanent characteristics. *G. S. Jenman.*

(*To be continued.*)

WROXTON ABBEY.

(*Concluded from p. 814, vol. xxiv.*)

PASSING from the grounds more immediately adjacent to the Abbey, the walk leads for a long distance through a wood, much of which is Beech—tall old trees with unusually long straight trunks, devoid of branches, and as smooth as if none had ever existed on them. They stand thick on the ground, and the dimensions they have attained are an evidence of what good land is capable of supporting without the exhaustion which induces a stunted condition, for though old they are still in a vigorous thriving state.

Further in this direction are three lakes, which have been formed by damming the stream in the valley. Following the walk on the northern bank of these may be seen a singular instance of what appears to be natural grafting—a Beech, with a trunk about 12 feet in circumference. At about 6 feet from the ground the stem has divided into four limbs, all of which have so far preserved an erect position of growth as only to allow a space of some 6 inches between them. In this way they have extended for another 6 feet, when the whole have again united, forming an even stem almost as smooth as a gun barrel, and showing little, if anything, of the line of union, which continues for a considerable length, and finally separate into six branches, which then tower up to a great height; the lowest branch is quite 50 feet from the ground. At the lower end of the water there is a fall of 16 or 18 feet, after which it continues in the form of a pool.

A little lower down is a temple, on a high mound, from which a glimpse of the beautiful sheet of water, overhung around with trees, is to be had; still lower the water takes an abrupt turn, at which point there is a quaint-looking building of considerable size—a Chinese tea-house, in the construction of which the several details existent in the architecture of the Celestials have been closely adhered to. The walk then leads to the south or opposite side of the water, to which, here and there, there are wide irregular grassy openings through the dense growth of stately trees, consisting principally of Oak, Ash, and Beech, the trunks of which often run to 40 or 50 feet, without the semblance of a branch. Continuing in this direction the head of the upper lake is reached; from this a broad walk leads to the flower garden, the site of which has apparently been scarped out of the steep ascending ground on the western side, so as to form something like a half-circle. This garden has a telling effect, especially as seen from the walk on the high ground above; many of the beds are large—the central one takes 2000 plants; some were filled with a combination of flowering and coloured-leaved subjects, others with flowering plants edged with such things as Iresine Lindeni, whilst others again were arranged in carpet fashion. Mr. Doherty, the gardener here, deserves credit for the artistic way the whole was arranged; there was enough colour, without the glare, which has been the worst feature of modern flower-gardening.

At the side of the walk above, already named, there is one of the best examples of a clipped Yew hedge I have ever seen; it is about 9 feet high, and as close as a wall. Through the centre of this is an arch; a short walk, with Yews right and left, leads to a temple, in which is a curious relic of the Battle of Edge Hill—a table at which it is said the unfortunate king dined previous to the fight.

The kitchen garden, in which are the various plant and fruit houses, is situated on the high ground at some distance from the Abbey; it is about 4¼ acres in extent, enclosed with good walls, which are covered with exceptionally fine fruit trees in excellent condition. The eastern aspect is occupied by Pears, a good many of which are two and three-branched cordons, the rest horizontal and fan-shaped. These were mostly carrying good crops. The inner south wall is principally devoted to Apricots and Plums; the former were bearing a good crop of very large fruit, as also were the Plums, Morello Cherries, Plums, Currants, and Gooseberries cover the rest of the walls inside the garden. In front of that facing north there is a row of Gooseberry bushes running the entire length, which arrangement gives an opportunity of netting them along with the trees on the wall, so as to keep the birds from the fruit. On each side of the divisional wall, running east and west across the garden, there is an iron trellis covered with a beautiful lot of Pears and Apples laden with a very fine crop. The other walks have bush-shaped Pears and Apples on each side, with, in some cases, lines of low cordons next the path. These trees are in excellent condition. Cherries do not succeed well here. The outside of the southern wall is covered with Peaches and Apricots, like the others in good order and in full bearing. The soil of which the garden is composed is rich loam, from 3 to 4 feet deep, resting on rock, which is highly favourable to the growth of fruit generally, as well as vegetables, of which the crops when I saw them at the beginning of September, after the exceptionally dry summer, gave evidence of their having received the attention to which their importance entitles them.

Most of the houses occupy a space in the south-west corner of the garden, and are nicely enclosed with Yew hedges. The vineries are four in number; the first house is confined principally to Black Hamburghs, which were ripe about the beginning of May. The second contains Black Hamburgh and Golden Champion, timed to come in when the first are over; they were carrying the remains of a good even crop. The Vines in both these houses are in good condition.

Next is a large lean-to, some 18 feet wide, and much higher than vineries usually are. Here the Orange trees that stand on the terrace in summer are wintered. The Vines in this house consist of various kinds, are strong and in fine order, and were carrying a grand crop of ripe fruit—Black Hamburgh, bearing very heavy, finely finished bunches, some of which were over 5 lb.; Black Alicante, full sized, handsome bunches, as black and heavily covered with bloom as this showy Grape where well done is usually seen; Golden Queen was in fine form, well shaped bunches, with large berries of the right colour; Buckland Sweetwater, Muscat of Alexandria, Gros Guillaume, and Gros Colmar, all in excellent bearing; Alnwick Seedling was full and even in the bunch, the berries black and thickly coated with bloom—collectively such a house of Grapes as one might go a long distance without meeting with its equal, and of which Mr. Doherty had good reason to feel proud. In the latest house, filled with Lady Downe's, Raisin de Calabre, and Mrs. Pince, the crop was ripening; the bunches here were thinned out freely with a view to their keeping.

There are three lean-to Peach-houses, the first, containing a good lot of trees, had the crop ripe about the middle of May. A trellis in front reaches about two-thirds up the roof, allowing light to reach the trees on the back wall. In the second house the crop was over; here the arrangement is similar, except that part of the back wall is covered with Figs. In the last house there are good trees on the back wall, with a row of standards in front; these latter are to give place to others trained to a trellis in the usual way, as most of the fruit borne by the standards is wanting in colour and flavour through its not getting enough sun.

Pines also, are well done; the fruiting house contains a good lot of plants in fruit, mostly Queens, with a few Smooth Cayennes. The succession pit is filled with stout, short-leaved young stock, that promise well. The plant stove is a hip-roofed structure, in which are good specimens of Clerodendron Balfourii, Stephanotis floribunda, Bougainvillea glabra, Dipladenias, Rondeletia speciosa, Allamanda grandiflora, and A. Schottii. Another house of a like description is also used as a stove; the occupants comprise a mixed collection of flowering and fine-leaved

plants, amongst which are several nice young specimen Crotons and Ixoras, with quantities of decorative plants. Here likewise are a good lot of Calanthe Veitchii and C. vestita. Melons are grown over the back paths of these houses.

In the greenhouse there is a general assortment, including a nice collection of medium-sized Azaleas, Begonias, Coleus, Campanula pyramidalis, Pelargoniums, Lilies, Ferns, and numerous other things for the production of cut flowers, and for room decoration. Two pits were filled with a beautiful lot of Celosia pyramidalis and Poinsettia pulcherrima—two of the most useful autumn and winter-flowering plants. Chrysanthemums and Salvias in quantity standing in an open position promised to do good service when their time for blooming came.

The garden and grounds collectively are well kept, each department bearing evidence of skilful management. *T. B.*

THE GENUS ODONTOGLOSSUM.

(Continued from p. 748, vol. xxiv.)

FOLLOWING again from the pretty little O. blandum mentioned at p. 748, December 12, we come to

O. NÆVIUM, which seems to lie between it and O. cirrosum. It is one of the rarest and most elegant of our Odontoglossums, sepals and petals pure white, spotted with blood-red, base of the lip yellow, the rest white with a few red blotches.

O. CIRROSUM.—This is much like a large form of the preceding, but with flower-spikes which often run up over 2 feet in height—some of the varieties with the longest spikes often producing the fewest flowers, but culture close to the glass helps to improve their habit. Flowers snow-white blotched with dark crimson, base of lip yellow with chocolate lines at the sides. Ecuador: 6000 feet. (See fig. 3. A page cut is given at p. 506, April 15, 1876.)

O. C. HRUBYANUM is a pure white form with precisely the same habit as the type. Its flowers have a stray spot sometimes, but it may be called a permanent and well marked variety. Wm. Lee, Esq. received a First-class Certificate for it February 10, 1885.

O. ELEGANS.—This is a most beautiful thing, with flowers intermediate between those of O. cirrosum and O. Hallii. Mr. Pollett's variety is perhaps the best of all—it has sepals and petals white tinged with pale yellow, and heavily blotched with bright chestnut-red; lip white, spotted red, crest yellow. First-class Certificate Royal Horticultural Society, May, 1883.

O. E. ALICÆ is a lovely variety, more nearly resembling O. cirrosum than the last named. Its flowers are of the true elegans shape, clear white with dark crimson blotches and yellow base to the lip. Messrs. F. Sander & Co. received a First-class Certificate at the Royal Horticultural Society, June 23, 1885.

O. TENTACULATUM is another step up to O. mulus; in form and general appearance, as well as colour, it is like O. elegans, but the sepals and petals, and lip are curiously attenuated at the points. F. C. Jacomb, Esq., flowered an exceptionally fine form of it last year.

O. MULUS. — The varieties of this are supposed hybrids between O. luteo-purpureum and O. odoratum. Sepals and petals yellow, richly blotched with dark brown, lip, which shows distinct traces of O. luteo-purpureum, white, with one or two dark blotches, the base being marked with yellow and red. (See fig. 4, p. 13.)

O. M. COURTAULDIANUM. — This fine variety has larger flowers than the type, the yellow-ground colour, which also suffuses the lip, being very bright. It was flowered by Sydney Courtauld, Esq., of Bocking Place, Braintree.

O. M. HOLFORDIANUM.—A very fine form, with nearly white flowers blotched with purplish-brown.

O. M. GERMINIANUM has well-formed flowers with bright yellow ground and brownish-crimson blotches. It was certificated at the Royal Horticultural Society, June 23, 1885.

O. CUSPIDATUM may be regarded as of the O. mulus section, and it is of much the same form in all respects. Sepals and petals yellow, blotched, dark brown, lip white with yellow base.

O. C. XANTHOGLOSSUM is a brilliantly coloured and distinct form of the preceding, having also a much showier lip, which is large and curiously wavy and toothed, yellow, with an irregular dark crimson blotch. Mr. B. S. Williams had this excellent form.

All the varieties here enumerated have profusely branched spikes, and the same pleasant Hawthorn scent. *James O'Brien.*

GARDEN PALMS.

(Continued from p. 750, vol. xxiv.)

JUANIA, *Drude.*—As this genus is not represented by living plants in any European collection, so far as is known, it should not properly be included here, but the name appears in the list of Palms cultivated at Kew in 1882, and this requires explanation. In 1877 seeds of what were said to be the Juan Fernandez Palm were sent to Kew, and from one of these a plant was obtained. This plant was labelled Juania, on the assumption that the seeds had been correctly named, and also because the plant apparently fitted the description of the true Juan Fernandez Palm. In 1882, however, young living specimens of the Palm, recently introduced from Rio Janeiro as Glaziova insignis—now referred to the genus Cocos—were obtained for Kew, and on comparing these with the plant labelled Juania the two were seen to be identical. This led to the suggestion in the Kew list (see *Kew Report*, 1882) that Glaziova insignis was a synonym for Juania australis. If the Kew Juania had been the true plant this would have been correct, but instead of this it turns out that the seeds sent as Juania were really those of the Glaziova, and the Juan Fernandez Palm is therefore still unknown in English gardens. The following brief description of the Palm is taken from the *Botany of the "Challenger" Expedition*:—

Juania australis, Drude. (syn. Ceroxylon? australe, Marl.; Morenia Chonta, Philppi).—Chonta is the native name of this Palm, which is peculiar to Juan Fernandez. The trunk attains a height of 80 or 90 feet, though rarely exceeding 8 inches in diameter, and it rises high above the tallest forest trees, where its head of waving feathery leaves is very effective. The dark green trunk is quite smooth and shining, and the scarlet fruit, about the size of a bullet, hangs in elegant festoons, adding greatly to the beauty of the tree. It is stated that during Alexander Selkirk's (Robinson Crusoe's) stay on the island (1704—1709), the Chonta Palm was very abundant, but that now, according to Moseley, who recently visited the island, the number of trees is very small. There is a portion of a leaf of this Palm in the Kew herbarium, and this shows the elegant character of its foliage, which is apparently very like that of the Glaziova. Probably some one will soon succeed in procuring fresh seeds of what promises to be an elegant garden plant for cultivation in English collections.

Jubæa, H.B.K. — A monotypic genus, chiefly interesting because of its being the southernmost Palm in the New World, and for its usefulness as a source of food for the Chilians. As an ornamental Palm it is much inferior to the majority of the plants of the order. In the *Voyage of the "Beagle"* Darwin speaks of this Palm as follows. Describing the plants met with in his ascent of the Campana, or Bell Mountain, which is 6400 feet high, he says:—"In a few places there were Palms, and I was surprised to see one at an elevation of at least 4500 feet. These Palms are, for their family, ugly trees; their stem is very large, and of a curious form, being thicker in the middle than at the base or top. They are excessively numerous in some parts of Chili, and valuable on account of a sort of treacle made from the sap. On one estate near Petorca they tried to count them, but failed, after having numbered several hundred thousand. Every year in the early spring, in August, very many are cut down, and when the trunk is lying on the ground the crown of leaves is lopped off. The sap then immediately begins to flow from the upper end, and continues so doing for some months; it is, however, necessary that a thin slice should be shaved off from that end every morning, so as to expose a fresh surface. A good tree will give ninety gallons, and all this must have been contained in the vessels of the apparently dry trunk." Through neglecting to plant young trees to replace the old ones cut down for their sap the enormous number of trees in the country has been reduced to a very few. There is a fine specimen of this Palm in the temperate-house at Kew, which has fronds 12 feet high, and a large barrel-like base or bole, but no distinct stem. The leaves are pinnate, and resemble those of the Date Palm. The seeds are round, as large as Plums, and they are covered with a fibrous husk; seedling leaves simple, stiff, and erect; seeds germinate rapidly in heat and young plants grow fast if kept in a stove temperature. In the warmest parts of England and Ireland this Palm ought to thrive out-of-doors as does Fortune's Palm (Chamærops Fortunei).

J. spectabilis, H.B. et K., "Coquito-nut Palm." Chili.

KENTIA, *Blume*.

Reference has already been made to the numerous Palms of different genera which are known in gardens as Kentias, and of which only two, and these rare ones, have a right to the name. There are three species included in the genus by Sir Joseph Hooker,

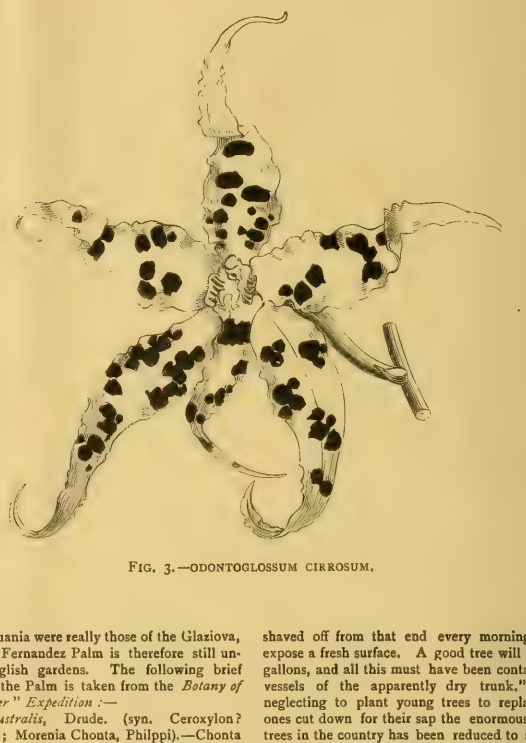


FIG. 3.—ODONTOGLOSSUM CIRROSUM.

and these are tall unarmed Palms, with annulated trunks and pinnate leaves, the pinnules arranged regularly along the leaf-stalk, which is keeled above and rounded below. The fruits are small as black Currants, slightly oblong, the calyx attached to the base, and contain brown peppercorn-like seeds also slightly oblong. Seedling leaves bipartite as also are the following six or eight leaves, the plants not bearing pinnate foliage till several years old. The plants of the following two species at Kew are small, the largest (K. elegans) being 3 feet high, with pale green leaves, and rather graceful. K. costata was offered for sale by Messrs. Williams, of Holloway, a few years ago.

K. costata, Beccari.—New Guinea.

K. elegans, Br. (K. Luciani, Wendl.).—New Guinea? *W. W.*

(To be continued.)

GARDENIAS PLANTED OUT.

THIS system, both with market and private growers, has now become established as the most remunerative and best method of cultivation. Many who formerly grew plants in pots, whether they had a house or pit with the water. Paraffin diffuses in water much better when soap is first added. After trying many prepared insecticides I have come to the conclusion that nothing is so effectual as paraffin (for Gardenias) in keeping down mealy-bug. Should this troublesome pest appear it should be applied once a week in the evening.

The bed for the reception of the plants should be made up in a house or pit wherein a brisk heat can be obtained in winter and early spring, which would enable the flowers to expand during dull cold weather when they are most remunerative and appreciated. If bottom-heat pipes are beneath the bed so much the better; for winter work they are desirable, but not essential. A space of 5 or 6 feet should be allowed between the glass and the surface of the bed, which should consist of equal parts of the best fibrous peat and loam, with a liberal addition of coarse sand and broken charcoal or burnt soil; the latter is most desirable to keep the soil sweet until the roots are in full possession. After planting the plants should be kept staked for a year or so to induce the formation of straight woody stems for the ultimate self support of the plants. No annual trimming or pruning will be required, as this operation would interfere with a time the vigour of the plants declines, and they are of little value afterwards. C. citrina does well in shallow pans in the usual compost used for Cattleyas. Those who have plenty of plants should try O. Jonesianum in pans or teak baskets, as forming amore permanent basis on which to establish them. There are several nice examples in flower in Messrs. Veitch's nursery at Chelsea, but not one alike; they seem to vary as much as Odontoglossum crispum. The sepals and petals are creamy-white, spotted and blotched reddish-brown. One variety had a pure white labellum, without spots; others had this portion of the flower more or less spotted with crimson. A very handsome variety had flowers 2½ inches by 2½ inches. There is a coloured plate of it in the *Orchid Album*, iv., t. 183. It has been introduced from Paraguay.

MASDEVALLIA GARGANTUA.

This is also in flower in Messrs. Veitch's nursery. The flowers have certainly a very remarkable appearance, and emit a very disagreeable odour, which is more marked at certain hours of the day. It belongs to the M. vilifera group, another of the vile-smelling species, to which the Floral Committee of the Royal Horticultural Society awarded a Certificate of the first-class. This species has much larger, greenish-yellow flowers, with a deep maroon blotch on the labellum; this portion of the flower terminates in a peculiar prong on each side. It is certainly most interesting botanically. *J. D.*

DENDROBIUM CŒLOGYNE.

The members of the section to which this species belongs have creeping stems with short, upright, thickened branches, or pseudobulbs, bearing on the top a pair of stiff leathery leaves. The peduncle springs from between the leaves, and bears a large, solitary flower. Lindley enumerated sixteen species under the generic name of Sarcopodium. Some of them are now relegated to Bulbophyllum, and others to Dendrobium. Their creeping habit bears considerable resemblance to that of the former, while the structure of their floral organs shows their affinity with the latter. They enjoy some popularity in gardens on account of their conspicuous and more of less showy flowers, and are generally, if not always, exhibited under the name Bulbophyllum. The species under notice flowered a short time since in the Orchid-house at Kew. The sepals and petals are long and narrow with revolute margins, yellow externally, and densely dotted with purple on the inner face. The three-lobed labellum is lightly attached at the long foot of the column, and is creamy-yellow, more or less marked with purple, while the terminal lobe is almost black. Doubtless this would account for the name D. atropurpureum, sometimes applied. A description will be found in the *Gardeners' Chronicle*, 1871, p. 136.



FIG. 4.—ODONTOGLOSSUM MULUS, VAR. (SEE P. 12.)

entirely devoted to them or not, since making the change have been agreeably surprised at the large and continuous supply of fine blooms which they now so easily obtain. Once the plants get established in a bed they certainly do not entail half the labour that is necessary for pot plants, whether they are free from insects or infested more or less with mealy-bug or scale. The spring is the best time to commence preparations for planting out, and the first essentials are clean, healthy and insect-free plants, and a light, properly heated house in which to grow them. Should mealy-bug or scale infest them these can be so kept under by the use of insecticides as to be scarcely perceptible. On the first appearance of the pests the remedy should be applied to the plants with the syringe once a week, after all expanded blooms have just been cut. This consists of 2 gallons of chilled water, to which sufficient dissolved soap to make the water feel a little greasy should be added, then pour in a wineglass and a half of paraffin oil. When applying this, after a thorough mixing, discharge the syringe two or three times sharply into the water-pot between each one which is drawn up to apply over the plants.

The use of paraffin for this purpose, in common with many others, has been carried to excess, and has injured or destroyed many plants through being used too strong, and when it has been applied as an insecticide in a safe quantity, not properly mixed continuous supply of bloom. Three or 4 inches of wood may be cut with each single bloom; this will counteract the straggling habit of the plants, and will cause them to break lower and form thick bushes. When planted out under these conditions no water (as a rule) need be applied direct to the roots, but it should reach them through frequent syringing; the water, if thus applied, will render the double service of keeping the foliage thoroughly cleansed and supplying the necessary moisture to the roots. *G. H. Richards.*

Orchid Notes and Gleanings.

ONCIDIUM JONESIANUM.

REFERRING to the notes on this species at p. 808, vol. xxiv., it may be stated that it is now flowering in several collections, and proving to be one of the most distinct Orchids recently introduced, as it is certainly the most handsome species in the extensive genus to which it belongs. So far the plants succeed well on blocks, with the terete leaves, about 9 inches or a foot long, hanging downwards. So does Cattleya citrina for a year or two, or perhaps for three years; by that

FORESTRY.

WORK FOR JANUARY: SELECTIN MATERIALS.

FOLLOWING up the work of the past two months, or rather what has been performed during the suspension of planting operations, all timber that has been felled should now be prepared for sale. In doing so the heavier trees may be dragged or "tail-chained" by horses to the clearance roads, while poles and the less heavy trees are carried by the workmen. Whilst lotting divide the trees into various classes, not only as regards size but quality of timber as well. Where there is a quantity of any one kind it is advisable not to allow an admixture of others, thus at the same time satisfying the demands of the merchant, and aiding considerably in measuring and valuing the timber. Propwood of various kinds, excepting Larch, Oak, or Ash, is, however, usually lotted together, at least hard woods in one and Pine in another, as owing to their small value purchasers generally are by no means particular as to their being mixed in the lots. Previous to lotting have all the heavy wood, or such as is sold by cubic measurement, sawn to 6 inches diameter in the small end, and propwood, that is disposed of at so much per yard, to 3 inches. Small poles of from 3 to 4 or 5 inches diameter in the butt end should be lotted for fencing purposes, and sold at a fixed price per dozen, the top ends of the propwood already spoken of, where 3 yards or upwards in

length, being included for a like purpose. Choose, if possible, dry weather for dragging the timber, as where this work is prosecuted during rain, or when the woodlands are wet, small stones and mud get so firmly pressed into the bark that removal is almost an impossibility, the result being in many cases damage to the saws in the conversion of the trees into planking. As nothing helps to make wood sell so well as ease of removal, it is in all cases advisable, even at the risk of extra expense, to have it placed near good clearance roads—work that is often much better and cheaper done by the proprietor than by the timber merchant. Firewood and branches should also be removed from the woodland, the former lotted for sale, and the latter made into faggots for home consumption.

The Nursery.

The home nursery being now well cleared out of such stock as was intended for planting this season, the trenching and manuring of impoverished borders, and refilling of others, should go hand-in-hand and be forwarded without delay. In replanting plots from which young trees have just been removed, and where time cannot be allowed for a crop of Potatos or Turnips, an abundant supply of rich but thoroughly decomposed compost should be added, this being easily procured if previous instructions given under this heading have been attended to. Lime composts should not be applied to ground intended for the reception of Larch, although for most other kinds of nursery stock, it is a valuable adjunct to the ordinary manures. Specimen Conifers of too small a size for their final despatch from the nursery borders should be transplanted into fresh ground, while those of larger growth may be dug carefully around and left for another year.

Seeds and Seed Beds.

Young plants from the seed bed had better not be removed into lines for another month, for should severe frost set in they become a source of annoyance to keep below-ground, and are frequently killed outright in numbers. Collect cones, more particularly of the Pines, wherever such are obtainable, these being unusually late in ripening this season. Holly berries are very plentiful this year, most of our woodlands, hedges, and parks, wearing at present quite a gay appearance with their pleasant ruddy glow. Advantage should be taken by the forester of this, and a sufficient quantity stored in sand for future use, remembering that as the young plants are of tardy growth, a constant succession of sowings will alone keep up the demand. The yellow-berried variety is unusually well covered with fruit just now, the appearance of a 12 feet high specimen putting me in mind that such an ornamental plant should be brought prominently before your readers. As it cannot be propagated by seed, cuttings, or grafting on the common stock should be resorted to in due season by those wishing to possess one of the most distinct and beautiful of berry-bearing plants. *A. D. Webster, Penrhyn Castle.*

PRUNING ORCHIDS.

There are many vexed questions which no amount of argument or *à priori* reasoning can do anything in settling, nothing but an appeal to Nature herself can put such matters upon a sure foundation beyond controversy—one experiment is often worth a score of arguments. The effect of pruning Orchids is manifestly one of these questions, and I should not now enter the field of controversy if I had not seen what to me was a very unexpected result.

For my own part I turned to this question with a very strong prejudice against the use of the knife, so confident was I that nothing but mischief could arise from cutting away healthy bulbs, which I cannot but regard as natural stores of nourishment put aside by the plant for future use. That I was wrong I now freely confess, and three months have sufficed to convince me of my error. In one species at least, Dendrobium nobile, my results have been most remarkable, and have set me thinking how the facts observed are to be reconciled with what we know of the physiology of the mature pseudobulbs.

The arguments which have been adduced against pruning away healthy bulbs are apparently most convincing, yet facts are undoubtedly adverse to the conclusion, so that all that can be said on the matter is "so much the worse for the arguments."

It is rightly maintained that the bulbs are stores of nourishment, they abound in chlorophyll, and at times contains minute granules, which are stained blue by iodine, like starch. They are the means of reproducing the plant under adverse circumstances, and hold a large supply of water against the dry season, that is, they insure the plant's survival throughout a period of severe drought. It is such bulbs—bright green succulent bulbs—to which I refer when speaking of pruning. Every one, I suppose, would remove unsightly and useless incumbrances like the two-year-old bulbs of Dendrobium Pierardi and primulinum, which are evidently quite dead or useless to the plant.

The argument for maintaining the leafless but green and healthy bulbs is, that they are "the strength of the plant," that is, they act like leaves, and assist the growth of the young shoots. A plant with one or two bulbs is supposed to be less valuable, and to produce less vigorous shoots than a plant with many bulbs. This is said to be a matter of common experience—at least, so say the opponents of pruning, and I suppose there is some truth in this view.

There is, however, another side to the question, which has, I think, been overlooked—a plant with many pseudobulbs has a rhizome of corresponding dimensions, and when there are numerous healthy roots and good back eyes it is a far more valuable plant. But if, as often happens, all the back eyes are dormant, and there are no roots, or no healthy roots, to the back bulbs, it is certain these will draw their moisture from the more recent roots, and thus, in their tendency to store nourishment, starve the young shoot.

In ordinary pruning the old branches are cut away to encourage the young growth. Every gardener knows that by cutting off the old fronds of a Fern the young ones come stronger and more abundantly. Yet the old fronds are undoubtedly organs of assimilation, only the harm they do in drawing moisture from the young shoots is greater than the good they do as organs of nutrition. The same holds good in all cases of ordinary pruning. If, therefore, experience shows the same thing to be true with the back bulbs of Orchids, there appears to me to be no reason for attempting to gainsay the evidence on general principles.

I will not longer detain the reader, but will recount the experience which set me thinking over the subject anew. I had a number of plants of Dendrobium nobile, which I purchased at a sale three years ago, and since I have had them they have never done any good. I tried everything, but the young shoots have always been puny and useless. At last I felt inclined to throw them away, but before doing so determined to cut away all the old bulbs, leaving nothing but this year's shoots. This I did last August. I did not regard it as a fair experiment, but from that day a marked change took place in the appearance of my plants, the young shoots were improved two days after the operation, and they grew vigorously. I have made no other change in their treatment, so that the improvement can only be due to the cutting away of the old bulbs. These were evidently living upon the material absorbed by the new roots, as their own were either dead or inactive. The new bulbs are now well matured, exceed a foot in length, and give good promise of producing abundant flowers. Such a result was, I must say, quite unexpected by me, for, in spite of all that has been said, my preconceived opinion was so strong, that I expected the young shoots to perish. I am happy to say, however, that I was mistaken, and I have continued to experiment on the beneficial effects of pruning, with the best results, in other species of Dendrobium.

It will be asked by the opponents of this method of cultivation, "Then what is the use of the old bulbs if you can improve your plants by cutting them away?" The answer is, I think, obvious:—Starve a plant from which the bulbs have been cut, and it will speedily die. It would have lingered on perhaps for years with them, under adverse conditions, and even perhaps young plants produced from them. I had a plant of Dendrobium formosum in a miserable state, I cut the old bulbs away, and the result was the death of the plant. Had I performed the operation whilst the young shoots were healthy I should perhaps have saved my plant, as I did it when they were already exhausted I only expedited its death. Such a plant was valueless to the cultivator, but in a state of Nature I doubt not it would have managed to hold on, and would in the end, perhaps, have re-established itself, but probably years would have elapsed before it flowered again; that is nothing in a state of Nature, but in our hothouses it is a very different matter.

I have not yet tried the knife sufficiently on Cattleyas and Lælias, but from what I have seen I suspect we are wrong in opposing its judicious use, not only in removing the old shrivelled and exhausted bulbs, on the sacrifice of which few I suppose would hesitate, but in cutting out good healthy looking bulbs.

That such pruning would render the plants less capable of withstanding starvation and extreme drought I have little doubt, but that it would improve plants which are well used and comfortable I now think is more than probable.

I shall hope to supplement these experiences with others on a future occasion, whether in favour of or against cutting away healthy bulbs the future alone can determine, but that "pruning" is worthy of an extended trial I am sufficiently convinced, and the thanks of cultivators are at least due to those who had the courage to enter as pioneers into a field which bids fair to produce such remarkable results. *B. T. L.*

THE FERNERY.

ADIANTUM FARLEYENSE.

This is undoubtedly the most lovely Fern of this beautiful genus, and under favourable treatment it grows very freely; yet many fail to grow it successfully, and we believe failure is often caused by coddling. It will also suffer sooner from being allowed to become too dry in the pot than from any other cause; the under fronds are generally the first to suffer. The fronds, being very fragile, will shrivel up, and then as soon as a little moisture settles on the damaged parts they begin to show signs of damping; and, as this is generally noticed after the plants have been watered, the cause is attributed to over-watering, whereas the primary cause is drought. Plants grown in a shady position will be more tender than those grown where they are more exposed to the light and sun; the young fronds also assume a more beautiful appearance when well exposed to the light, as they become tinted. We have had them almost as highly coloured as in A. tinctum; this has been where the plants were grown suspended to the roof, and where only a very slight shading was provided. The best time for increasing the stock of A. Farleyense is while the plants are in active growth; and if the plants are divided before they get too large, they will start off more freely than is the case where larger plants are broken up. The compost for potting should consist of good fibrous loam, with a little well-rotted manure and a good sprinkling of sand added; or, if the loam is not light and fibrous, a little peat may be used. The pots should be well drained, and the drainage covered with sphagnum moss.

Adiantum Pacotti.

This, which is said to be a variety of A. cuneatum, is a very distinct little Fern, and one of the most useful for small pots. Being of a very dense growing habit, and the pinnules of the fronds overlapping each other, it is very liable to damp off if too much moisture is given, otherwise it is of easy culture, and freely produced from spores. We believe A. mundulum is identical with the above.

Adiantum cuneatum grandiceps.

A beautifully tasselled variety. The fronds are more elongated than in the normal form, and terminate in a dense tassel of multifid growths, the weight of the tassels bearing the frondz down, and giving the plant a very graceful appearance. We find this a very serviceable variety.

Adiantum Lathomi.

This is a variety of A. scutum, from which it differs in the fronds being more recurved, the stipes shorter, and the pinnules rather broader; it is certainly one of the most useful of this beautiful class of Ferns. It appears to come true from spores, which germinate freely, and being of remarkably free growth it soon attains to a useful size; like A. scutum the fronds are very tender while in a young state, but after they are well developed they will stand exposure better than most of the Adiantums.

ADIANTUM VICTORIÆ.

This is another useful variety, being dwarf and compact in habit. It is especially useful in a small state. It also makes a good plant for 48-size pots. It may be propagated either by division or from spores, the latter being the best plan where a large stock is required, as the spores germinate freely, and maintain their character. It may be grown under similar trentment to A. Farleyense, to which it bears some resemblance, except that it is very dwarf in habit.

ADIANTUM RHODOPHYLLUM.

This is another form which closely resembles A. Victoriæ. It differs, however, in the matured fronds being of a deeper green, and the young fronds brightly tinted with red, somewhat like A. rubellum. *H.*

The Flower Garden.

WALKS.

NEATNESS is at this season the order of the day. All Nature may be said to be at rest; there are only the same sights day after day, and therefore it is necessary to have everything in first class order. Sweep lawns frequently, to rid them of worm-casts, and well roll them; also roll gravel walks to keep them firm and smooth. Now is a good time to prepare gravel. I prefer all the sand sifted out, and the remainder passed through a half-inch riddle. When well rolled this makes a pleasant and durable path, upon which you can walk without lifting at the feet after frost. Previous to putting on the gravel attention should be given to drainage. My practice is to make a drain down the centre of the walk, with side branches communicating with the water-grids, which need not be more than 6 inches square. On a level walk they are placed at a distance of 20 yards apart, but on steep declivities we put them from 12 to 16 feet apart. This prevents any body of water collecting sufficient to wash the walk. Alterations of lawns and flower-beds must be pushed forward whenever the weather permits; avoid treading on the ground when it is in a plastic state. If lawns are soft and spongy a good plan is to remove the turf, and spread over the surface a couple of inches of furnace ashes, relaying the turf.

PROTECTING PLANTS.

Protection should be given to Fuchsias, Alströmerias, Witsenias, Japan Lilies, and other tender plants and bulbs in the open air, by placing around and over them cinder ashes, dry leaves, or any other light material. Place a good mulching of cocoa-nut fibre over Hyacinth and Tulip beds. In case of severe frost have at hand a quantity of dry Fern, or Spruce branches, so that they can be used as necessity requires. Keep a sharp eye on Crocus edgings, or else mice will play sad havoc. Perhaps the best trap is the old "three-hole" set with threads, and baited with a little roasted oatmeal. To prevent cats from running off with the traps, attach one end of a string or wire to the trap and fasten the other end to a peg in the ground. Look frequently over Dahlia roots to see that they are keeping all right.

FLOWER BEDS.

This is a good time to secure a supply of Ranunculus tubers, as planting-time is drawing near. If not already prepared the beds should be seen to. They prefer a firm soil, having some well-rotted cowdung, a little peat, and some silver-sand well incorporated with it. For cut flowers the large French is the best to grow, but for beds and masses the Persian, Scotch, and Turban are by far the finest in form and brilliancy of colour. Take advantage of fine dry days to pick over the beds of Carnations and Picotees, carefully picking off all bad foliage; also weed and prick over beds of Stocks, Campanulas, Forget-me-nots, &c. In bad weather much may be done to expedite summer work, such as preparing tallies, making pegs and flower-stakes and sorting them into sizes. If those for Dahlias and Hollyhocks have their ends charred, or dipped in boiling coal-tar, they will last three times as long. *W. M. Baillie, Luton Hoo Park.*

The Orchid Houses.

TO-DAY (December 29) brought bright sunshine, ever welcome to the Orchid grower—especially so after the thick fogs so prevalent of late. These are very trying to the grower of Phalænopsis, and the best way to combat the ill-effects they cause is to keep the glass scrupulously clean, especially in and near towns, where the "blacks" from the chimneys are ever present, and by constant sponging of the leaves with warm rain-water. To grow Phalænopsis at all satisfactorily there must be a great amount of moisture in the house, for to attempt it in a dry atmosphere would mean nothing else than failure. I find that small houses suit them by far the best. If a good thickness of sphagnum moss is put on a plant-stage (quite close to the glass), and the plant sraised about 6 inches above the moss, the moss kept well syringed, and the whole house kept full of moisture, they will grow and flower well. The Phalænopsids differ from many Orchids in that they cannot endure anything like the amount of air that many Orchids can, therefore they must be very carefully aired at all seasons of the year. The blinds should be let down every cold night so as to prevent a large amount of heat from escaping and moisture being condensed on the glass. Vanda Hookeri, V. vandarum, and V. teres grow very freely under this treatment, but are syringed freely every day. Cattleya superba enjoys this treatment, and flowers freely. Odontoglossum Roezlii, by reason of the moisture, keeps fairly free from thrips. With the New Year, Cattleya Trianæ, where grown in quantity, will bring much pleasant expectation, the flowers now rapidly pushing their way through the sheaths. These plants should all be kept on the moderately dry side till their roots begin to show themselves, and even then they must be very carefully watered with warm rain-water, or, what is far better, dipped in a pan or pail. Cattleyas require a liberal amount of air, and if they do not get it they cannot be kept in good health. We air our houses every day the whole year round. Keep a sharp look-out for greenfly, for with the young growth the fly appears, and if it is not destroyed it will injure the growth. The same warning is needed in regard to the Lælia, Dendrobium, and Odontoglossum-houses. Dendrobium Wardianum is now pushing its flowers, and must be watered, or the flowers will come deformed and the growth be injured. Odontoglossums are growing now freely, and must be well supplied with soft water both at the roots and in the atmosphere—in fact, all Orchids must have considerable moisture in the atmosphere. The Odontoglossum-house should stand at between 43° and 53°, but ought not to rise much higher for the next fortnight. Cattleyas will do well at from 56°, with a rise of 8° or 10° on bright days. Phalænopsis ought not to fall below 65° unless the night is very cold, when a few degrees of lower temperature will do less harm than very severe firing, but still it should be remembered that the Phalænopsis very soon shows the effect of a severe check when in bud (as they now are), by the buds turning yellow and falling off. *A. Bradshaw, Waddesdon.*

Hardy Fruit Garden.

INTENDING planters may with advantage pay attention to the collection of old lime rubble and pieces of soft bricks for the purpose of being broken up and mixed with the soil for the formation of new fruit tree borders. Such borders are frequently composed entirely of top-spit loam, with but very few stones or grit in it; consequently, when the ultimate decay of the fibre takes place, the mass of soil often runs together so much as to render it liable to become somewhat sour before the roots have time to take possession. In the absence of the above materials burnt earth may be used as a substitute. Fruit tree roots, in common with roots of other subjects, seem to remain healthy for a longer period when this is added to the ordinary composition of the borders. By these remarks I do not wish to be understood as favouring loose borders; treading or beating will bring the material into a proper consolidated condition. In making new borders at the base of walls the material in the first onset should be raised a brick or two higher up the wall than the future surface of the border is to occupy, so as to allow for sinking. Freshly-planted wall trees should be hung loosely, and not nailed or tied for the season until advancing growth renders it necessary; such a course of procedure will allow the roots, soil, and tree, to settle down altogether. It is a pity to see good walls disfigured so much with nailing; a wired wall is much the best on which to train trees, which produce their fruit principally on the previous year's wood, such as Peaches, Morello Cherries, &c. For those grown on the spur system wire is not so necessary, as a few stout nails or staples is all that is required to secure them to the wall.

Before tying trees to new galvanised wire it should be painted or tarred, and afterwards white-washed; no fear then need be entertained that the galvanised coating will injure the young shoots. Where the old nail holes in walls exist in great numbers they form favourite hiding-places for insects to deposit larva and eggs, and something should be done (during the dormant period of the trees) towards their destruction. Diluted insecticide may be forced in with the syringe or garden engine. Whilst the buds of Cherries are dormant the trees should be well syringed with soap-suds, or something equivalent—the application of which will considerably promote the freedom of the trees from blackfly, &c., during the coming summer.

Apple trees affected with American blight should be well dressed with Gisburst Compound, not only above-ground, but several inches of soil should be removed around the stems, the latter dressed and some fresh soil placed to them, into which some lime and soot should be previously mixed: the old soil which was removed should be burnt. The work of planting should be pushed forward whenever the nature of the weather and the state of the soil will admit. When planting in a heavy, damp soil, a few shovelsful of soil of a lighter character placed over the roots of each tree would be an advantage. This will work more freely amongst the small roots, and will give the trees a good start. *G. H. Richards, Somerley.*

The Kitchen Garden.

BEFORE entering into details of work for the ensuing year, it would be advisable to take a retrospective glance at the results obtained during the one just closed, and where these have not been satisfactory, to ascertain, if possible, the reason. In doing so there are several causes to be taken into consideration, as to whether it be the condition of the soil for the respective crops, suitable situations, climatic influences, incorrectly named or worthless varieties of seeds, &c. It frequently happens, in very old gardens, that a repetition of the same kind of manure has been used for years—a mixture of leaves and straw litter from the frame-ground—and as a consequence the soil becomes infested with insects, sour, and in an unhealthy condition generally. As a remedy, trench to the depth of 2 feet, leaving the surface as rough as possible. A good top-dressing of salt should then be applied, at the rate of 6 to 8 bushels to the acre—followed by another of soot, when the former has disappeared, of 40 bushels to the acre, taking advantage of frosts to well fork over the surface. Occasionally, in soils described as above, and underlying the top spit, is a subsoil of a stiffer and more retentive nature; on bringing this to the surface a good top-dressing of lime, burnt ashes, screenings from dustbins, &c., would in this case be preferable, adopting the same after-treatment.

Where a constant supply of good vegetables has to be provided, care should be taken in the judicious selection of the proper sites for growing them. This is a very important point, and requires careful consideration, for on it depends in a great measure success or failure, and also a considerable saving of labour. More especially is this necessary during the summer months, to ensure a constant supply of all kinds of salading, Spinach, Cauliflowers, Turnips, &c., preference being given for the earliest sowings in dry, warm, sheltered situations, and for succession in lower and cooler ones, gradually returning, towards autumn, to sites recommended for the earliest sowings. With regard to the selection of seeds, the quality of those supplied by our leading seedsmen leaves nothing to be desired. It is wise always to give preference to well-known and tried varieties, and which observation has shown to flourish in the locality. The introduction of new varieties and novelties annually for experimental purposes is both desirable and necessary, and likewise very interesting. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan 4.	Sale of 10,000 Lilliums, 9300 Iris, from Japan; 5000 Tuberoses, &c., at Stevens' Rooms.
TUESDAY,	Jan. 5.	Clearance Sale of Glass Erections and Nursery Stock, at the Lordship Nursery, Wood Green, by Messrs. Protheroe & Morris
WEDNESDAY,	Jan. 6.	Sale of Roses, Fruit Trees, Hardy Bulbs, Plants, &c., at Stevens' Rooms. Sale of Lilies, Plants, and Bulbs, at Protheroe & Morris' Rooms.
THURSDAY,	Jan. 7.	Sale of Valuable Importations of Orchids, from Mr F Sander, at Stevens' Rooms Sale of Dutch Bulbs, at Protheroe & Morris' Rooms.
FRIDAY,	Jan. 8.	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	Jan. 9.	Sale of Roses, Fruit Trees, Hardy Bulbs, Plants, &c., at Stevens' Rooms.

THE year 1885 was marked by the introduction of many good and NEW PLANTS, every department of the garden having been recruited by them more or less. The Orchids still head the list, and not only are we indebted to them for most of our best and showiest flowers, but to the eager search after them may be attribute the introduction of many other good plants. As time goes on, too, the ever-increasing fine productions of the hybridist show us that we are far from being exclusively dependent on importations for our new plants, and that they who have the skill and patience may evolve from the materials in their hands by cross fertilisation things of surpassing beauty, such as could never be obtained among imported plants by any combination of circumstances. The new hybrid Orchids, greenhouse Rhododendrons, and Amaryllis raised by Messrs. JAMES VEITCH & SONS, which have made quite a revolution in their several sections, may be cited as beautiful, and well merited rewards for patience and skill.

ORCHIDS.

Aëranthus (Angræcum) Leonis, from the Comoro Islands, is certainly an acquisition, its habit as a plant being singular and distinct. The profusion with which it produces its pure white, sweet-scented flowers, with their curiously bent spurs, renders it attractive, useful, and one of the best white-flowered intermediate-house plants we have; large illustrations, giving a good idea of the plant and its method of flowering, will be found in the number for July 18, 1885, pp. 80, 81.

The Aërides still continue to furnish good things, and although the standard of the grand A. Lawrenciæ and A. Sanderianum is not reached by those of the past season, they are all desirable. A. Ballantinei is a comparatively dwarf growing variety and very profuse bloomer; it has white flowers tipped with crimson, and with orange tinge on the lip. Its general appearance is that of a good bright A. suavissimum; A. Wilsonianum appears to be very distinct, its flowers are clear white, with lemon-yellow centre; A. marginatum is of the A. quinquevulnerum section, having flowers with pale yellow sepals and petals with rosy border, lip orange and yellow with brownish markings; A. Ortgiesianum is like a slender form of A. quinquevulnerum, and the A. Bernhardtianum which CURTIS sent from Borneo to Messrs. VEITCH, also resembles that species in general appearance, but the overlapping side lacinia of the lip, which are also covered by the front one, renders it very distinct.

The Calanthes have been augmented by the distinct looking C. Sanderiana certificated to Mr. B. S. WILLIAMS; it is of the Regnerii section, and has rose-coloured flowers with darker blotch in the centre. Among hybrids, Sir TREVOR LAWRENCE has the charming bright magenta C. porphyrea, which is quite new in form, partaking much of its parent, Limatodes labrosa; and C. Burfordiensis, a showy variety of the Sedeni class. NORMAN C. COOKSON, Esq., received certificates for two grand hybrids, C. Alexanderii×, also of the Sedeni section, with very bright rosy-crimson flowers; and C. Cooksoni×, a large pure white variety almost imperceptibly marked in the centre with primrose—certainly the finest thing in its way.

Cattleya Lawrenceana is quite a phenomenal introduction, on which all eyes are turned to see how it will answer those descriptions given from the living plants and dried flowers, good illustrations of both of which will be found in the *Gardeners' Chronicle*, pp. 374, 375, vol. xxiii., and of its interesting home in the Roraima district at p. 160, vol. xxiv. There is no fear of disappointment in the matter, for the plant is one of the most distinct, and the freest grower we have, and the old flower-spikes exhibit six to twelve flowers on each of many of them. The flowers, which will, no doubt, exhibit endless variety, are generally of a clear purplish-lilac, lip dark purple, yellow in the upper part. Soon the mystery will be solved, for it is in sheath and bud everywhere. It is one of Messrs. F. SANDER & Co.'s most promising introductions.

C. Bowringiana is a proved good thing, and very distinct. Its pseudobulbs, which somewhat resemble those of Epidendrum ciliare, are clad with peculiar sheaths, and rise from a curiously flattened base unlike anything else. The leaves have a glaucous tint, and the flowers, which are produced in showy bunches in late autumn and winter, are very lovely, having the form of a good C. Skinnerii, with the rich violet-tinted rose colour of Dendrobium lituiflorum Freemanni. A few of it came to Messrs. JAMES VEITCH & SON, from a new district in South America, and it may be regarded as an *enfant trouvé* rather than a regularly imported plant.

The great sections of Cattleya have each produced good novelties, among which the curiously variegated flowered C. Massangeana, certificated to Sir TREVOR LAWRENCE, the scarcely less quaint and beautiful C. Mossiæ Nalderiana, the chaste pure white C. Gaskelliana alba, flowered by R. H. MEASURES, Esq., A. CURLE, Esq., of Melrose, and others; the handsome C. Mendelii striata, and C. M. carminata, out of the famed importation of Messrs. HUGH LOW & Co.; and, grandest of all, that magnificent C. Hardyana, which appears to be intermediate between C. aurea and a good form of C. gigas; its large labellum is one of the richest pieces of flower colour we have, its intensely bright violet-crimson being veined with clear yellow in much the same manner as in C. Dowiana. C. bicolor Wrigleyana is also a fine form, bearing many flowers on a spike, sepals and petals greyish-green, lip dark purple. Among supposed hybrids, C. resplendens, a form intermediate between C. guttata and C. Schilleriana, with sepals and petals olive-green, and lip white and amethyst, is very curious; and C. Schofieldiana, before described, but certificated last year, well keeps up its character. The sepals and petals are yellow, densely spotted with purple, and the lip, which is over 2 inches in length, is white, beautifully traced with lines of rich purple lamellæ.

Cypripedium Sedeni candidulum is a welcome addition to that most useful group; in lasting properties and other qualities it is equal to the type, but its flowers are much whiter, and in appearance more nearly approaching C. Schlimii album, which was one of its parents. C. macropterum is another fine hybrid, C. Lowii×, C. superbiens (Veitchii) possessing marked features of both the parents, and especially the beautiful spotting of C. Veitchii on the spreading side-petals. C. insigne Wallacei, a variety imported by the New Plant and Bulb Company, Colchester, shows the advisability of getting new importations of even old things, for this is really an acquisition. Its flowers are well formed, the dorsal sepals being large and round; the heavy blotches on them the nearest to black of any, and the violet marks running into the pure white tip very telling.

Cyrtopodium Saintlegerianum is a fine plant, with the habit of C. punctatum, and immense spikes of showy flowers; sepals yellow, with brown spots; petals clear yellow, with a few spots at the base; lip sulphur, with a few brown spots at the upper portion, and brownish markings at the sides. Not the least of the attractions of this plant is given by the showy character of the floral bracts. It was collected by M. DE. ST. LEGER, the discoverer of Oncidium Jonesianum and O. O'Brienianum.

Remarkable among Dendrobes is D. nobile Cooksonianum, which is like an ordinary good nobile, except that the petals have crimson bases, and are labelloid, the flowers having somewhat the appearance of having three lips; the white form of the true D. heterocarpum is very chaste; D. euosmum (D. endocharis× D. nobile), a fine thing, of the D. splendidum group; and Mr. JAMES CYPHER'S D. Falconerii delicatum, very pretty and distinct, although not so showy as the type.

Lælias have received some good additions, the L. anceps getting L. a. leucosticta, with rosy flowers curiously marked with white; L. a. blanda, with sepals and petals, white with a rosy hue, the median nerve of the sepals being pale green, and the lip bright purple, with sulphur centre. Of yet unflowered importations L. a. Sanderiana and L. a. Schroderiana, white forms, described as being rivals to the respected L. a. Dawsoni, will certainly prove good if they come up to the dried flowers. The long thin pseudobulbs of the last-named are very distinct.

Lælia Measuresiana is very distinct, its habit and flower being strongly suggestive of L. elegans and some good forms of Cattleya intermedia, the latter being curiously followed in the bold spreading wavy edge to the lip, which is entire and not lobed, as in L. elegans. It is a charming thing, with white sepals and petals, and labellum rose-coloured, in front nearly white, veined with purple in the centre, and the throat white stained with yellow.

Lælia Schroderii is another welcome addition, seeming to blend the features of L. purpurata Russelliana and L. grandis. The flowers are over 6 inches across, sepals and petals pure white, lip white, veined in the throat with rose, which runs up into the yellow tube of the labellum. It seems to come nearest to L. Wyattiana. Messrs. HUGH LOW & Co., who have some other very curious freaks of L. purpurata and C. guttata, received a certificate for it at the Royal Botanic Society in May last.

Lælia Canhamiana ×, a cross between L. purpurata and Cattleya Mossiæ, is a very showy and compact plant, something like a dwarf L. purpurata. The sepals and petals are blush-white, and the lip, which is very broadly expanded, is of the richest purple, margined with white, the throat having distinct traces of C. Mossiæ in the rich orange tint traced with crimson. L. Sedeni × is another grand Veitchian production, with some of the habit of L. elegans; sepals and petals bright rosy-purple, lip carmine-magenta, and very showy. L. elegans Littleana is one of the grandest forms of the Turneri section of L. elegans, the large labellums of the massive flowers being almost unsurpassable for the richness of their glowing carmine-magenta tint.

Luddemannia Lehmanni is a very striking basket plant in the way of Acineta Humboldtii, the plant which Sir TREVOR LAWRENCE exhibited at the Orchid Conference, had a drooping spike about 2 feet in length, furnished with wax-like flowers, yellow, tinged with cinnamon-brown.

The Masdevallias have not had their ranks added to by many newcomers worthy to place with the handsome things already at home with us. The M. Wallisii stupenda, illustrated from Sir TREVOR LAWRENCE'S collection at p. 473, April 11, 1885, is certainly a fine thing with massive sulphur-coloured flowers blotched with rich crimson; the peculiar apricot-coloured M.



FIG. 5.—EICHORNEA AZUREA: FLOWERS PALE BLUE, WITH A YELLOW SPOT. (SEE P. 18.)

Harryana armeniaca, very distinct, and M. Gairiana, a hybrid between M. Veitchii and M. Daviesi, with the clear yellow of the latter, and some of the rich bluish lustre of the former, a very pretty thing. M. acrocordonia, too, a yet unflowered plant of the M. ephippium class, and described as having spikes of six to eight very singular and striking flowers, may be regarded as an acquisition.

In Maxillaria Sanderiana, certificated to Baron SCHRODER at the Orchid Conference, we have the grandest of the genus, as well as the most difficult to import; in habit the plant is something like M. grandiflora, and its flowers may be roughly described at being something like those of a gigantic form of that species; white, heavily marked with rich vinous-purple. The plant is distinct in every respect, and its flowers seem to have some of the semi-decumbent character of those of M. venusta. Maxillaria Kalbreyeri is allied to M. venusta, but with a distinct trilobed lip. Flowers white tinged with green.

Mormodes luxatum punctatum and M. l. Dormanianum are lovely purple-dotted varieties of the handsome, fragrant, ivory-white original type, Mr. DORMAN'S variety being much the darker, although both are good and very rare, until more of the importation flower.

The Miltonias have a good newcomer in the M. spectabilis aspersa of Major LENDY, which in form, size, and beauty, far outstrips the numerous other varietal forms of M. spectabilis. The sepals and petals are waxy-white, washed with mauve, lip very large, light mauve veined with a darker tint; the whole shading off to blush-white towards the edge.

The favourite genus Odontoglossum increases in the beauty of its representatives every year, that highest favourite O. crispum (Alexandræ) supplying many of the best things, an idea of which may be gained by reference to p. 588, November 7, 1885, where the varieties, both new and old, are enumerated and described. Odontoglossum vexillarium Measuresianum is, perhaps, the purest white of any, its flowers having that clear surface, unmarked by any colour save a slight lemon-yellow tinge in the centre, in a similar manner to that of a good O. Roezlii album. O. v. Kienastianum is also very distinct and pretty, flowers with soft rose sepals and petals, with broad white margins; lip rose, margined white; centre yellow, with fine radiating rose lines. O. Insleayi splendens, which flowered so finely recently in Baron FERDINAND DE ROTHSCHILD'S garden, and which was certificated to Mr. BULL this year, is a fine addition to its section, being more showy even than the fine leopardinum form, which it somewhat resembles in the brightness of the crimson markings on the clear yellow lip. The chief distinction consists in the more spreading sepals and petals, which are washed with reddish-brown, and not barred with it, as in the other forms. O. Pescatorei Thomsonianum, of Messrs. WM. THOMSON & SONS, Clovenfords, is the best Pescatorei of the past season; it is of the Veitchianum class, and has large clear white flowers, very heavily blotched with purplish-violet, and stained with dark rose. The O. mulus Germinyanum and O. m. Courtauldianum are both fine forms of the fragrant kind, having clear yellow flowers, barred with reddish-brown; and the chaste O. Hrubyanum, the pure white form of O. cirrosum, which has been before described, has proved a constant form, and Mr. LEE received a certificate for it last spring.

Oncidium Brunleesianum, also before noted, has been certificated and much admired last season. Its growth is much like that of O. sarcodes, but the dense branched spikes of curious primrose flowers, with their prominent, tongue-like, and nearly black labellums, is unlike any other Oncid.

Phalænopsis Marie, certificated to Baron SCHRODER, is a real gem, with flowers of the P. tetraspis form, pure white, heavily marked with a glowing violet-crimson, and the P. Schilleriana advena of Mr. LOW, a very distinct form, with sepals and petals clear rose, lip white, with yellow callus and side laciniæ.

Two new Saccolabiums are to be recorded, and they are of the first merit, viz., Saccolabium cœleste, a lovely plant, with habit in appearance intermediate between S. curvifolium and Vanda cœrulescens; its flowers, which are produced on slender arching spikes, are of the clearest sky-blue, the centre being dark blue. S. Heathii is one of the very finest plants of the season, and a correct estimate of it may be formed by imagining a pure white variety of the best long-spiked S. Blumei. To Messrs. HEATH & SON, of Cheltenham, belong the honour of introducing it, and the pleasure of receiving its rather stiff price, and to WILLIAM LEE, Esq., of Downside, the pleasure of paying it, and including the plant in his already magnificent collection.

Thunia Veitchii ×, raised between T. Marshalli and T. Bensoniæ, is a worthy subject, with flowers with white sepals and petals and mauve lip, merging into orange in the centre. It flowers in very small plants, and combines the good qualities of both parents.

Vanda Denisoniana hebraica, flowered by G. NEVILE WYATT, Esq., of Lake House, Cheltenham, and others, is a very curious departure from the unmarked ivory-white flowers of the type which it resembles in form, but the flowers are curiously shaded and veined on the surface with brownish-yellow.

Zygopetalum pentachromum ×, a Veitchian hybrid, Z. Mackayii × Z. maxillare, and consequently the reverse cross to that which produced Z. Sedeni, is an elegant and showy thing, with upright spikes of handsome flowers, with sepals and petals wax-like and emerald-green, barred and marbled with rich brown; lip white, with mauve blotches and lines.

This completes a list which might easily have been lengthened, but which amply serves to show that the Orchidist at least needs not come to a standstill for want of good and new things. What fare is provided for the other departments of the garden shall be set forth in a future number.

—— OUR ALMANAC.—With the present issue we give a coloured almanac for the use of our subscribers. In addition to the usual calendarial matter the reader will find a table of temperatures for each day of the year. These are the average temperatures as observed in the garden of the Royal Horticultural Society at Chiswick for more than forty years, and reduced by Mr. GLAISHER. All horticultural appointments, and fixtures, and meetings of societies that have reached us in time for publication are inserted. All the more important metropolitan and provincial meetings are thus noted, as well as many of the smaller ones, and we desire to tender our thanks to the Secretaries and other gentlemen who have thus enabled us to give as complete a record of forthcoming events as circumstances will allow.

—— EICHORNEA AZUREA.—This is a magnificent stove aquatic, which we saw flowering profusely and growing vigorously in the Nymphæa tank at the Oxford Botanic Garden, under the charge of Mr. BAXTER, during the course of the last summer (fig. 5, p. 17). The bold rich green foliage, and the spikes of pale blue flowers, with a yellow spot, bordered with white—well represented by Mr. WORTHINGTON SMITH—render this a most attractive plant. The young leaves are rolled round the stem, being themselves enclosed within the ligule-like sheath that springs from the leaf-stalk of the preceding leaf. The leaf structure is homogeneous, the stomata very abundant, the flowers protandrous (anthers ripe before the stigma), and the pollen grains elliptic. It is common in the tropics, from Jamaica to South Brazil, but can hardly be more "at home" in its native streams than it is in the Oxford garden, where it is grown in the stove aquarium, in a box sunk to a depth of 6 inches in the way detailed by Mr. BAXTER, in another column. Considering the facility with which many of these stove aquatics may now be grown—a large tank is by no means essential—it is astonishing that so few of these magnificent and interesting plants are grown. To be sure, they do not serve well as cut flowers, but cut flowers and table decorations are not the only objects for which plants should be grown.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—With a view of encouraging the cultivation of late-flowering Chrysanthemums, this Society will hold an exhibition of late-flowering Chrysanthemums on January 13, at the Royal Aquarium, Westminster. These have been arranged in six classes, all for cut specimens, the prizes ranging from £2 to 10s. The Society invites miscellaneous exhibits. The Secretary, Mr. W. HOLMES, Frampton Park Nurseries, Hackney, will supply full information.

—— INTERNATIONAL EXHIBITION OF INDUSTRY, SCIENCE, AND ART AT EDINBURGH, 1886.—We learn that Mr. ROBERT TODD, for many years gardener at Rawcliffe Lodge, Langside, Glagow, and Ascog Hall, Bute, has been appointed to lay out the extensive grounds around the Exhibition buildings. These will be of an ornamental character, and include ornamental shrubberies, Scottish lakes, rockeries, fountains, &c. Before leaving Glasgow Mr. TODD was presented with an address, a purse of sovereigns, and a gold brooch for Mrs. TODD, subscribed for by their many horticultural and other friends in the West of Scotland.

—— A VETERAN LINNEAN.—On the occasion of the presentation to the Linnean Society, at a late meeting, of a large photo-portrait of the Rev. LEONARD BLOMEFIELD (JENYNS), it was announced that that day sixty-three ago (Nov. 19, 1822) he was elected a Fellow; at present, therefore, he is the oldest living member of the Society. While a student at Cambridge the post of naturalist to the Expedition of the *Adventure* and *Beagle* was offered him, which, he declining, Mr. CHARLES DARWIN accepted it, with what results is well known. It is singular also that in 1856 (prior to DARWIN'S volume) Mr. JENYNS read before the British Association at Cheltenham a paper "On the Variation of Species," a subject to which evidently he had given great consideration.

—— LYCOPODIUM COMPLANATUM.—Although a British habitat has been ascribed to this species by several field botanists, and specimens forwarded to the Editor of this journal, the statement has been received with doubts. These may now be regarded as set at rest, Mr. J. G. BAKER having exhibited at the Linnean Society (December 17) a fine specimen collected by the Rev. A. LAWSON on the Somersetshire side of Exmoor, near Porlock.

—— HARDY PLANTS IN THE RIVIERA.—Mr. FORCKEL, head gardener of the beautiful gardens of Monte Carlo, has published a descriptive catalogue of the trees, shrubs, and ornamental plants which thrive in the open air in the Western Riviera. The list is arranged alphabetically, and gives brief descriptions of the plants and of the soil and culture most suitable for them. More than 500 trees and shrubs are mentioned, in addition to bedding plants. In an appendix are given the French, Spanish, German, and English names of the plants described, but, singularly enough, not the Italian appellations.

—— MADAGASCAR ORCHIDS.—Mr. H. N. RIDLEY has described (Linnean Society, December 17) new species of Satyrium, Bulbophyllum, Mystacidium, Cynorchis (several), Habenaria, Holothrix, and Brownleea, from a small collection gathered in the neighbourhood of Jmerina by Mr. FOX. He also adds three new genera to the Madagascar flora, viz., Arnottia, a Mauritian form; Brownleea, hitherto only known from South Africa; and Holothrix, an East African representative.

—— FLORAL INVERSION IN ORCHIDS.—Mr. THOMAS CHRISTY exhibited, at the Linnean Society, on December 17, a plant of Angræcum sesquipedale in flower, and a plant of Catasetum purum showing some flowers erect and others reversed on the same spike. In none of the flowers was the ovary visibly twisted, but in long-ovaried Orchids it is often very difficult to detect the twisting of the ovary

by external aspect. This specimen illustrated the fact that light, or the absence of light, was not the cause of the alteration of position.

—— PARIS HORTICULTURAL CONGRESS.—The following subjects are proposed for discussion at the meeting of the Congress, May 4–9, 1886:—

1. Examination of the tariffs of the railway companies for—A, carriage of living plants; B, the carriage of horticultural products.

2. The intervention of Consuls in the matter of the phylloxeric conventions. Is their signature indispensable to give an official value to a certificate? Can the Custom-houses of different countries refuse to admit entrance of plants from various countries when the certificate of origin bears only the signature of the person charged to deliver the certificate (is not countersigned)?

3. In what measure and in what manner would it be desirable to extend the teaching of horticulture in the superior primary schools and in agricultural schools?

4. What influence has the age of seeds on the quality and quantity of the plants which spring from the seeds?

5. Can any other edible Mushroom besides the common one (Agaricus campestris) be artificially cultivated?

6. What are the causes of shanking (*rifle*) on the trellises in [out-of-door] dessert Grapes? Is there any means known of preventing it?

7. What is the cause of the disease known as *blanc des racines*, the effects of which are seen chiefly on the roots of the Peach, and secondarily on those of other fruit trees?

8. Mildew (Peronospora viticola) and the means of preventing or curing it in houses and gardens.

9. What are the advantages of taking cuttings of Apple and Pear trees, &c.—practical means to secure success?

10. What are the best fruits to grow largely for market?

11. The means to be taken to improve bad or poorly productive soil by the employment of fruit trees or shrubs for market purposes.

12. Influence of chemical manures in horticulture. The best way to use them.

13. On the vaporisation of insecticides. Its advantages and inconveniences.

14. The employment of liquid manures in cultivating plants in pots or tubs.

15. To what cause is to be attributed the great difference which often exists in the germination and in the growth of young plants from the same lot of seed?

16. What explanation can be given for the difference that is seen in the growth and flowering of perennial plants multiplied by cuttings, or by division of the roots?

17. Discussion as to the best materials suitable for constructing a hotbed. Their influence on the rise and duretion of the temperature.

18. Diseases of zonal Pelargoniums. Treatments to be adopted.

19. Of the practical means to avoid drip (*buée*) in the construction of greenhouses.

20. The comparative advantages or inconveniences in using cast iron, wrought iron, steel, and copper in heating apparatus for houses.

21. The employment of steam for heating water in boilers.

22. The use in horticulture of meteorological instruments (barometers, thermometers, hygrometers). The simplest mode of using them.

23. The improvements in horticultural hydraulic machines, and of those which are still needed.

24. The influence of different sorts of soils on the growth of hardy woody plants.

—— PURDON'S FARMERS' AND GARDENERS' ALMANAC.—This useful and handy publication contains a farmer's calendar of operations, and one also for gardeners, a list of fairs, a table of measurement and weight of cattle, the prices of grain, and many other agricultural statistics and cultural information of value to the Irish farmer. The text of the Purchase of Land Act (Ireland), 1885, the Labourers' Act (Ireland), 1885, are likewise given in full.

—— ANCIENT SOCIETY OF YORK FLORISTS.—The members of the Ancient Society of York Florists held their annual dinner at the "White Swan" Hotel, Pavement, York, on Dec. 23, 1885, the City Sheriff, Mr. S. WRIGHT, presiding. After the dinner the Sheriff awarded three silver cups, which were given as special prizes at the recent Chrysanthemum show, held under the auspices of the Society. The first—the City Sheriff's prize—was given to Mr. R. F. JAMIESON, Hull, for the best thirty-six Chrysanthemum blooms. The next was the officers of the Society's prize, awarded to Mr. JOHN FIELDEN, High Sheriff of Yorkshire (gr., Mr. H. J. CLAYTON), for the best six bunches of Grapes, three varieties. The 3d prize—given by the Lord Mayor of York—was taken by Mr. ROBERT BAKER, of The Retreat (gr., Mr. J. DOE), for the best group of Chrysanthemums. Mr. J. L. SPETCH, in responding to the toast, "The donors of special prizes," contended that special prizes induced a keener competition than would otherwise take place, and ascribed the progress at the respective exhibitions to the circumstance that extra prizes had been given. He thought efforts should be made to increase the number of such trophies, so as to induce a larger number of gentlemen from a distance to exhibit.

—— ANTHURIUM ARCHDUKE JOSEPH.—This is a very handsome hybrid between A. Andreanum fertilised with the pollen of A. Lindeni. It has the brilliant spathe of the former and the broad foliage of the latter. The spathe is smooth, and not puckered, as in A. Andreanum. The newcomer was raised in the establishment of the Compagnie Continentale d'Horticulture, Ghent, and is figured in the *Illustration Horticole*.

—— PRESENTATION TO DR. PATERSON.—On the evening of the 24th ult. a meeting was held in Bridge of Allan, Mr. LAURENCE PULLAR, Chief Magistrate, in the chair, for the purpose of making a presentation to Dr. PATERSON, the well-known Orchid amateur. The presentation consisted of a cheque for £340, enclosed in a silver casket, bearing the following inscription:—"Presented to Dr. ALEXANDER PATERSON, along with a cheque, given by 260 subscribers over the whole country, in testimony of their regard for him as a successful physician, a kind friend to the poor, and a public benefactor to the inhabitants of Bridge of Allan."

—— BOUGAINVILLEA SPECIOSA.—This beautiful stove creeper, not so often found in gardens as is B. glabra, is doubly grateful when obtainable at this season. Mr. PAUL, gardener at Osborne Villa, Bowdon, Cheshire, forwarded to us recently a fine raceme of its yellow flowers, with deep pink bracts, somewhat faded certainly, it having been removed from the plant on December 10. Still, that it should be presentable in appearance so long afterwards speaks in its favour as a cut flower. It is better not to put it into water as other cut flowers.

—— ABERDEEN SEED TRADE CONVERSAZIONE.—The annual conversazione in connection with the Aberdeen seed trade was held in the Royal Albert Hall on Thursday, December 24, and was in every respect a success, the company numbering about 300. The hall was upholstered a few days before by Messrs. Pratt & Keith, and on this occasion was enhanced by garlands of foliage, mirrors, curtains, flags, and coloured lamps here and there, giving quite a fairy aspect to the scene. The decorations were carried out under the superintendence of Messrs. Duthie & Thomson. Among the large company present were Mr. A. Robson (of Smith & Sons), who presided; Messrs. Bruce, Gordon (Broad Street), Darling (of Cardno & Darling), Anderson (of Reid & Co.), Smith, Cassel (of Cross & Sons, Glasgow), Bell (of Cross & Donaldson, Leith), Harper (of Harper & Co., Aberdeen), &c. After tea the Chairman, in a brief address, referred to the satisfactory state of the seed trade in Aberdeen, notwithstanding the unfavourable times. He saw it reported the other day that the improvement had begun in America, and that a great wave of prosperity might be expected to strike British shores in a very short time. He hoped that this would be as true as the American weather predictions usually were, and that we were on the eve of a great revival in trade. Notwithstanding the bad times we experienced, the seed trade of Aberdeen had been progressing wonderfully well. During the last few years it had been increasing, he might say, by leaps and bounds, and that a very large increase might be looked for in the future. The ball which followed was largely attended.

—— PRESENTATION.—On the evening of Monday, the 21st ult, a testimonial, in the shape of a handsome timepiece, was presented to Mr. GEORGE SMITH, the late Head Gardener at Longford Hall, Stretford, near Manchester. The interesting proceedings took place at 11, Greenheys Lane, and Mr. BINNS was entrusted with the pleasing duty of making the presentation on behalf of the subscribers, who were young men who had been under Mr. SMITH'S tuition, and who are now holding responsible positions in various parts of the country, and who wished to testify to the example which had been shown to them. In making the presentation Mr. BINNS eulogised Mr. SMITH as being an able horticulturist, and a man of a kind and genial disposition, which was thoroughly corroborated in an excellent speech by Mr. JOHN TURNER, of The Gardens, Old Trafford, who spoke on behalf of the subscribers.

—— A SALT-WATER FUNGUS?—Ustilago marina, DURIEU, a fungus new to Britain, was exhibited at the Linnean Society (December 17) by Mr. E. MORELL HOLMES, who discovered it last autumn at Studland Bay, Dorset, growing on Scirpus parvulus, on ground covered by brackish water.

—— PUBLICATIONS RECEIVED.—SUTTON'S *Pocket Gardeners' Calendar for 1886.—The Housewife.—Report of the Government Botanical Gardens at Saharanpur and Mussorie.—Catalogues of Canadian Plants*, Parts I. and II.—*Botanischer Verein für Gesamtthüringen.—Ninth Report of the Montreal (Canada) Horticultural Society.*—PURDON'S *Irish Farmers' and Gardeners' Year Book.—Tenth Annual Report of the Montreal Horticultural Society and Fruit Growers' Association of the Province of Quebec.—Illustrations of British Fungi.*

FRUITS UNDER GLASS.

ORCHARD-HOUSE

WE have just entered into the duties of the New Year, and everything in the earliest house should be ready to start into gentle growth. I find when the trees are not placed out-of-doors they are more liable to be attacked by insect pests the following season. It is necessary to carefully look over the branches to see if there is any scale upon them, this is first rubbed off with the finger-nail or a small label, afterwards wash with strong soapy water. The flower-buds will soon be prominent on the young wood, but these must not be interfered with. The first step towards forcing them is to slightly increase the temperature at first. Should the weather be frosty and cold at night, the temperature of the house should be kept about 45° at night, if mild out- of-doors it may easily be kept at 50° with even less artificial heat than would be required to maintain it at 40° during frost. If the atmosphere feels dry, slightly damping the paths and bordere of the house early in the day will be sufficient.

A very damp atmosphere would be injurious to Peach trees, while it would be the right thing for Vines. The most important of the cultural details is watering the roots. When the plants are kept under glass they get little or no water while they are at rest; indeed it is easy enough to allow them to become too dry at the roots—at any rate, examine each pot separately, and ascertain in what state the roots are. If very dry continue to water them till the whole mass of roots are saturated. If they are moderately moist to begin with one application with water will be enough. I never allow Peach trees to become dusty dry, either in pots or planted out; this is the most fertile cause of the buds dropping almost as soon as they ought to begin to swell. The house ought to have a little ventilation every day, shutting up early in the afternoon. About the second or third week in January the late house trees which have up to that time been out-of-doors, should be removed inside; as they have been exposed to all the autumn and winter rains they require no water for some time.

ORANGERY.

I do not write these few lines for those who possess a house set apart entirely for the culture of Orange trees in pots or planted out, but more especially for gardeners who may possess a good Cucumber or Pine house. For many years I grew splendid dessert Oranges in the Pine-house or on a stage at the back of a half-span Cucumber-house. In fact, it does not matter what the house is, provided it is kept at a minimum temperature of 60° to 65°. It is now a good time to place the trees in such a house, even small trees in 7, 8, and 9-inch pots will produce fruit. The little Tangierine will ripen its fruit early in September, to be followed by the St. Michael's in October and November. Keep the atmosphere rather dry when the trees are in blossom. There is always plenty of pollen, which may be placed on the stigmatic portion of the flowers with a small brush. *J. Douglas.*

WESTERN AMERICAN FIRS.

DR. ENGELMANN'S characters of Abies nobilis, republished in the *Gardeners' Chronicle* of November 21, 1885, from the *Botany of California*, were drawn previous to his visit to the Pacific forests in 1880, and do not contain his latest views upon this and its most closely allied species. It was supposed previous to that time by botanists that the Red Fir, which forms upon the slopes of Mount Shasta, in Northern California very considerable forests, was the Abies nobilis of Lindley, and that the Red Fir, which is found scattered through the Sierra forests further south was a different species—the Abies magnifica of Murray, which, moreover, had for a long time been confounded by the Californian botanists with the Abies amabilis of Forbes. How it came about that the Mount Shasta tree was confounded with A. nobilis is not very clear, although American botanists never knew much about Abies nobilis previous to 1880, although it was collected by Dr. Newbery in the Cascade Mountains many years previous to that time, and had been well figured by him in vol. vi., *Pacific Railroad Report*, pp. 49, 90, t. 17). The fact that a Fir with long cones and exserted bracts, and of the general habit and appearance of A. nobilis, existed in Northern California, near the Oregon line, seems to have been considered a sufficient basis for referring it to that species. Dr. Engelmann certainly thought so when he wrote the description of the Californian Abietineæ for the *Flora*, for in his sectional characters, intended to include Abies nobilis and A. magnifica, he says:—"Leaves more or less quadrangular, short, and curved upwards;" and again, in his characters of A. nobilis, "leaves keeled both on the upper and lower side . . . only on the lowest branches flatter and slightly grooved.

Even such keen observers as Hooker and Gray had come back from the Californian forests with the impression that they had seen Abies nobilis on Mount Shasta, although Sir Joseph was impressed with the fact as soon as he returned to England, and saw again cultivated plants of A. nobilis, that he had not seen this tree during his American journey, which did not extend as far north as Oregon. When he reached Northern California in 1880, fresh from the great forests of A. nobilis growing on the very spot where Douglas had discovered the species on the Cascade Mountains, immediately south of the Columbia River, it was at once evident that the Californian tree was not A. nobilis, but a form of A. magnifica, with long exserted bracts. A conclusion which solved the doubt which had long existed in regard to the identity of the Abies with exserted bracts, which Mr. Brown had discovered several years before upon the Mount Whitney Range, in the extreme southern part of the Sierra system. The facts in the case are these:—Abies nobilis is a tree of restricted range, being confined to the State of Oregon, neither, so far as is known, extending north into Washington Territory, or south into California; and Abies magnifica is exclusively a Californian species, producing cones which sometimes have long exserted bracts, and sometimes short included bracts.

Dr. Engelmann published his views upon these species after his return from California, in a note in Coulter's *Botanical Gazette*, vol. vii., p. 4, which, as it may not be generally accessible, I will reproduce in full:—"Abies nobilis (Douglas), Lindley, is peculiar to the higher mountains of Oregon, and has not yet been found in California, nor, as far as I can see, in Washington Territory. Its greenish leaves crowded on the branchlets, and its large purple cones, with long, exsert, recurved bracts, well characterise it. The tree on Mount Shasta, which has gone by this name (also in the *Flora of Californnia*) is distinguished by its quadrangular leaves keeled on the upper side; its large cones considerably resemble those of nobilis, and have often, not always, exsert and recurved bracts. It is a form of A. magnifica, Murr., the common Red Fir of the Californian Sierras, which has bracts normally enclosed."

I have examined a large number of specimens of these two species, and in all the character of the leaves—that is, flat and grooved in A. nobilis, and quadrangular and keeled in A. magnifica—is constant, except that the leaves upon the leading shoots of A. nobilis, as is the case with many species of the genus, are not flat but quadrangular.

I should suppose, from the figure and description, that the tree from the Cranston Nursery, figured in *Gardeners' Chronicle* (fig. 146, p. 653, vol. xxiv.) belonged to the form of magnifica with the exserted bracts; and if its origin can be traced I think it will be found that it was raised from Californian seed, and that A. nobilis robusta is not nobilis at all, but a form of A. magnifica. The indication of a groove at the base of the leaves is something I have not seen in native specimens, and I should be glad to know more about it.

Several years ago (1875 or 1876) I had collected in California a large number of seeds for the Knap Hill Nursery of what was then supposed to be Abies amabilis of Forbes, but which was really Murray's typical form of A. magnifica with enclosed bracts. This tree, in a young state at least, must, therefore, exist in considerable quantities in England.

The difficulty of satisfactorily distinguishing Abies grandis, Lindley, from Abies concolor, Lindley and Gordon, under all conditions of distribution, and especially in the herbarium, is very great. Abies grandis, as it grows in Vancouver's Island, looks certainly different enough from Abies concolor of Southern Colorado; but there are no real characters to distinguish them except the length of the leaves and the number and position of the stomata—not very constant or valuable indications. The cones and the leaf structures of the two species are identical, their bark does not differ more than might be expected in individuals of the same species scattered over such an immense territory, and subjected to such different climatic influences. I have traced this species, or these species, from Vancouver's Island inland at the north to the extreme eastern limits of their distribution in that direction, the western base of the Rocky Mountains and Montana. I have followed them south through Washington, Oregon, and California, to Arizona and Colorado. For garden purposes it will be wise perhaps to keep these species separate, and even to admit Abies Lowiana, which is only the Abies concolor of the Californian Sierra Nevada, as are other species; but, looking at the matter broadly, I am inclined to believe that these different forms—Abies grandis at the north, Abies Lowiana, or lasiocarpa, in California; Abies concolor in Utah, Arizona, New Mexico, and Colorado—distinct enough in many minor respects, but not to be distinguished by essential characters, must all be referred to one species of immense geographical distribution. *C. S. Sargent, Arnold Arboretum, Harvard.* [If this view be taken, why not on the same principle make nobilis and magnifica forms of one and the same species? ED.]

THE CINCHONA IN JAVA.

WE extract the following notes from a very interesting lecture lately delivered at the Pharmaceutical Society by Mr. Brady:—

Buitenzorg is a fascinating place—landscape and climate alike irresistible; and in addition to its natural attractions it possesses a far-famed botanical garden which is at once the most extensive and most instructively arranged, and perhaps, on the whole, the most beautiful of any within the Tropics.

The island itself [Java] is about one-third larger than Ireland, and it is, I think, with the exception of Belgium, the most thickly populated country in the world, having a population in this small area of upwards of 20,000,000. Batavia is the largest and most populous town in the southern hemisphere, having a population of something like 500,000, and spreading over an enormous area. The only city at all comparable with it is Melbourne, which, with its suburbs, has a population of 300,000 or 360,000. The island of Java is about 600 miles long, and varies in breadth from 40 to 120 miles. After one or two cursory visits to the gardens in company with their indefatigable Director, Dr. Treub, I took train for Bandong, where I found comfortable quarters at the little local hotel.

Bandong is situated in the midst of a wide plain about 2000 feet above sea-level, bounded by mountain ranges to north and south. The localities selected for Cinchona cultivation are on the southern aspects of these opposing ridges. There are altogether eight Government plantations, four of about 200 acres each, two of 150 acres, one of 100, and one of 70 acres—total, say, about 1270 acres. One of the estates lies at an altitude of about 6000 feet above the sea, and four at about 5000 feet, the remainder are somewhat lower. Six out of the eight are on the southern group of mountains—that is to say, on the sides of Mount Malawar and the adjacent Wajang, Tiloe, and Patoeha. Some, if not all of these were visited by Mr. H. O. Forbes, in 1880*; my own experience does not extend to that particular region. The expedition planned for me was to the two northern plantations, those of Nagrak and Lembang, on the southern slopes of Tangkoeban Praoe.

Early on the morning of the day appointed our little party started in two cars, each drawn by three smart ponies, on the road towards Lembang; and after about an hour's drive we reached a little village where saddle-horses were waiting for us. Thence, accompanied by a considerable escort of natives, riding and on foot, we commenced the steeper portion of the ascent by a devious mountain path. Though we had been gradually getting on to higher ground ever since leaving Bandong, there was at first but little perceptible change in the character of the vegetation, and one might still observe about the native cottages Bananas and Betel-pepper, patches of Cassava, the Cocoa-nut Palm and the Areca Palm, and clumps of tall Bamboos. Somewhat higher these gave place more or less to the Arenga or Sugar Palm and small plots of Tea; whilst higher again Coffee became the prominent object of cultivation, and this, together with fine crops of Tobacco, were noticed up to an elevation of 4000 feet.

Thanks to an early start we reached Nagrak about 9 A.M. On entering the plantations our attention was first attracted by a large patch of Cinchona Josephiana, well-grown trees eight or nine years old. The bark of this species has been found to be of low alkaloid value, seldom yielding more than 1 per cent. of quinine, so that the tree is no longer regarded as worth growing, and the whole were being uprooted. Then came a plot of C. succirubra, which, so far as quinine is concerned, is scarcely richer, and this ground was about to be cleared for the same reason. A similar fate had already befallen a large proportion of the plantings of C. calisaya, C. Pahudiana, and C. Hasskarliana.

The homestead, if one may call it so—that is, the buildings pertaining to the station—are situated about 13 paals from Bandong, on a sort of platform 5000 feet above the sea, the plantations extending to a further height of 400 feet or more on the mountain side. The area of the estate is about 200 acres. The buildings consist of the overseer's house—a commodious little wooden bungalow of the customary Dutch East India pattern, in a garden gay and fragrant with Roses and Heliotrope, and a number of rows of tidy cottages, built native fashion, of Bamboo wickerwork, and thatched. Near at hand are the drying-sheds and frames, stoves, and the like, as well as the nurseries stocked with young plants. The platform in front of the house commands a magnificent panorama of the plain of Bandong, with the Tji Taroem meandering through it; and of the opposite range of Mount Malawar, 30 to 40 miles distant, whose summits reach an elevation of 7200 feet. A flag-staff with the Dutch colours is a conspicuous landmark from below; and close by is a tall handsome tree of Cinchona cordifolia, which has been spared for its beauty in the general uprooting of that species.

Leaving our horses at the house, we prodeeded to the work of inspection on foot, visiting first the drying-sheds. The bark is dried as far as possible without artificial heat. It is placed in trays 4 to 5 feet long by 3 feet wide, made of plaited strips of Bamboo, the quills being arranged in orderly fashion side by side. The trays are slid on to long stages or tresales 3 or 4 feet in height. They are brought out early in the morning, and at sunset are all taken back into the adjoining sheds, and piled in tiers. The frequent heavy tropical showers necessitate a large amount of care whilst the bark is thus exposed. For artificial drying there are houses with stoves and long flues, wood of course being employed as fuel; but

* I was not aware that Mr. Forbes had published anything relating to the Dutch Cinchona plantations, or, indeed, that he had visited that particular portion of Java, until some time after my return to England. He sent home, however, a very interesting account of his excursion to these southern estates, which appeared in the form of a letter, with the signature "F. Z. S.," in the *Field* for September 25, October 9, and October 23, 1880. This letter, to which I have referred more than once in subsequent pages, contains a large amount of statistical information, and many details as to culture, of a kind I have not thought needful to introduce. I may here explain that considerable diversity exists as to the mode of spelling geographical names in Java, most of them being of native origin; and that in the present paper I have, as far as possible, followed official usage. For example, Malawar is often found on maps as Malebar, and Tangkoeban Praoe as Tankoeban-prahoe. The latter, which is the somewhat formidable name of the mountain on which the northern plantations are situated, refers to the imaginary resemblance of the outline of the summit to that of a boat or praoe turned upside down.

these are comparatively little used, as, on the whole, spontaneous drying has been found to give the best results. At the time of my visit the trays were filled with succirubra bark in quills, and the root-bark of the same in small irregular shreds.

Passing from the drying-ground again into the plantations, which lie on a tolerably steep ascent, we found ourselves first in a tract laid out with C. succirubra. As a tree Cinchona suecirubra is one of the handsomest of the genus. The size of the leaves, especially these of the young plants, and the fine ruddy hue which they often exhibit, together with its vigorous habit of growth, serve to distinguish the species from most of its congeners. The plantation was undergoing the process of thinning, and to this end the surplus trees were being pulled up by the roots. The bark of the roots, which is thinner and much less easily separated than that of the stem, is carefully preserved; for it has been ascertained that in several species which are accounted of relatively low quinine value, notably C. officinalis, C. anglica, and C. succirubra, the root-bark gives the better percentage of alkaloids.

Further on we came to a plot of what is termed by the Dutch botanists Cinchona calisaya var. anglica, which is supposed to be a hybrid between calisaya and succirubra, and possesses more or less the botanical features of both. The original stock is said to have been obtained from Ceylon. At a somewhat higher level, 5200 feet or more, is a plantation of C. lancifolia, which is still regarded as a useful tree, the bark often yielding 4 or 5 per cent. of quinine. At about the same elevation there is also a considerable planting of C. officinalis, but either the climate or soil are unfavourable to that species, for it grows slowly and the trees are long and spindling, though it is reported to thrive well in private plantations in the more easterly portions of the island.

(*To be continued.*)

HOME CORRESPONDENCE.

Saluting Apple Trees in Devonshire.—Mention is made in the *Gardeners' Chronicle*, p. 776, vol. xxiv., of this quaint ceremony which was always commemorated on Old Christmas Eve, but like many of the ancient customs it is now nearly extinct. Years ago almost every farmer observed this holiday, his friends and workpeople being invited to supper, usually of a very substantial character, and which, as might be supposed, ended in bacchanalian glee. During the night a huge fagot of Ash sticks would be burnt on the spacious hearth, and the cracking of each of its numerous binds, was the advent of another supply of cider. Towards midnight, supper being over, the party would proceed to the orchard carrying with them toast and cider, then selecting a large tree they would address it thus:—

"What zeal! What zeal there is in our town!—
Our cider is good and our ale is brown:
Here, old friend, we drink to thee:
Bear and blow Apples now.
Hats full, caps full, three bushel bags full, and the old sow's belly full.
Hurrah, hurrah, hurrah."

The toast and cider were then thrown at the tree, saying:—

"Now, old friend, we let thee drink."

After which guns were fired. All this would be repeated to certain other trees in the orchard when the party would again retire to the farmhouse keeping up all sorts of fun with considerable zest until break of day. *W. Napper.*

Bonâ-fide Exhibits at Chrysanthemum Shows.—In answer to your correspondent, "W. G.," at p. 815, issue December 26, respecting *bonâ-fide* exhibits at the National Chrysanthemum Society's Floral Committee meetings, I, as one of the above committee, wish to say that we have a certain code of rules drawn up for the guidance of the committee, and none of these rules specify that the blooms shown shall be grown by the exhibitor; and I do not think that any other society has rules to that effect, where Certificates are awarded for new or rare specimens. If "W. G." will apply to Mr. Wm. Holmes, Frampton Park Nurseries, Hackney, the Secretary, for the above rules, no doubt he will be happy to furnish him with a copy, and then "W. G." will find that the committee has acted honourably in the matter. *One of the Committee.*

—— Referring to remarks on p. 815 of last issue, would "W. G." give his name, that one may understand the motive that prompts the question, before answering it? *N. Davis, Canberwell.* [It is the principle that is in question, not the name of our correspondent. ED.]

Aster ptarmicoides.—The accompanying illustration (fig. 6) represents a very pretty hardy perennial Aster belonging to the section Orthomeris, to which A. Chapmanni and A. pulchellus also belong. It makes a compact tufted plant, with stems from 6 to 20 inches in height; the leaves are linear, or linear-lanceolate in outline, and are lucid on both surfaces; the ray-florets are a bright white. It is a native of rocky banks and bluffs in the United States, from New England to the mountains of Colorado. In some gardens it is cultivated as Achillea ptarmicoides, a name which rightly belongs to a widely different plant from



FIG. 6.—ASTER PTARMICOIDES.

Eastern Asia, &c. The figure represents an inflorescence, the margin of a leaf, end and side views of pollen grains—which exhibit the echinate character, which is almost universal in Compositæ—and a ray-floret with its pappus. Perhaps it may be better, for the sake of non-botanical readers, to state that in the genus Achillea there is no pappus at all. *G. N.*

A Scottish Orchid Exhibition.—At the Orchid Conference held in London in May last it was a matter of universal regret that Scotch growers were so poorly represented. The distance from London, and the unfavourable weather at the time, no doubt contributed largely to this result, and these two causes will always militate more or less against a strong muster from the North whenever the Orchid Conference is repeated. But I would suggest to my fellow orchidologists in Scotland that we might have a very good exhibition to ourselves. With such collections to draw upon as those of Messrs. Gair, Buchanan, Dr. Paterson, Smith, of Brentham Park; Macdonald, of Perth, and hosts of minor luminaries, we have no need to be backward in exhibiting. But the matter needs an organisation to take it in hand, and to form an Orchid Society of Scotland, with an annual show, a general meeting, for the discussion of Orchid topics, a social dinner, if you like, a reference library, &c. I venture to lay this before the Scotch Orchid growers, and to ask them to communicate their opinions, with your permission, in your widespread columns. *Walter T. Ogilvy.* [We shall be glad to further the project. ED.]

Eichornia azurea (see fig. 5, p. 17.—In the number of the *Gardeners' Chronicle* for June 6, 1885, there is an article on the "Oxford Botanic Garden," where, amongst other plants mentioned in it, Eichornia azurea is instanced as thriving well in the stove tank with the Nymphæas, &c., and as frequent inquiries have been made as to how it has been treated here so successfully it may be well to give a formal account of its culture, which is very simple. No doubt the structure, which is fully exposed to light, has much to do with the healthy condition of this, as well as of other aquatics grown in it. Early in March a few of the best pieces that can be selected are taken off as cuttings about 2 feet in length, and planted in a box 18 inches square, well drained, and filled with a mixture of good loam and a little well-rotted stable manure pressed firmly together. A place being chosen for its reception near to the front of the tank, it is placed about 6 inches (not more) under water, the temperature of which at this time would be about 65°, and which is gradually increased till in summer and early autumn it would be 80° or rather higher. The plants make such rapid growth during the summer and autumn that to keep them within the space they can be allowed to occupy, it is found necessary to occasionally reduce them. This is done by taking off the ends of the leading stems as cuttings, about 2 feet long, and the old plants having been put away, planting them as at the commencement of the season in the same box and in mostly new soil of similar quality. This operation is repeated three or four times during the growing season and its flowering is but slightly checked by such treatment. It may be mentioned that the Eichornia azurea seeds freely if fertilised with its own pollen. [This is the more interesting, as from the structure of the flower, as explained at p. 18, the plant is not naturally self-fertilising. ED.] A batch of seedlings were raised here about four years ago, but having had established plants sufficient for our requirements the raising of plants from seed has not been continued. From early in June till the middle of September this plant does fairly well in a sheltered tank, open to the south, out-of-doors, but the flowers, produced under such treatment are poor as compared with those grown under glass and as far as our experience has gone we cannot say much in its favour for outdoor purposes. *W. H. Baxter, Oxford Botanic Gardens.*

Scarlet Runners.—A short time ago I saw in the garden of an amateur a plant of the white Dutch Runner Bean, which had been transplanted and borne a crop four successive years. The plant was again taken up, potted, and stored in a cold dry room last autumn, and for aught I know it may continue to live and produce many more excellent crops. It is not, I think, very generally known that Scarlet Runners may be stored away and preserved in a similar manner to Scarlet Pelargoniums, nor is it perhaps of much practical value, except that in bad seasons, when seed is scarce, it might prove to be an economical method of cultivation, or when it is desired to preserve true, or increase by every means possible, a new or choice variety, it would prove advantageous. *T. Challis.*

A Berried Plant.—May I be allowed to suggest as an addition to the list of plants, the seeds of which are so ornamental as to make their bearers worthy of admission to a garden or shrubbery, Iris fœtidissima? The seed vessels during the winter are filled with seeds of a bright orange colour, which are borne (after the manner of the genus), not singly, but in considerable numbers in each seed vessel, and are therefore very effective. The seeds are said to be very poisonous, and the birds do not seem to touch them. The plant is extremely common in some of our western counties, as Devon and Somerset, and I have formerly seen it on the steep rocky hill-side above Sandgate, in Kent [where it is still common. ED.]. *Alex. Nesbitt, Oldlands, Uckfield.*

Skimmia japonica.—Fortune, the introducer of this pretty shrub, tells us regarding it:—"These scented flowers are produced in great profusion in early spring, and are succeeded by bunches of bright red berries like those of the English Holly." Mr. Alfred Walker (p. 815, vol. xxiv) will therefore see that I did not eulogise the fruit beyond its due. I have more than once been surprised to find it stated that the berries of this plant are not eaten by birds, for in our home nursery here a border containing two or three dozen plants are usually, when frost sets in, completely stripped in a few days, but by what bird I am unable at present to say, but will endeavour ere long to find out. Would it be the pheasant? *A. D. Webster.*

Tree Carnations.—On December 19 "R. D." says:—"It is at this season and on till March these flowers are most useful." In the *Pasha of Many Tales*, written forty years ago by Captain Marryatt, after a story told to amuse the Pacha, he said, "What are these things but bosh, Mustapha? Off with his head." And why could not "R. D." say plainly what he saw? I saw the same plants he alluded to. There were a few indifferent looking Carnations in flower there a fortnight ago, and I selected the best of them. It is an absurdity to talk of winter flowering Carnations at all: a few flowers open out of hundreds of pots so far as my experience has gone, and many of those named by "R. D." are not worth a dump as winter bloomers. If by winter the writer means August and September, March and on to July, he and I are of one opinion. Interested in these flowers, and having a fair collection, I have this week visited a nursery, at no small expense of time (and railway fares for that matter), from a statement like "R. D.'s" in a contemporary, where I was told that "there was a great sight." Well, I saw a few plants of Pride of Penshurst in bloom, a weedy looking Andalusia, and perhaps in all fifty flowers on at least 3000 plants, and they were really well grown plants, but altogether not worth naming as winter bloomers. In all the collection there was but one plant in flower worth noticing, and that was an imported seedling. After a long experience, I may say that out of a hundred plants I should grow fifty of Balaclava, which I had from Mr. Turner seven years ago; thirty Alegattier, ten Defiance, and ten Mrs. Dix. There are other very good flowers—when you can catch them! *W. J. R.*

Taxed *v.* Untaxed Trading.—Under the above heading your correspondent, Mr. James Anderson, complains of the anomaly of landlords that sell surplus vegetables are not taxed the same as market gardeners who pay rent. I am not aware of any special tax on the sale of vegetables, but Mr. Anderson may be able to explain further. I do not know what he means by local burdens, but I find on enquiry at our factor's office that for the support of the poor, public health, school rates, lunacy, police, roads and bridges, water, and a host of other subjects the landlord is assessed on a fixed rent for the garden, both as proprietor and occupier, whether he sells vegetables or not. What more do market gardeners want? If the garden is not returned at the proper value the remedy lies with the assessor, and besides a landlord has to pay a tax of 15*s.* for every man he employs in his garden, except the ordinary day labourer, while market gardeners and their men are exempted. I may also mention that pleasure grounds and plantations are usually returned at a rent per acre equal to the agricultural value of the surrounding district. The landlord is taxed on this scale, and in many cases the land is not worth the tax to him; the grievance is, therefore, only an imaginary one. As to the letter of "A. D.," he begins by abusing landlords for selling vegetables at all. This, indeed, seems to be the main purpose of his writing, and much in the same strain has been written of late. As to the cause of it there is considerable misunderstanding. The prevailing opinion seems to be that it is to make money; this will not bear examination, because from the usual style of a gentleman's garden, produce for market can only be disposed of at a considerable loss to the owner, not because the stuff is inferior, although market gardeners are fond of saying so, evidently for the purpose of advertising their own produce, but the statement is a mere assertion. A market garden is not so well worked as a private one, the stuff gets less attention, and has less room to grow in; better quality, under these conditions, is an impossibility, the only advantage they have is that their seed is often better selected than for private gardens. I also believe that in most cases landlord's greengrocer's accounts in London or elsewhere are in excess of the whole receipts from the sale of surplus from their own gardens: these facts dispose of the money-making theory. As to market gardeners being handicapped by landlords selling vegetables, they are handicapped to a much greater extent by what is imported from the Continent than ever they could be, although surplus produce were sold from all the gentlemen's gardens in Britain. "A. D." finishes by giving a lecture on taxation in general, little of which is relevant to the point raised. *R. Bell, Morton Hall, Midlothian.*

Rhododendrons for Forcing.—In reply to the query of "Dutch Florist," p. 794, I may say that in addition to greenhouse Rhododendrons, the following hardy varieties are commonly used for forcing:—Nobleanum, fine scarlet, very early; Jacksoni, bright rosy-crimson; Caucasicum album, white tinted with pink; C. pictum, light crimson; Cunningham's White, white; Præcox, rosy-lilac, dwarf-growing; Wilsoni, rosy-lilac, dwarf-growing; Madame Wagner, light centre, edged with rose; Prince Camille de Rohan, light pink, crimson spots. There are several other varieties which flower early, and are therefore useful for forcing, such as Broughtonii, brilliant crimson; La Brillante, rich crimson-scarlet; Flower of May, pale blush, crimson blotch; Hendersoni, dark purplish-claret, lighter centre; Brayanum, bright rosy-crimson. *W. Davies.*

Odontoglossum crispum.—Your correspondent, De B. Crawshay, in criticising my letter on Odontoglossum crispum, puts a wrong meaning on that part referring to thinly grown plants in their native habitats producing the fine flowers seen by the collectors, and for a time after being imported. It was never intended to imply that they degenerated under cultivation; but do they continue to improve at the same ratio after being imported as those that happened to be growing in a crowded condition and not getting sufficient nourishment to develope their growth? And what I wanted to find out, from extensive cultivators, was, do all Odontoglossum crispum, whether from crowded or thinly distributed stations, retain the character of their first flowering after being imported? I think De B. Crawshay, referring to his Odontoglossum crispum Rothschildianum, foreshadows the meaning of my question; but beginners must always be preparing to put off "their long clothes" some day. *T. H. A.*

Salisburia.—If W. Napper's figures are correct (p. 816, vol. xxiv.) there are many Salisburias that exceed the one he names at Exeter. I have one here higher, though not of greater girth; but at Badminton and at Blaise Castle there are much finer trees. I should think, too, that the old specimen at the Physic Gardens, Chelsea, must be larger. *Henry N. Ellacombe, Bitton Vicarage.*

The Daffodil.—Dean Herbert seems to have thought the Daffodil not truly wild in England, and says:—"I am informed by a gentleman who has paid much attention to the wild bulbs of Italy, that Pseudo-Narcissus in the neighbourhood of Naples is often found in a wild state with double than with single flowers. Such plants, I think, must be vestiges of ancient horticulture." This seems important. The Romans may have brought over these Narcissi, the double form being of lobularis, or something like telamonius. Then they got all wild together, and in taking up the bulbs for gardens, the little unflowered bulbs of double telamonius are taken up with the single Pseudo-Narcissi. Then these flowering, people think they have turned double from the single Pseudos. Mr. Elwes (I think) and several other gardeners have observed that common Pseudo-Narcissi will not flower in a border—why, I don't know. They never did give (of hundreds of bulbs) more than two or three blooms in a garden under my observation. *Frank Miles, 26, Tite Street, Chelsea.*

PEAR BALTET PÈRE.—Fruit turbinate, of large size, regular, with a very short stalk, and a depressed eye. The skin is olive, speckled with brown-red on the sunny side. The flesh is white, melting, sugary, sometimes with a vinous flavour. The season is November and December. This variety, like Urbaniste, survived the terrible winter of 1879—80. It is figured in the last number of the *Bulletin d'Arboriculture.*



Notices of Books.

Die Bekämpfung der Pilzkrankheiten unserer Culturgewächse. Versuch einer Pflanzentherapie. Von Felix von Thümen. (Wien, 1886, Facsy.) (The Treatment of Diseases caused by Fungi, &c.).

This little book is intended for the use of farmers, gardeners, fruit growers, foresters, &c., and it is an attempt to give them something more than a mere description of the fungi that cause their troubles.

In the present state of plant pathology, an attempt to write a book on "plant therapeutics," is as bold as the results are certainly modest. So far as present knowledge goes, it warns us, first, to exhaust measures of prevention before the forlorn hope of a cure is to be entertained at all. In only a very few cases can "local applications" be of service, and then the result is hardly ever very satisfactory. Our knowledge of the life histories of parasites is growing daily, but not so our acquaintance with the intimate relations of parasite and host. One set of people get rid of the whole difficulty off-hand, by assuming that plants attacked by parasites are degenerate—have an "inherent tendency to disease" brought about by over cultivation and the like. This is mere assertion, and there is nothing more to be said about it but perhaps very much to be doubted. Certainly, wild plants are by no means exempt from kindred diseases. A consideration of the nature of parasitism as exhibited in the evidence furnished by repeated observations and experiments, leads us to the conclusion that this mode of life as enjoyed by many plants is not so limited in its scope as these persons would have us believe. A great number of parasites attack, so far as we know, only one kind of host, others attack a number of hosts related to each other, while others again attack hosts of remote affinities, while letting others which intervene in relationship escape. Then there are what are termed facultative parasites, that is, fungi which may live either as saprophytes or parasites, such as certain species of Pythium, &c. In one of the last-mentioned cases (Pythium) the susceptibility of the host to the attack of the parasite varies with the amount of water present—the more the greater the susceptibility. It is quite clear that the aggressive relationship, so to speak, of a parasite to different individuals of the host species—in the predisposition of the individuals to the attack of the parasite may be one of degree. There are other parasites (and these unfortunately are those which concern us most, such as species of Peronospora, certain Uredineæ, which are no respecters of individuals so far as we know. At all events, until a great deal more is known of such relationships between parasite and host attempts to fight such diseases must be made to a great extent in the dark, or must be limited to such measures of prevention as the purification of seed, &c. That a good deal may be done even in the dark the history of medicine shows, but the same history teaches unmistakably that full knowledge of the action of disease on host is the necessary condition of perfect success.

Von Thümen's book is divided into a short introductory chapter, and thereafter into sections dealing with the fungal diseases of field crops, of fruit and garden crops, of Vines, of forests, and a supplement is added on dry rot. Since it is impossible to go over the book in detail it may be said that the author deals throughout very satisfactorily and judiciously with the cures commonly recommended, and that his advice as to measures of prevention is for the most part very sensible. The Jensen earthing-up system of Potato growing has engaged the attention of readers so much, and the interest in it has been so recently revived by the report drafted by Dr. Masters

on behalf of the Potato Committee of the Scientific Committee of the Royal Horticultural Society, that it may be excusable to quote here what Von Thümen has to say of it. He states that comparative experiments carried out at different Agricultural Institutes have yielded the result that a Potato field treated on the Jensen system showed not only no diminution of disease (as against an ordinary field) but on the other hand a diminution of total crop. *George Murray.*

DEAN HERBERT.

AT a recent meeting of the Literary and Philosophical Society of Manchester, Mr. William Brockbank, exhibited a complete series of the illustrations of flowers by the late Dean Herbert, including a number of his original sketches.

The Honourable William Herbert was the third son of Henry, first Earl of Carnarvon, born 1778, educated at Eton and Exeter College, Oxford, M.A. 1802, and D.D. 1841. He was made Rector of Spofforth, near Wetherby, in 1814, and held that living up to his death. Born a Whig, and being a supporter of Lord Melbourne's government, he was appointed Warden of Christ's College, Manchester, on the death of Dr. Calvert, in 1840. He died suddenly in 1847, æt. 70. He was thus only about seven years amongst us in Manchester—1840-7, and it was during this period that the bishopric was created, and he became Dean. He was the last Warden and the first Dean of Manchester, and is now generally spoken of as Dean Herbert, although he was Dean only for about a year. Mr. Eglington Bailey, in his forthcoming history of the Wardens of Manchester, sums up his character in these words :—"He was an active and influential dignitary, when in Manchester; throwing himself unreservedly into his work, and labouring with all his might to fulfil his high responsibilities. He was simple and unaffected in his manners, and walked quiety about Manchester, acquainting himself with its people, their interests, and wants; inspecting its improvements, promoting its charities, and diffusing by his presence and acts of unostentatious benevolence, happiness, and contentment everywhere." "His conversational powers were not remarkable, and while he maintained that the pulpit was the true place for the clergy, he was himself a dull preacher, without animation or any of the recommendations of a popular orator, except an expressive and benevolent countenance." The list of his literary works will be given in Mr. Bailey's memoir, and will show the wide extent of his acquirements. He was an excellent classical scholar, wrote Latin and English verse with correctness and elegance, had an extensive knowledge of modern languages, even extending to Icelandic and the Northern dialects. He was an able naturalist, and contributed notes on ornithology to Burnet's edition of *White's Selborne*; and a writer in the *Gentleman's Magazine* sums up in these words: "On the whole, I consider Herbert to have been one of the most learned and accomplished persons of his age."

Now it is a strange circumstance that the feature of Dean Herbert's life which is most noteworthy, appears to have been entirely overlooked by all his biographers. Neither Parkinson in *The Old Church Clock*, nor the writer in the *Gentleman's Magazine*, appears to have been aware of his botanical acquirements, and of the immense mass of work which he did for botanical and horticultural science. It is upon this work that his fame, to a great extent, rests: as thereby he anticipated by half a century the progress which has been achieved in the hybridisation of plants. So far back as 1819 he wrote his essay on the production of hybrid vegetables, and thereby started the gardening world upon a course of careful intercrossing of vegetables and flowers, which led to the great improvement of garden and farm produce. In 1821 he published his first treatise on the Amaryllis. His great work on the Amaryllidaceæ was published in 1837, with forty-eight plates, drawn by his own hand. The amount of careful work in this volume is immense, and it remains to this day the standard work on the subject. Many of Herbert's papers appeared in Edwards' *Botanical Register*, and in Curtis' *Botanical Magazine*, all beautifully illustrated by drawings from his own pencil, carefully coloured, and containing minute details of the organic structure of the plants. In these are figured the hybrid Narcissi raised at Spofforth in 1843, and the manner in which the varieties had been intercrossed is detailed, and he thereby showed the way which has led to the immense variety of Daffodils which now adorn our gardens, and which we owe directly to him. Our fellow-townsman Edward Leeds soon felt the influence of the Dean's teaching, and in 1850 he produced the first group of his fine Daffodils, and now we have more than 150 varieties of the Narcissus raised Mr. Leeds.

Dean Herbert's history of the species of Crocus was published in 1847, and he made accurate drawings of almost every variety, flowered at Spofforth.

Herbert's skill as a draughtsman was extraordinary, as well as the diligence he displayed in the delineation of plants which formed the subjects of his researches. Seventy-two of his original drawings were exhibited, many of them most exquisitely drawn and coloured. Not only are they beautiful as works of art, rivalling in the exact rendering of every detail a drawing by John Ruskin, but they are so botanically correct as to place the details of the plant before you, making them precious indeed to the student. The actual amount of illustrative work accomplished by Herbert was immense, there being 113 published plates, all drawn by himself, in addition to the seventy-two drawings now exhibited, or in all 185, all sketched by his own hand, many of them crowded with subjects, and all bearing the stamp of perfect accuracy.

COLONIAL NOTES.

NATAL BOTANIC GARDEN.

FROM the report for the year 1884 it appears that the leaf disease has appeared in the Coffee plantations of that colony. Measures were taken to destroy the affected plants at once, the owner being compensated for his loss; and so far the prompt action taken has been attended with success. Much activity has prevailed in the planting, and in the distribution of plants likely to be useful in the colony; but the Curator complains, and with reason, of the anomalous position he occupies in having to combine the functions of a dealer with those of a director. The following record of temperature and rainfall may be of interest to those who cultivate Natal plants:—

ABSTRACT OF METEOROLOGICAL OBSERVATIONS FOR THE YEAR 1884, TAKEN AT NATAL OBSERVATORY, BEREA. READINGS AT 9 A.M.:—

	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept	Oct.	Nov.	Dec.
THERMOMETER—Highest	87.4	95.3	90.5	92.3	85.6	81.8	82.0	81.7	84.4	84.9	85.6	97.9
Lowest	65.0	61.6	54.6	53.1	52.2	44.7	43.7	49.8	48.3	54.1	59.3	56.6
Mean	77.9	77.7	74.3	71.8	66.5	59.0	58.3	61.6	67.6	71.0	72.9	75.0
RAINFALL	4.68	5.01	5.19	0.50	1.02	2.60	0.16	0.51	3.26	12.19	8.40	1.58
DAYS ON WHICH RAIN FELL	14	13	14	5	7	9	2	7	13	16	16	9

PIETER MARITZBURG, NATAL: *September.*—The rain, long hoped for, has come at last. We have had very little since February—less, probably than half-an-inch a month on the average, and this with the dry north-west winds made vegetation in general look as shabby as any one can conceive. The cold weather at the beginning of August was remarkable. Snow fell, and remained in sight for a few hours on the hills close to the town. On the same day I found snow 3 inches thick lying over a wide range of hills some twenty miles from town, and about 4000 feet above the sea. It was strange passing by clumps of bush to see Imantophyllums in bloom, careless of the snow. High above, Greyia Sutherlandi stood up resplendent in crimson bloom. What an exceedingly handsome shrub this is!

But to come back to the rain. How it was looked and hoped and waited for, till hope began to weary. Yet we see the seasons repeat themselves so exactly that the description of one thunderstorm may stand good for all time. The dry winds blow with great violence from north-west for two or three days, then veering round and coming with equal force from south-east. A few days of intense heat follow; everything living feels exhausted; the sky is brass, and the earth iron. At last we see a mass of snow-white clouds rising slowly up behind the Zwart-kop Mountain, which towers 5000 feet above the city nearly due north-west.

Slowly, very slowly, it rises till by mid-day half the sky is overshadowed. The sun, which up till now has been at his brightest in a sky of the clearest blue, is hidden, and the thermometer (in the shade) runs down from 85° or 90° to 70°, or thereabouts. We hear faint thunder from the north-west at a great distance, then nearer and louder, till it resembles the heaviest artillery, together with most vivid lightning. Small clouds "like a man's hand" detach themselves from the larger mass, which now has neared the earth. A pause; the wind rises; then the first few big drops come dancing down, and with a burst the storm is on us, recalling Mendelssohn's most wonderful music. The storm may last an hour, raining very heavily the while. Suddenly the clouds roll by, and the sun breaks out again, and by sundown the sky is clear again.

But it is next morning, after a quiet night, that our unrivalled climate is at its best. The Orange trees give out from their snowy masses of bloom the strongest, most delicious scent. The Gums breathe an incense-like perfume; the dewy grass sparkles with crimson and gold, rivalling the star-like Hypoxis and scarlet Irids. Mr. J. A. Froude (*Leaves of a South African Journal*) says:—"The climate of Natal is exquisite. The days are brilliant, and not overpoweringly hot. The nights are cool and fragrant with Orange blossom. The stars shine with a steady lustre. The fireflies gleam. The moth-hawk hunts his fluttering prey. The Indian Ocean moans on the shore, and will moan on till the day which Tintoret has painted, when the ships shall drift deserted on the waves, and the human inhabitants of the earth shall have passed away from it for ever."

October 15.—The rains seem to have been universal over the whole country. From the Cape Colony, from the Free State, Transvaal, and Bechuanaland, the same good news reach us. Perhaps the rains have extended to—

> "Mombaya, and Quiloa, and Melind,
> And Sofala, through Ophir, to the realm
> Of Congo and Angola." *Paradise Lost.*

Or, perhaps to the Zambesi, where the vast river, a thousand yards broad, leaps down a crack in the hard basaltic rock, five columns of vapour ascending skywards, and bearing a lovely circular rainbow "pendent by subtle magic;" all this, as seen in Baines' large picture, makes the Victoria Falls one of the most wonderful sights the sun looks down on.

Be this as it may, the open weather has done a vast amount of good to this colony. The Tuberose crop is being rapidly got in. This is becoming a settled industry, and grows yearly in extent. I should like to say a few words on this subject.

THE TUBEROSE IN NATAL.—So much progress has been made within the last few years in the cultivation of the double Tuberose in this colony, that no excuse is needed for bringing it under your readers' notice. I cannot exactly ascertain when the Tuberose was first brought to Natal, but it must have been about fifteen years ago. Mr. Justice Phillips, late of Natal and now of Cyprus, was a most ardent horticulturist, and the credit of importing the Tuberose is attributable to him. A short account of the fine estate planted by this gentleman near Maritzburg will be found in Mr. J. A. Froude's graceful little sketch, *Leaves of a South African Journal.*

For several years Tuberose bulbs, in number a few hundred, were simply cultivated, not propagated, their possibilities unthought of. About five years since, however, they were taken in hand, and a different culture began. Instead of the bulbs being allowed to occupy the same ground year after year without transplanting or division of any kind, they were regularly lifted about June, growth being then at a halt, the offsets taken off, and replanted the following spring (September).

I shall describe the method followed in a 10 acre field, which is daily under my notice. In

October last year, the dry grass having been burnt off, the ground—perfectly virgin soil—was broken up with a large American plough drawn by twelve oxen; the few large boulders lying about were removed. For a first crop Mealies (Maize) were sown broadcast, and harrowed in. The next thing was to get the field enclosed with a good bank and ditch and barbed-wire fence. Owing to a press of work the Mealies grew up untouched by hoe or cultivator of any kind, yet, thanks to the good season, an average crop of fair-sized cobs was gathered last April.

As is generally the custom here, during the winter, the cattle were turned in to feed off the cornstalks. In August last all was burnt that would burn, and the ground thoroughly ploughed, cross-ploughed, and harrowed twice, grass and Mealie roots gathered and burnt. The soil being in a fine friable condition, furrows were struck out 2 feet apart with a small iron plough and a couple of horses, a simple marking-machine drawn up and down the drills, and the sets planted 6 inches apart, and hoed in. Weeds are very carefully kept down, and with our heavy summer rains the growth of the plant is rapid. About mid-summer (December) the splendid spikes of bloom expand, and continue till mid-winter (June); indeed, in this locality, 2800 feet above the sea, I am convinced that, with a little management in planting successional batches, they could be had in flower in the open ground throughout the year. For so little frost have we, that Tomatos generally continue to ripen fruit in the open through the winter; when in Maritzburg, about 200 feet below us, they are invariably killed by the cold. Cannot the Tuberose be flowered in the open—at least in the South of England? I venture to ask your readers to try. The climate of this colony is particularly well suited for the cultivation of bulbous-rooted plants—a hot, moist summer, followed by a dry, cool winter; and, I will add, this locality is favoured above many others for Tuberose culture. We miss the winter rains of the coast, and escape the up-country summer hailstorms. A rough estimate gives about 50 acres under Tuberoses in this colony, and the number of bulbs now in the ground nearly 3,000,000. *R. W. Adlam, Pieter Maritzburg, Natal.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, DECEMBER 30, 1885.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 90 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°	°			In.
24	30.30	+0.44	37.5	27.0	10.5	32.1	— 6.1	29.1	88	E.N.E.; N.W.	0.00
25	30.19	+0.32	37.2	25.1	12.1	33.0	— 5.6	30.3	90	S.; S.S.W.	0.00
26	30.24	+0.36	42.0	32.6	9.4	38.3	+ 0.5	36.4	94	N.W.	0.00
27	30.34	+0.45	38.2	30.2	8.0	34.5	— 3.1	33.0	94	W.	0.00
28	29.72	—0.17	47.0	31.0	16.0	41.1	+ 3.6	37.1	85	S.W.	0.17
29	29.71	—0.19	38.0	32.0	6.0	34.7	— 2.7	29.7	81	S.W.	0.00
30	29.97	+0.07	37.2	26.0	11.2	32.0	— 5.3	26.7	79	N.W.	0.24
Mean	30.07	+0.18	39.6	29.1	10.5	35.1	— 2.6	31.8	87	Variable.	0.41

Dec. 24.—Fog in early morning; fine bright cold day.
— 25.—Very dull day.
— 26.—Thin fog in early morning; dull day.
— 27.—Dense fog from early morning till 3 P.M. Fine night.
— 28.—Dull day and night; rough wind.
— 29.—Snow fell about 7.30 A.M. Fine bright day; snow and sleet at 7 P.M.
— 30.—Fine day, cold; heavy rain at night.

LONDON: *Atmospheric Pressure.*—During the week ending December 26 the reading of the barometer at the level of the sea decreased from 30.21 inches at the beginning of the week to 30.13 inches by 1 P.M. on the 20th, increased to 30.16 inches by 9 A.M., and decreased to 30.12 inches by 1 P.M. on the 21st, increased to 30.59 inches by 9 A.M. on the 23d, decreased to 30.45 inches by 1 P.M. on the 24th, increased to 38.48 inches by 5 P.M. on the same day, decreased to 30.32 inches by 5 P.M. on the 25th, and was 30.46 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.34 inches, being 0.07 inch lower than last week, and 0.31 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 47°.5, on the 21st; on the 23d the highest temperature was 37°. The mean of the seven high day temperatures was 41°.6.

The lowest temperature was 25°.1, on the 25th, on the 21st the lowest temperature was 40°.4 The mean of the seven low night temperatures was 33°.3.

The greatest range of temperature in one day was 12°.1, on the 25th; the smallest on the 23d was 6°. The mean of the seven daily ranges was 8°.3.

The mean temperatures were, on the 20th, 41°.3; on the 21st, 44°.6; on the 22d, 43°.; on the 23d, 34°.2; on the 24th, 32°.1; on the 25th, 33°; on the 26th, 38°.3; of these the 20th, 21st, 22d, and 26th were above their averages by 1°.6, 5°.3, 4°.2, and 0°.5 respectively, the rest were below by 4°.2, 6°.1, and 5° respectively.

The mean temperature of the week was 38°.1, being 3°.5 lower than last week, and 0°.5 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 52°, on the 21st. The mean of the seven readings was 44°.5.

The lowest reading of a minimum thermometer placed on grass was 20°.9 on the 24th. The mean of the seven readings was 31°.3.

Rain.—Rain fell on the 22d, to the amount of 0.02 inch.

ENGLAND: *Temperature.*—During the week ending December 26 the highest temperatures were 53° at Truro, 51°.4 at Plymouth, 48°.5 at Bristol; the highest at Bolton, 45°.7, at Wolverhampton and Hull 46°. The general mean was 47°.9.

The lowest temperatures were 24°.6 at Wolverhampton, 25° at Cambridge, 25°.1 at Blackheath; the lowest at Sunderland was 32°, at Liverpool 31°.9, at Sheffield 31°. The general mean was 28°.2.

The greatest ranges were 27°, at Truro, 22°.5 at Cambridge, 22°.4 at Blackheath; the least ranges were 15°.7 at Liverpool, 16° at Sunderland, 17° at Sheffield and Hull. The general mean was 19°.7.

The mean of the seven high day temperatures was highest at Truro, 47°.8, at Plymouth 46°.4, at Sheffield, 45°.7, and was lowest at Blackheath, 41°.6, at Wolverhampton 42°.2, at Brighton 43°.1. The general mean was 44°.1.

The mean of the seven low night temperatures was highest at Liverpool, 38°.1, at Truro 36°.3, at Plymouth and Sunderland 36°.1; and was lowest at Wolverhampton, 32°.5, at Bolton 33°.2, and at Blackheath and Hull 33°.3. The general mean was 34°.9.

The mean daily range was greatest at Truro, 11°.5, at Plymouth 10°.3, at Sheffield 10°.1; and was least at Liverpool, 6°.1, at Brighton 7°.6, at Bradford 7°.7. The general mean was 9°.2.

The mean temperature was highest at Truro, 42°.1, at Plymouth 41°.3, at Liverpool 41°.2; and was lowest at Wolverhampton, 37°.3, at Blackheath 38°.1, at Bolton 38°.2. The general mean was 39°.5.

Rain.—The largest falls were 0.46 inch at Bolton, 0.32 inch at Plymouth, 0.26 inch at Liverpool. The smallest falls were 0.01 inch at Bradford, 0.02 at Blackheath, 0.03 inch at Sheffield. The general mean was 0.12 inch.

SCOTLAND: *Temperature.*—During the week ending December 26, the highest temperature was 52°, at Perth; at Edinburgh and Greenock the highest temperature was 48°. The general mean was 49°.4.

The lowest temperature in the week was 25°.5, at Glasgow; at Leith the lowest temperature was 31°.7. The general mean was 28°.9.

The mean temperature was highest at Paisley, 41°.4; and lowest at Perth, 39°.9. The general mean was 40°.7.

Rain.—The largest fall was 0.76 inch, at Aberdeen; the smallest fall was 0.15 inch, at Glasgow. The general mean fall was 0.35 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, December 28, 1885, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been cloudy or dull generally. Mist and fog were again prevalent during the greater part of the week, but scarcely any rain fell (except in the extreme north) until towards the end of the time, when showers of rain, hail, sleet, or snow were experienced.

The *temperature* has been 1° above the mean in "Ireland, S.," and "England, N.E.," and from 2° to 4° above in Scotland; but in all other parts of the kingdom it has varied between 1° and 3° below. The maxima, which were registered on different days in the various districts, ranged from 49° in the north and west of Scotland, and in the south of England and north of Ireland, to 53° in "Ireland, S." The minima, which were recorded during the first half of the period, varied between 21° in "England, N.W.," 23° in the south and south-west of England and over Ireland, and 31° in the "Channel Islands."

The *rainfall* has equalled the mean in "Scotland, N.," but in all other districts it has been considerably below.

Bright sunshine has again been very little prevalent. In "Scotland, N.," it was quite absent, while elsewhere the percentage of the possible duration ranged from 6 in the "Midland Counties" to 22 in "Scotland, E.," and 27 in the "Channel Islands."

Depressions observed.—The distribution of pressure over our islands was mainly anti-cyclonic, while depressions—some of them large and deep—travelled eastwards or north-eastwards over Scandinavia. Towards the close of the period, however, an extensive depression, whose track lay rather more to the southward, brought a rapid fall of the barometer to all the more northern parts of our islands, and caused the wind, which had generally been light or moderate between west and north-west or north, to shift to the westward or south-westward, and increase to a gale on nearly all our coasts, accompanied by squalls of rain, hail, or sleet.

Obituary.

WILLIAM COLE.—Amongst those who have held a prominent position as plant growers and exhibitors, there was no one better known than Mr. Cole, of Manchester, and to the wide circle of those who knew him the announcement of his sudden and unexpected death will cause a feeling of pain and regret. He died from the rupture of a blood-vessel on December 26, at Didsbury, near Manchester, where he resided. His father, whose name was long associated at the metropolitan exhibitions with those of Baines, Green, May, Taylor, and a few others, who were the pioneers that led the way in showing what it was possible to effect in plant-culture, was an ardent cultivator and successful exhibitor. The son inherited the father's passionate love of the pursuit which, combined with unremitting watchfulness and attention to his favourites, resulted in the marvellously fine collections of plants he so often used to exhibit at Manchester and many other places.

—— Many of our readers will be sorry to hear of the death of Mr. WILLIAM KEMP, gardener to the Duke of Northumberland, Albury Park, Guildford. He died on the 23d ult., aged fifty-five, after about a month's illness. Mr. Kemp had been thirty years at Albury, and was a very successful plant grower and exhibitor both at Regent's Park and Guildford, and a judge at Regent's Park for many years. He served his time under Mr. Forbes, the gardener at Woburn Abbey, and afterwards went to Highclere, Lord Carnarvon's, and from there to Albury.

Answers to Correspondents.

CHRYSANTHEMUMS DAMPED-OFF: *G. Paton.* The plants were housed late, and have been kept badly ventilated, and perhaps placed too thickly together.

CYCLAMEN: *C. W. D.* The soil in which the plants are growing is of a sour nature, is too finely comminuted, and contains a great deal of sand. Only sound fibry loam should be used with a very little peat or leaf-mould, and no sand, unless the first-named is of a clayey nature. The plants appear to have suffered from too much water, and insufficient ventilation.

MANURIAL VALUE OF LEAVES: *O.* See *Gardeners' Chronicle*, p. 618, November 14, 1885.

NAMES OF FRUITS: *Seven Pears sent without an address from Lewes.* 1, Léon Le Clerc de Laval; 2, Winter Crassane; 3, Duchesse d'Angoulême; 7

Knight's Monarch; others decayed. — *J. H.* 1, Winter Hawthornden; 2, King of the Pippins; 3, Clarke's Pippin.—*A. P.* Kentish Golden Knob.

NAMES OF PLANTS: *W. H.* 1, Adiantum tenerum; 2, *A. macrophyllum*; 3, Cheilanthes elegans; 4, Asplenium cicutarium; 5, Adiantum cardiochlæna, *alias* polyphyllum; 6, sterile branch of Anemidictyon phyllitidis.

QUANTITY OF HALF-INCH BONES FOR VINE BORDER 20 FEET BY 16 FEET: *A Subscriber.* Two cubic yards will be sufficient if the border be 3 feet in depth.

SNOWDROP BULBS: *T. T.* The bulbs are too small to be good blooming ones, and especially so if double.

INTELLIGENT READERS, PLEASE NOTE. — *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

CATALOGUES RECEIVED.

IRELAND & THOMSON, 20, Waterloo Place, Edinburgh—Vegetable and Flower Seeds.

LAING & CO., Forest Hill, S.E.—Seeds, Novelties, Begonias, &c.

F. ROEMER, Quedlinburg, Germany — Flower, Vegetable, and Agricultural Seeds.

ALEX. DICKSON & SONS, Belfast—Seeds.

THOS. METHVEN & SONS, 15, Princes Street, Edinburgh—Seeds.

DICKSON, BROWN & TAIT, 43 and 45, Corporation Street, Manchester—Seeds.

HARRISON & SONS, Market Place, Leicester—Seeds.

B. S. WILLIAMS, Upper Holloway—Flower, Vegetable, and Agricultural Seeds.

J. CHEAL & SONS, Crawley, Sussex—Garden Seeds.

J. & R. THYNE, St. Vincent Street, Glasgow—Garden Seeds.

C. FIELDER, Reading, Berks—Seed Potatos.

JAS. CARTER & CO., 237 and 238, High Holborn, London—"Vade Mecum."

F. & A. DICKSON & SONS, Upton Nurseries, Chester—Vegetable and Flower Seeds.

SUTTON & SONS, Reading—"Amateurs' Guide for 1886."

JOHN WATERER & SONS, Bagshot, Surrey—Rhododendrons, Trees and Shrubs.

W. LEIGHTON, 89, Union Street, Glasgow — Garden Seeds.

COMMUNICATIONS RECEIVED:—C. N. (many thanks).—Prof. Max Cornu, Paris.—W. G. S.—A. D. W.—M. D., Dalkeith (many thanks—under consideration).—J. W. Keele (many thanks)—J. T. B., Lamorran (next week).—W. T. T. D.—Prof. Macoun, Ottawa.—Lord Brabazon.—H. E.—R. D.—E. D.—J. F.—I. C.—A. D. W.—Agnes.—H. G. J.—Max Leichtlin.

DIED, on December 20, 1855, M. JOSEPH VANDERSWAELMEN, of Gentbrügge, Belgium.

Markets.

COVENT GARDEN, December 31.

MARKET quiet, with no alteration. Good samples of Grapes maintain their value. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Apples, per ½-sieve	1 0– 3 0	
— Canadian, barrl.	10 0–20 0	
Grapes, per lb.	1 6– 4 0	
Kent Cobs, 100 lb.	22 6–27 6	
Lemons, per case	15 0– ..	
Pine-apples, Eng., lb	1 0– ..	
— St. Michael, each	2 0– 7 0	
Pears, per dozen	1 0– 2 6	
— per ½-sieve	1 6– 3 0	

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	5 0– ..	
Beans, Kidney, lb.	1 0– ..	
Beet, red, per dozen	1 0– 2 0	
Broccoli, bundle	0 9– 1 0	
Cabbages, per dozen	1 6– ..	
Capsicums, per doz.	0 6– ..	
Carrots, per bunch	0 6– ..	
Cauliflowers, per doz.	2 0– 3 0	
Celeriac, per root	0 3– ..	
Celery, per bundle	1 6– 2 0	
Coleworts, doz. bunch	4 0– 6 0	
Cucumbers, each	1 0– 1 6	
Endive, per dozen	1 0– 2 0	
Herbs, per bunch	0 2– ..	
Leeks, per bunch	0 3– 0 4	
Lettuce, per dozen	1 0– 1 6	
Mushrooms, punnet	1 0– 1 6	
Mustard and Cress, do.	0 4– ..	
Onions, per bushel	4 0– ..	
Parsley, dozen bunch	2 0– 3 0	
Parsnips, per dozen	1 0– ..	
Potatos, per cwt.	4 0– 5 0	
„ kidney, per cwt	4 0– 5 0	
Salsafy, per bundle	0 9– ..	
Scorzonera, p. bundle	1 0– ..	
Seakale, punnet	2 6– ..	
Shallots, per pound	0 3– 0 4	
Spinach, per bushel	4 0–6 0	
Sprouts, per pound	0 3– ..	
Sprue, bundle	1 0– ..	
Tomatos, per lb.	0 6– 1 0	
Turnips, bunch	0 6– ..	

POTATOS.—Magnum Bonums, bad trade, 50*s.* to 80*s.*; Regents, 60*s.* to 80*s.* per ton; German Reds, 2*s.* to 2*s.* 6*d.* per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9 0–18 0	
Arbo. vitæ (golden), per dozen	6 0–18 0	
— (common), dozen	6 0–12 0	
Arum Lilies, dozen	12 0–18 0	
Azaleas, per doz.	24 0–42 0	
Begonias, per dozen	6 0–12 0	
Bouvardia, doz.	12 0–18 0	
Cineraria, per doz.	10 0–12 0	
Cyclamen, 12 pots	12 0–24 0	
Cyperus, per dozen	4 0–12 0	
Dracæna terminalis, per dozen	30 0–60 0	
— viridis, per doz.	12 0–24 0	
Erica, various, doz.	12 0–24 0	
Euonymus, in var., per dozen	6 0–18 0	
Evergreens, in var., per dozen	6 0–24 0	
Ficus elastica, each	1 6– 7 0	
Ferns, in variety, per dozen	4 0–18 0	
Foliage Plants, various, each	2 0–10 0	
Hyacinths, per doz.	9 0–12 0	
— Roman, per pot	1 0– 1 3	
Marguerite Daisy, per dozen	8 0–12 0	
Myrtles, per dozen	6 0–12 0	
Palms in var., each	2 6–21 0	
Pelargoniums, scarlet, per dozen	6 0– 9 0	
Poinsettia, per dozen	12 0–18 0	
Primulas, single, 12 pots	4 0– 6 0	
Tulips, 12 pots	8 0–12 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Abutilon, 12 bunches	2 0– 4 0	
Acacia (Mimosa), Fr., per bunch	0 6– 1 0	
Arum Lilies, 12 blms.	6 0– 9 0	
Azalea, 12 sprays	1 0– 1 6	
Bouvardias, per bun.	0 6– 1 0	
Camellias, 12 blms.	3 0– 6 0	
Carnations, 12 blms.	1 0– 3 0	
Chrysanth., 12 blms.	2 0– 4 0	
— 12 bunches	9 0–18 0	
Cyclamen, doz. blms.	0 6– 0 8	
Epiphyllum, dozen blooms	0 6– 1 0	
Eucharis, per dozen	5 0– 8 0	
Gardenias, 12 blooms	6 0–18 0	
Hyacinths, Rom., 12 sprays	1 0– 2 0	
Lapageria, white, 12 blooms	2 0– 3 0	
— red, 12 blooms	1 0– 2 0	
Lilium longiflorum, 12 blooms	9 0–12 0	
Marguerites, 12 bun.	3 0– 6 0	
Mignonette, 12 bun.	3 0– 6 0	
Pelargoniums, per 12 trusses	1 6– 2 0	
— scarlet, 12 trusses	0 9– 1 0	
Poinsettia, 12 blms.	4 0– 8 0	
Roses (indoor), per dozen	1 0– 3 0	
— Tea, French, doz.	0 9– 1 6	
— red, French, doz.	3 0– 4 0	
Tropæolum, 12 bun.	2 0– 3 0	
Tuberoses, 12 blms.	1 6– 2 6	
Tulips, doz. blooms	1 0– 1 6	
Violets, 12 bunches	1 0– 1 6	
— Czar, Fr., bunch	1 0– 2 0	
— Parme, French, per bunch	4 0– 5 0	

SEEDS.

LONDON: *Dec.* 30.—The seed market to-day presented quite a holiday appearance, and the business done was very limited. All descriptions remain firm, and no change in values can be noted. Stocks generally are in moderate compass, and no inundation of red Clover seed from America is this season possible. Bird seeds meet a slow sale on former terms. The cold weather hardens the prices of Peas and Haricot Beans. Feeding Linseed is quiet. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

MARK LANE: *Dec.* 28.—The agricultural outlook has not been very materially changed during the past week. The trade has ruled as dull as it very well could do, and has been upon the smallest scale. English Wheat has, in some of the country markets, sold rather lower, and at Mark Lane to-day slightly easier rates were also taken, whilst the average price for the kingdom has been further reduced. With these prices foreign Wheats hardly now compete. Grinding Barley is weaker. Beans show steady value. Peas and Lentils barely support late rates. Good Oats are 3*d.* dearer on the week.

Dec. 30.—There has been no appreciable change in the Wheat and flour trades to-day. Grinding Barley was firmer, and prices tended against buyers. Oats are firm, and good sound qualities tend in sellers' favour.

Average prices of corn for the week ending Dec. 26: —Wheat, 30*s.* 2*d.*; Barley, 29*s.*; Oats, 18*s.* 3*d.* For the corresponding period in 1883:—Wheat, 31*s.* 5*d.*; Barley, 31*s.* 2*d.*; Oats, 19*s.* 5*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Dec.* 30.—Fairly good supplies of all kinds, with a dull demand. Quotations:—Apples, 2*s.* to 4*s.* 6*d.* per bushel; Pears, 2*s.* to 4*s.* do.; Cabbages, 2*s.* 6*d.* to 4*s.* 6*d.* per tally; Savoys, 3*s.* to 7*s.* do.; Cauliflowers 4*s.* to 7*s.* 6*d.* do.; Spinach, 2*s.* 6*d.* to 3*s.* per sieve; Brussels Sprouts, 3*s.* to 4*s.* do.; Celery, 2*s.* to 6*s.* dozen bundles; greens, 3*s.* to 3*s.* 6*d.* per dozen bunches; Turnips, 2*s.* 6*d.* to 3*s.* do.; Carrots, 1*s.* 6*d.* to 2*s.* do.; Beetroot, 2*s.* 6*d.* to 3*s.* do.; Parsley, 1*s.* 6*d.* to 2*s.* do.; Onions, 4*s.* 6*d.* to 5*s.* per cwt.; Carrots, in sacks, 30*s.* to 50*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 25*s.* to 27*s.* 6*d.* do.; Mangels, 20*s.* to 25*s.* do.

STRATFORD: *Dec.* 29.—Supplies have been good during the week, and a fair trade has been done at the following prices:—Cabbages, 5*s.* to 6*s.* per tally; Savoys, fine, 7*s.* 6*d.* to 12*s.* do.; do., small do., 4*s.* to 6*s.* do.; greens 3*s.* to 5*s.* per dozen; Sprouts, 3*s.* to 7*s.* per sieve; Mangels, 18*s.* to 24*s.* per ton; Swedes, 24*s.* to 30*s.* do.; Carrots, cattle feeding, 28*s.* to 35*s.* do.; do., household, 40*s.* to 50*s.* do.; Turnips, 40*s.* to 70*s.* do.; do., bunch, 3*s.* to 4*s.* per dozen; Onions, 70*s.* to 80*s.* per ton.

POTATOS.

BOROUGH AND SPITALFIELDS: *Dec.* 29, — Best qualities are firm and in moderate demand. Other grades dull, and prices irregular, as follows:—Regents, 60*s.* to 120*s.*; Magnum Bonums, 50*s.* to 100*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Dec.* 30. — Magnums, 50*s.* to 70*s.*; Regents, 60*s.* to 70*s.*; Victorias, 50*s.* to 60*s.*; and Champions, 50*s.* to 60*s.* per ton.

STRATFORD: *Dec.* 29. — Magnums, 50*s.* to 80*s.*; Regents, 70*s.* to 90*s.*; Champions, 50*s.* to 60*s.*; and Reading Heroes, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 24 bags from Hamburg, 15 from Rotterdam, 726 from Harlingen, and 5 from Christiania.

HAY.

WHITECHAPEL: *Dec.* 29 — Moderate supplies and very dull trade, especially for hay, which is exceedingly slow of sale. Quotations:—Clover, prime, 90*s.* to 105*s.*; inferior, 60*s.* to 85*s.* Hay, prime, 70*s.* to 88*s.*; inferior, 50*s.* to 65*s.*; Straw, 28*s.* to 37*s.* per load.

Dec. 31.—There was a moderate supply on sale, and the trade was very dull at Tuesday's prices.

CUMBERLAND (Regent's Park): *Dec.* 29. — A fair supply, with moderate demand. A very dull trade for Clover and mixture. Quotations:—Clover, best, 90*s.* to 105*s.*; second, 70*s.* to 90*s.* Hay, best, 72*s.* to 85*s.*; second, 60*s.* to 70*s.* Straw, 30*s.* to 36*s.* per load.

STRATFORD: *Dec.* 29.—Hay, 65*s.* to 90*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 38*s.* per load.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

4*d.* per bushel; 100 for 25*s.*; truck (loose, about 2 tons), 40*s.*; 4-bushel bags, 4*d.* each.

LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks 25*s.*; sacks, 4*d.* each.

BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; sacks, 4*d.* each.

COARSE SILVER SAND, 12. 9*d.* per bushel; 15*s.* per half ton, 26*s.* per ton in 2-bushel bags, 4*d.* each.

YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF MOULD, 1*s.* per bushel.

SPHAGNUM MOSS, 8*s.* 6*d.* per sack.

MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—**H. G. SMYTH**, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

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Quality, THE BEST in the Market. (All sacks included.)
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PEAT, best black fibrous .. 3*s.* 6*d.* „ 5 sacks for 15*s.*
PEAT, extra selected Orchid 5*s.* 6*d.* „
LOAM, best yellow fibrous .. „
PREPARED COMPOST, best
LEAF MOULD, best only .. } (1*s.* per bush., sacks included).
PEAT MOULD, „ ..
SILVER SAND, coarse, 1*s.* 3*d.* per bush., 12*s.* half ton, 22*s.* ton.
RAFFIA FIBRE, best only .. .. 1*s.* per lb.
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 18*s.*
TOBACCO PAPER „ (Spécialité) 8*d.* lb., 28 lb. 18*s.*
MUSHROOM SPAWN, finest Milltrack .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each; 10 sacks, 9*s.*; 15 sacks, 13*s.*; 20 sacks, 17*s.*; 30 sacks, 25*s.*; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

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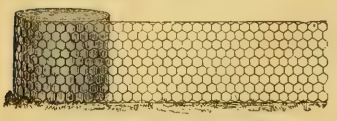
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2-in. mesh. Poultry	Light.	19	3 0	4 6	5 6	7 6	9 0	12 0	18 0
	Medium	18	3 6	5 3	7 0	8 9	10 6	14 0	21 0
1½-in. mesh. Rabbit.	Light.	19	4 0	6 6	8 0	10 6	12 6	16 0	24 0
	Medium	18	4 6	6 9	9 0	11 3	13 6	18 0	27 0
1-in. mesh. Small Rabbit.	Light.	19	4 6	6 9	9 0	11 3	13 6	18 0	27 0
	Medium	18	5 3	7 1	10 6	12 1	15 8	21 0	31 4

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1½-in	7 6	11 3	15 0	22 6
1-in.	11 6	17 3	23 0	34 6



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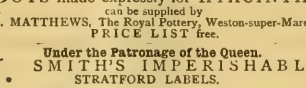
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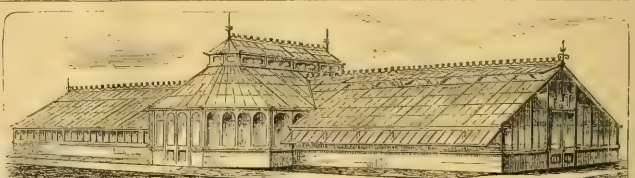


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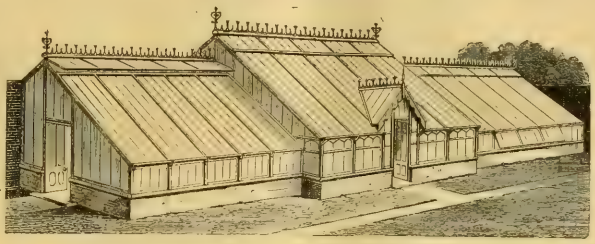
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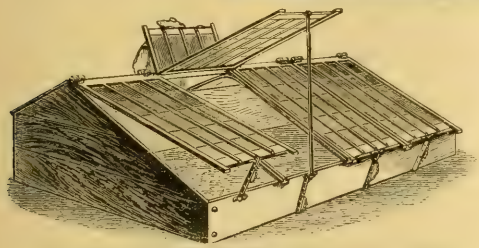
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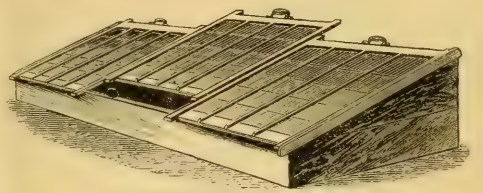


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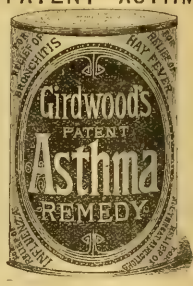
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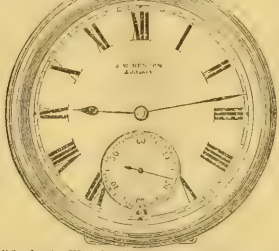
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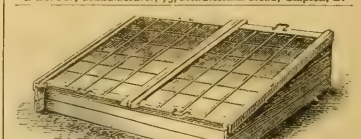
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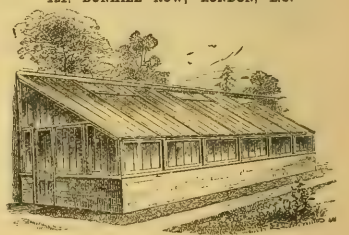
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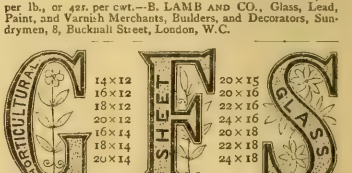
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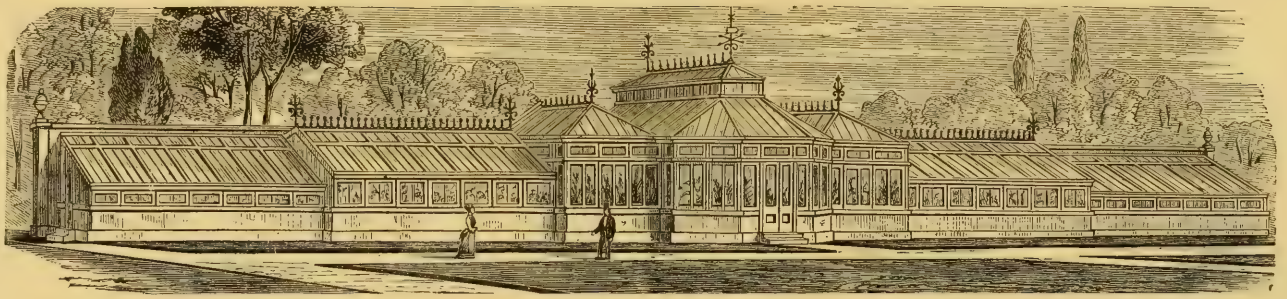
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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE!—COMMITTEE MEETINGS. Fruit and Floral, at 11 A.M., in the Conservatory: SCIENTIFIC, at 1 P.M., in the Lindley Library, on TUESDAY NEXT, January 12.

N.B.—Exhibitors' Entrance, east side of Royal Albert Hall.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

DATES OF THE MEETINGS.

OF THE

SCIENTIFIC, FRUIT, and FLORAL COMMITTEES in 1886.

SCIENTIFIC COMMITTEE.

Tuesday, January 12.	Tuesday, May 11 and 25.
Tuesday, February 9.	Tuesday, June 8 and 22.
Tuesday, March 9 and 23.	Tuesday, July 13 and 27.
Tuesday, April 13 and 27.	Tuesday, November 9.
Tuesday, December 7.	

FRUIT AND FLORAL COMMITTEES

Tuesday, January 19.	Tuesday, July 13.
Tuesday, February 9	Tuesday, July 27.
Tuesday, March 9	Tuesday, August 10.
Tuesday, March 23	Tuesday, August 24.
Tuesday, April 13.	Tuesday, September 7.
Tuesday, April 27.	Tuesday, September 21.
Tuesday, May 11.	Tuesday October 12.
Tuesday, May 25.	Tuesday, October 26.
Tuesday, June 8	Tuesday, November 9.
Tuesday, June 22.	Tuesday, December 7.

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5000 LILIUM AURATUM, 1250 L. LONGIFLORUM, 150 L. SPECIOSUM ROSEUM, and 400 L. S. ALBUM, 250 L. KRAMERI, and 1000 L. TIGRINUM(?), all in the finest possible condition; also 50 0 PEARL TUBEROSES, 3000 PAMPAS PLUMES, Home-grown LILIES, TIGRIDIAS, GLADIOLI, &c.

MR. J. C. STEVENS will SELL by AUCTION, as above, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, January 11, at half-past 12 o'Clock precisely.

On view morning of Sale and Catalogues had

Wednesday Next—(Sale No. 7062.)
HARDY PLANTS and BULBS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, January 13, at half-past 12 o'Clock precisely, several hundred first-class Standard and Dwarf ROSES, including all the leading varieties; Pyramid and Dwarf-trained FRUIT TREES, of sorts; Hardy BORDER PLANTS, in quantity; LILIUMS, GLADIOLI, DAFFODILS, and other BULBS, for present planting.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7063.)
A fine importation of CATTLEYA MOSSIÆ, in splendid condition, and many in full leaf.
ODONTOGLOSSUM CRISPUM ALEXANDRÆ, the best type, in fine condi ion, and extra fine pieces.
WHITE LÆLIA ANCEPS, from the same importation as those that have recently flowered. Semi-established,
ESTABLISHED ORCHIDS in variety, &c.

MR. J. C. STEVENS will SELL by AUCTION as above, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Messrs. Shuttleworth, Carder & Co., on THURSDAY NEXT, January 14, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his next SALE of ORCHIDS in FLOWER will take place at his Great Rooms, 38, King Srreet, Covent Garden, W.C., on WEDNESDAY, January 20, and he will be glad if gentlemen desirous of entering Planss for this Sale will please send particulars not later than THURSDAY NEXT.

Wednesday Next.

CONSIGNMENT of CAMELLIAS, AZALEAS, FICUS, and other PLANTS from Belgium; an importation of Californian LILIES in variety; 600 Standard and other ROSES from an English Nursery; a choice assortment of hardy home-grown LILIES and BULBS, TUBEROSES, SPIRÆAS, LILY of the VALLEY; a consignment of beautiful IRIS from Japan, in 30 distinct sorts.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, January 13, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.
ONCIDIUM JONESIANUM.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on FRIDAY NEXT, January 15, at half-past 12 o'Clock precisely, a grand importation of ONCIDIUM JONESIANUM, in splendid condition, some marvellous masses being amongst them; also a very fine lot of ONCIDIUM MARSHALLIANUM, in large masses; CATTLEYA MOSSIÆ, CATTLEYA WARNERI, ODONTOGLOSSUM ALEXANDRÆ, finest possible varieties; and many other valuable ORCHIDS.

On view morning of Sale, and Catalogues had.

Flowering Orchids.—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SPECIAL SALE of the above will take place on TUESDAY, January 26, for which they will be glad to RECEIVE NOTICE of ENTRIES as early as possible.

Central Sale Rooms, 67 and 68, Cheapside, E.C.

Exotic Nursery, Tooting.
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises as above, on WEDNESDAY, January 27, the whole of the well-grown NURSERY STOCK.

BY ORDER OF THE EXECUTORS.

The American Nurseries, Leytonstone
(adjoining the Station), and the Wanstead Nursery, Wanstead Flats.

GREAT UNRESERVED SALE of valuable NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises as above, on TUESDAY, February 2, and two following days, a large portion of the valuable NURSERY STOCK, covering several acres of ground, which has been carefully prepared for transplanting.

Fuller particulars will appear.

IN LIQUIDATION.

The Cranston Nursery and Seed Company, Limited,
King's Acre Nurseries, Hereford.

PRELIMINARY NOTICE.—Important to Noblemen, Gentlemen, Nurserymen, and others extensively engaged in Planting.

GREAT UNRESERVED SALE of NURSERY STOCK, affording an opportunity of securing Stock in such quantities as is seldom met with at an Auction.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from the Liquidator to make preparations for the SALE by AUCTION of the whole of the extensive stock of EVERGREENS, CONIFERS, FRUIT TREES, ORNAMENTAL and FOREST TREES, &c., during the present year.

The FIRST SALE will take place on TUESDAY and WEDNESDAY, February 23 and 24, fuller particulars of which will appear in further Advertisements.

Auction Offices, 67 and 68, Cheapside, E.C.

Important to those Seeking a Nursery, Florist, or SEED BUSINESS.

MESSRS. PROTHEROE AND MORRIS are about completing a new issue of their "HORTICULTURAL REGISTER," containing particulars of numerous Businesses for Sale requiring a capital of £300 to £10,000.

Gentlemen and others are invited to write for a Copy, giving a description of the property that is required, and a Register will be forwarded marked with those places that appear most suitable. No charge made to applicants.

This Register will also be found a valuable medium for the Disposal of Businesses. Terms and Forms for Inserting Particulars sent free of charge.

Auction and Estate Offices, 67 and 68, Cheapside, London, E.C. (First Floor).

Valuable Collection of Orchids for Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that they will shortly offer for SALE the large and valuable COLLECTION of ORCHIDS made by the late R. P. Percival, Esq., of Birkdale, Southport.

Catalogues will be ready in a few days, and will be sent post-free on application.

The Company are also daily expecting fresh importations of East Indian and Mexican Orchids, particulars of which will also be sent on application.

Seed Business
The Cranston Nursery and Seed Company (Limited), in Liquidation.

TO BE SOLD, as a going concern, the old-established SEED BUSINESS now carried on in Broad Street, Hereford.

Apply to the LIQUIDATOR, King's Acre, Hereford, or to Messrs. Protheroe & Morris, 67 and 68, Cheapside, London, E.C.

To Florists.

TO BE LET, or the Freehold to be SOLD, of a FLORIST, with six Glass Houses, 60 feet long, well stocked with Flowers; eight-roomed House, Stables, Loft, and Piggeries; five and a half acres of Ground, well stocked with Fruit Trees. Plenty of Water. Rent £100 per year, or freehold £2000. Close to station.

Apply, 72, Parade, Tunbridge Wells.

TO BE LET, on LEASE, through death of Owner, a compact little MARKET NURSERY, in good working order. Rent £50 per annum, with Stock at Valuation. This is a chance for an energetic man with a small capital seldom met with.

Apply to T. ROCHFORD, Northumberland Park, Tottenham, London.

Splendid Chance for an Industrious Man.

DWELLING-HOUSE (double-fronted), six large Glass Houses (some heated), and Garden Ground at Tottenham. Rent only £30; may be purchased at £40 per year, without interest

Apply, Mr. READ, 6, Worship Street, E.C.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Lisria Park, Stamford Hill, N.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

NOTICE IS HEREBY GIVEN, that the ANNUAL GENERAL MEETING of the Subscribers to this Institution will take place on FRIDAY NEXT, January 15, at "SIMPSON'S," 101, STRAND, W., for the purpose of receiving the Report of the Committee and the Accounts of the Institution for the present year, and electing Officers for the ensuing year; and to place TWENTY-FIVE PENSIONERS on the Funds. The Chair will be taken at 5 o'Clock precisely.

By order, EDWARD R. CUTLER, Sec.

January 1, 1886.

NATIONAL AGRICULTURAL HALL COMPANY (Limited).

President—The Right Hon. the Earl of ZETLAND.
Chairman—The Right Hon. the Earl of LATHOM.

The DIRECTORS INVITE APPLICATIONS for space within the Large Hall, which it is expected will be ready for opening about May next. Particulars can be obtained of the SECRETARY, at the Office of the Company, where a Plan of the Building can be seen.

Offices:—295, St. Margaret's Offices, Victoria Street, Westminster, S.W.

The Nurseries, Trinity Road, Wandsworth Common, S.W.

ROBERT NEAL (late R. & G. Neal) begs to offer to Gentlemen, Nurserymen, Builders, and others, the large and varied stock of well-grown FRUIT, FOREST, and other TREES and SHRUBS, too numerous to mention, grown at these Nurseries. The whole of the Stock is remarkably clean and well rooted, and especially adapted for Town planting.

The Nurseries are one mile from Clapham Junction, and a quarter of a mile from Wandsworth Common Station.

MELON, CUCUMBER, and BEET SEED.—We have a supply, of our own growing, of a beautiful new Afghan netted MELON, "The Ameer," grown to 7 or 8 lb. each, deep pink flesh, delicate flavour, suitable for exhibition. A packet of 12 seeds, 1s; the Improved Golden Perfection, a lovely Melon, 18 seeds, 1s. The Improved Telegraph CUCUMBER, prolific, handsome, and the very best for table use, 24 seed, 1s. The choicest Blood-red BEET, the best in cultivation, 1s. per packet of 1 ounce. Post-free. Apply to MANAGER, The Nurseries, 10, Cumberland Park, Willsden Junction, Middlesex

PALMS.—A few hundreds of splendidly grown healthy Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, Areca lutescens, and Euterpe edulis, 12 inches high, 4s. per dozen, 25s. per 100; same sorts, 20 inches high, 12s. per dozen, less quantity, 1s. 3d. each.

FERNS.—Strong, healthy, and handsome Lomaria gibba, Adiantum cuneatum (Maidenhair), Pteris tremula, Pteris serrulata, Pteris serrulata cristata, Pteris cretica albo lineata, Pteris argyrea, out of small pots, 20s. per 100, 3s. per dozen.

GARDENIA INTERMEDIA (true), 6s. per dozen,
Packages and parcels post-free.
GARDENER, Holly Lodge, Stamford Hill, London, N.

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

THE COMMITTEE beg to GIVE NOTICE that they have secured permanent Offices at

No. 50, PARLIAMENT STREET, WESTMINSTER, S.W.,
near Westminster Bridge,

and it is respectfully requested that all communications may be addressed there.

By Order,
EDWD. R. CUTLER, Sec.

November 3, 1885.

The Finest Celeries yet introduced are
WRIGHT'S GROVE RED, WHITE, PINK, and GIANT WHITE.

Extract from *Gardeners' Chronicle*, October 31, 1885, report of show at South Kensington, page 567:—"Turning to the single dish classes, we found no less than twenty lots of Celery, in sizes, generally very fine and clean. Here Mr. Richards, of Somerley Park Gardens, was *first* with a superb clean, solid sample of Wright's White, good as could be desired."

GROVE RED and WHITE have also been awarded First Prize. Packets 1s. each, four varieties, 3s., post-free.

CUCUMBER, PARAGON, also PRINCE OF WALES, packets, 1s. each, free.

W. WRIGHT, Market Square, Retford.

LILIES FROM JAPAN.
LILIUM LONGIFLORUM (grand variety).
" AURATUM
" HUMBOLDTII.
" LEICHTLINII.
" ELEGANS, rich apricot.
" THUNBERGIANUM.
" " AUROSANGUINEUM.
" " semi-double, second row of petals white.
" " light orange.
" SPECIOSUM RUBRUM, deep red, white margin.
" " ALBUM, yellow stamens.

Our L. LONGIFLORUM, from same source, last year contained a large percentage of Eximium and Wilsonii.

The above fine varieties have just arrived from Japan. For prices see our Wholesale Seed CATALOGUE, to be had on application. Special quotations for quantities.

WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

SPECIAL CHEAP OFFER. — PINES, Austrian, from 2 to 6 feet: LARCH, from 2 to 4 feet; FIR, Scotch, 12 to 24 inches; ELM, 3 to 4 feet, 4 to 5 feet; ASH, Common, 2 to 3 feet, 3 to 4 feet, 4 to 5 feet; BIRCH, 1½ to 2 feet, 2 to 3 feet, 7 to 8 feet, 8 to 10 feet; CHESTNUT, 1 to 2 feet; HORNBEAM, 2 to 3 feet, 3 to 4 feet, 7 to 8 feet, 8 to 9 feet; MAPLE, 4 to 10 feet; OAK, English, from 1 to 10 feet; POPLARS, Lombardy, 7 to 8 feet, 8 to 10 feet, 10 to 12 feet; POPLARS, American, 7 to 8 feet, 10 to 12 feet: PRIVET, Evergreen, 2 to 3 feet, 3 to 4 feet; good: PRIVET, Oval-leaf, 2 to 3 feet, 3 to 4 feet, fine; QUICK, THORN, 4, 5, and 6-yr., fine; SYCAMORES, 3 to 4 feet, 4 to 5 feet, 7 to 8 feet, 8 to 9 feet; AUCUBAS, 2 to 3 feet; BERBERIS AQUIFOLIA, BOX, CUPRESSUS, various; ELDERS, Gold; CURRANTS, flowering; HOLLIES, in great variety; IVIES, in sorts; JUNIPERS, LABURNUMS, LAURELS, assorted; RHODODENDRONS, several hundred thousand of all sorts and sizes—beautiful stuff; RETINOSPORAS, YEWS, Common and Irish. For Price LIST, &c., apply to

ISAAC MATTHEWS AND SON, The Nurseries, Melton, Stoke-on-Trent.

Established 1827.

TO FLORISTS and GENTLEMEN, or AMATEURS. For Forcing this Winter.

LILAC CHARLES X., and ALBA VIRGINALIS, nice plants, cultivated in pots, four to eight flower-buds, £5 to £8 per 100.

" from Persia, 3 to 3½ ft., bushy, full of flowers, £6 per 100.

PRUNUS SINENSIS, flore pleno, nice plants, in pots, £5 per 100, or 15s. to £1 2s. per dozen.

DEUTZIA GRACILIS, nice plants for pot culture, six to eight branches, £10 to £12 per 1000.

SPIRÆA JAPONICA, fine plants for forcing, £8 £10, and £12 per 1000

ROSES, SOUVENIR DE MALMAISON, LA FRANCE, and fifty of the very best sorts for pot culture, own roots, 12s., £11 per 100; 2-yr. transplanted, £4 per 1000

ROSE, Tea, budded on Brier roots, fifty of best sorts, £21 per 1000

PRUNUS PISSARDI.

The very finest Ornamental Trees ever seen, foliage of deep red colour, keeping until frost. Wood of a fine deep black colour; brilliant; very hardy and vigorous.

Young Plants about 1½ foot high, per 100, £3; per dozen, 25s.

Middle-size Plants, 2 to 3 feet, per 100, £4 to £5; per dozen, 12s. to 15s.

Strong Plants, bushy and pyramid, 4 feet to 5 feet, per 100, £10; per dozen, £1 5s.

" pyramid, bushy, 5 to 7 feet, per dozen £1 10s. to £2.

Extra strong pyramid, bushy, 6 to 8 feet, per dozen, £2 to £3.

Standards, fine specimen, per dozen £1 15s. to £3.

ACER NEGUNDO fol. variegata, to be planted with Prunus Pissardi, 2 to 3 to 4, and 6 feet, £2, £3, £4, and £7 per 100.

CATALOGUES, printed in English, of Fruit Trees of every description, trained or not trained, Roses, Peonies, Clematis, New Plants, and others, sent free on application.

L. PAILLET, Nurseryman, Chatenay, près Paris, France.

WHOLESALE SEED CATALOGUE.—Our Catalogue of Garden and Flower Seeds, Novelties, and Bulbs for Spring Planting, is now ready, and may be had on application. All our Customers should have already received one by post, and they will oblige by advising us if not to hand. The above also includes List of a few choice Lilies just to hand from Japan—L. auratum, L. longiflorum, L. Hansoni, &c.

WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

IMPORTANT ANNOUNCEMENT.

T. JACKSON & SON,

HAVING STILL A LARGE QUANTITY OF

NURSERY STOCK

of all descriptions,

Comprising DECIDUOUS and EVERGREEN SHRUBS, FOREST TREES, ROSES and FRUIT TREES, have succeeded in getting an extension of time for clearing their Kingston Hill Nurseries, till Lady Day, by which time everything must be cleared; prices are consequently greatly reduced, and no reasonable offer refused.

Nurseries, Kingston-on-Thames.

TELEGRAPHIC ADDRESS:—"Jackson, Kingston-on-Thames."

ORNAMENTAL PLANTS.

100 ORNAMENTAL TREES, in 50 distinct varieties, including the new golden Sycamore, purple Maple, purple Plum, purple Birch, several variegated Acers, Elms, &c., 4 to 5 feet high, for 30s.

100 ORNAMENTAL DECIDUOUS SHRUBS, in 50 distinct varieties, 2 to 4 feet high, for 15s.

100 ORNAMENTAL EVERGREEN SHRUBS, in 50 distinct varieties, 2 to 4 feet high, for 40s.

100 CONIFERS, in 100 distinct varieties, from 1 to 3 feet high, for 60s.

100 DWARF ROSES, in 100 finest varieties, for 30s.

100 RHODODENDRONS, in 100 finest varieties, 1 to 2 feet high, for 100s.

100 PRIMROSES, in 30 distinct hardy varieties, for 30s.

All safely packed in mats or hampers, package free, for cash with order.

MORRISON BROTHERS, Nurseries, Aberdeen.
Telegraphic Address—"FORBESFIELD, ABERDEEN.

OUR NEW HYBRID "CANTERBURY BELLS."

Were it not that the Rev. H. H. D'OMBRAIN, Messrs. A. F. BARRON, and H. TURNER called at our Nursery and saw the actual flower we should have hesitated before introducing to the Public an illustration of such a remarkable production.

SEEDS, 1s. and 2s. per Packet.

For fuller particulars of this and many others, see our "FLORAL GUIDE," sent Free for 1s. 3d.



Our "FLORAL GUIDE" for 1886

Not only contains authentic descriptions of all NEW and POPULAR PLANTS of the year, but all the best and most serviceable varieties (and their Seeds) in cultivation, with our usual immense amount of thorough practical information, with THREE SPLENDID COLOURED ILLUSTRATIONS, and several hundreds of the finest Woodcuts ever seen in any Catalogue. Sent post-free to those who really have flowers from us.

Mr. JAMES ARTHUR, Gardener, *Inverdon House, Aberdeen, January 1*, 1886:—"Would you send me your 'Floral Guide for 1886,' for which I enclose stamps. The Guide is such a useful work that it seems I cannot do without it."

Rev. H. SCOBELL, Chaplain, *Benares, N.W.P., India, December 2*, 1885:—"The Plants, Bulbs, and Seeds you packed for me to carry out in your Beaumont case arrived in good order, and will do well now they are planted out. Please send me your Catalogue for New Year."

H. CANNELL & SONS, The Home of Flowers, SWANLEY, KENT.

SEEDS OF SUPERIOR QUALITY.

WM. PAUL & SON

(*Successors to the Late A. PAUL & SON, Established* 1806)

BEG TO ANNOUNCE THAT THEIR

ILLUSTRATED CATALOGUE

OF SELECT VEGETABLE, FLOWER, AND OTHER SEEDS, &c.,

Is Now Ready, and will be forwarded Post-free on application.

☞ Many Seeds are home-grown, and all are selected with the utmost care from the most celebrated stocks at home and abroad, in order to secure their Customers the best quality that can be obtained at the lowest possible prices to be remunerative.

IMPORTANT—Observe Christian Name:—

Wm. PAUL & SON,

PAULS' NURSERIES AND SEED WAREHOUSE,

WALTHAM CROSS, LONDON, N.

PURE NEW SEEDS.

Vegetable & Flower Seeds.

All of the Highest Class

Unsurpassed and Unsurpassable

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F. & A. Dickson & Sons
The Queen's Seedsmen,
CHESTER.

Each Variety saved with special care from the most famous Strains in Cultivation.

Write for Catalogue —Post Free

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PURE NEW SEEDS.

Catalogue 1886, Post Free.

F. & A. Dickson & Sons

THE QUEEN'S SEEDSMEN

(SPECIALLY APPOINTED)

CHESTER.

NOW READY FOR SPRING 1886,

PRICE 1s., POST-FREE

(*Gratis to Customers or intending Purchasers*).

DANIELS BROS.'

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GUIDE

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AMATEUR GARDENERS,

CONTAINING

One Hundred and Twenty Pages of beautifully Illustrated Letterpress, with Two Superb Coloured Plates, enclosed in a handsome Chromo-lithographed Wrapper.



Also a complete LIST of choice KITCHEN GARDEN and FLOWER SEEDS, SEED POTATOS, GLADIOLI, LILIES, ROSES, choice FLORISTS' FLOWERS, including **New Chrysanthemums, New Fuchsias, New Pelargoniums, New Dahlias, &c., &c.,** and many other SPLENDID NOVELTIES. Should be read by every one interested in Horticulture.

DANIELS BROS.,
SEED GROWERS AND NURSERYMEN,
NORWICH.

PRIZE COB, FILBERT,
AND OTHER FRUIT TREES.

Gentlemen intending to make Plantations should apply for
CATALOGUE and PAMPHLETS
on *How to Make Land Pay*, and *How to Plant and Prune*, to
Mr. COOPER, F.R.H.S., Calcot Gardens, Reading.

Every Garden and every Gardener suited with a
SUPERB COLLECTION of ROSES,
at Prices ranging from 2s. 6d. to £20.
Carefully Packed, and sent Post-free or Carriage Paid to any Railway Station or Port in the British Isles.
FOR FULL PARTICULARS APPLY TO
EWING & CO.,
SEA VIEW NURSERIES, HAVANT, HAMPSHIRE.

ROSES.
20 Acres of grand plants in best varieties.

BUSHES, H.P., 8s. per dozen, 60s. per 100. } *Packing and Carriage FREE*
STANDARDS, H.P., 15s. per dozen, 105s. per 100. } for Cash with Order.
CLEMATIS (80,000), 12s. to 24s. per dozen.
ROSES, in Pots (80,000) 15s. to 36s. per dozen.
FRUIT TREES (7½ Acres).
VINES (6000) 3s. 6d. to 10s. 6d.
ORCHARD HOUSE TREES, "Fruiting," in Pots.
STRAWBERRIES, 4s. per 100; Forcing, 15s. to 25s. per 100.
ASPARAGUS, 2s. 6d. per 100; Forcing, 12s. 6d. per 100.
EAKALE, strong Forcing, 16s. per 100.
EVERGREENS, CONIFERS ORNAMENTAL TREES (9½ Acres).
FLOWERING SHRUBS, 8s. per dozen.
FOREST TREES, HEDGE PLANTS, UNDERWOOD, &c.

SEEDS
Of Finest Quality.

Descriptive LISTS of above and BULBS free.

RICHARD SMITH & CO.,
WORCESTER.

FERNS A SPECIALTY.
THE LARGEST STOCK IN THE TRADE.

ILLUSTRATED CATALOGUE, containing "Hints on Fern Cultivation," 1s.
SMALLER CATALOGUE, of over 1200 species and varieties, free on application.
Special Descriptive "LIST OF NEW, RARE, AND CHOICE FERNS," free.
Descriptive "LIST OF HARDY NORTH AMERICAN FERNS," free.

W. & J. BIRKENHEAD,
FERN NURSERY, SALE, MANCHESTER.



PINE-APPLE NURSERY,
MAIDA VALE, LONDON, N.W.

New Autumn LIST of Cheap Offers in Ornamental Plants, sent on application, for the Stove, Greenhouse, and Garden. Choice quality.

HENDERSON & SON.

100 HARDY GARDEN FLOWERS, hardy herbaceous plants, in 100 varieties, 10s., 21s.
100 STOVE OR GREENHOUSE PLANTS, the most beautiful flowering and ornamental foliage, in 100 varieties, for 63s. and 105s.; or in 50 varieties, 42s. the 100.
12 AZALEA INDICA, splendid varieties for 18s.; 12 hardy Ghent varieties, 18s.; 12 A. Mollis, all the above covered with flower-buds, 12s. and 18s.
12 CAMELLIAS, covered with buds, 21s. and 30s.
12 DRACÆNAS, 12 sorts, very ornamental, 6s., 9s.
12 CROTONS, beautiful sorts, 6s., 12s.
12 GARDENIAS, large, set well for flower.
12 MAIDENHAIR FERNS, 12 sorts, 6s., 9s.
12 PALMS, Ornamental varieties, 6s., 9s., 12s.
12 EUCHARIS AMAZONICA (Amazon Lily), 6s., 9s., 12s
12 TREE CARNATIONS, choice sorts, 6s.
12 AFRICAN ASPARAGUS, a lovely plant, 18s., 21s.
12 BOUVARDIAS, in 12 fine varieties, 6s., 9s.
In less quantities at the same rate.

Thomson's Improved Vine, Plant and Vegetable Manure.
MANUFACTURED SOLELY AT CLOVENFORDS.

For Prices and Testimonials, apply to
WILLIAM THOMSON & SONS,
CLOVENFORDS, by GALASHIELS.
Can be had from all Nurserymen and Seedsmen.

Old Established SEEDS — APPOINTED BY SPECIAL WARRANT — JAMES DICKSON & SONS — PLANTS — BULBS — Chester.

"Planting Season."
"Unequalled for quality, Variety & Extent"

FOREST, FRUIT & ALL OTHER TREES & PLANTS.
ROSES EVERGREENS VINES &c
Descriptive Catalogues Post Free.
"James Dickson & Sons" "Newton" Nurseries
TELEGRAPHIC ADDRESS CONFIDENCE CHESTER. Chester.



HIGH-CLASS
VEGETABLE AND FLOWER SEEDS,
INCLUDING
NOVELTIES,
at most moderate prices.

Send for large CATALOGUE (Gratis and Post-Free) and compare.

E. J. JARMAN, The People's Seedsman,
CHARD, SOMERSETSHIRE.



CUTBUSH'S MILL-TRACK MUSHROOM SPAWN.—Too well known to require description. Price 6s. per bushel (1s. extra per bushel for package), or 6d. per cake; free by parcel post, 1s.

None genuine unless in sealed packages and printed cultural directions enclosed, with our signature attached.

WM. CUTBUSH AND SON (Limited), Nurserymen and Seed Merchants, Highgate Nurseries, N.

B. S. WILLIAMS'
FLOWER VEGETABLE AND AGRICULTURAL
SEEDS
FOR PARTICULARS SEE ILLUSTRATED CATALOGUE POST FREE
LONDON N
SEEDSMAN UPPER HOLLOWAY

VEGETABLE & FLOWER
SEEDS
Now ready Post free
Descriptive Catalogue & Cultural Guide
J. CHEAL & SONS
Crawley Sussex.

Hooper's
Splendid Seeds and Bulbs at low prices
The Covent Garden Seed Warehouse
Catalogues free & Gratis

LÉNAULT-HUET, NURSERYMAN, Ussy, Calvados, France, begs to offer the following FOREST TREES, FRUIT TREES, and EVERGREENS, in large quantities:—
Maple, Hornbeam, Quicks, Privet, Hazel, Beech, Ash, Holly, Oak, Lime, Spanish Chestnut, Quince, Cherry, Maha'eb and Avium; Common Apple, St. Julien, Myrobolan; Spruce, Fir, Larch, Pine, Arbor-vitæ. Can be obtained as seedlings and transplanted from one to four years at the cheapest prices.
Samples and CATALOGUES free on application.

LEICESTER SEEDS.
HARRISON & SONS'
GENERAL CATALOGUE, POST-FREE.

Specially arranged for Seedsmen, Market Growers, Gentlemen, Amateurs, &c.

ALL THE BEST KINDS OF VEGETABLE AND FLOWER SEEDS
of unsurpassed quality, and in many instances superior to any that can be obtained elsewhere.

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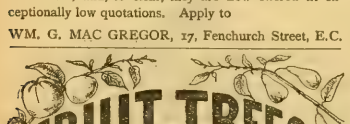
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THE

Gardeners' Chronicle.

SATURDAY, JANUARY 9, 1886.

EAST HORSLEY TOWERS.

NOVEMBER is not the best month for a country ramble, but Surrey is always cheerful, and her sandy lanes are always dry. I had never seen the new railway to Guildford. I remember the coach from Guildford which carried me to school through Leatherhead and over the Thames at Battersea, and then the new route home by railway from Vauxhall, and after that another line from London Bridge *viâ* Red Hill, which cut through copses and bridged streams in which with gun and rod I had often sported. There is now a third railway to Guildford through villages which lie far back in my remembrance in that part of life which seems like a dream when one thinks of it.

Wishing to see Clandon Park and East Horsley Towers again, and to ascertain whether time had turned the latter grey—for I had not seen the place since the Earl of Lovelace's alterations, when he enlarged the house and erected the present entrance lodge—I took train to Great Bookham. The railway has now opened up East Horsley and Clandon, and there are stations at each, but I wished for a walk, so I left the train at Bookham and then strolled on by the pales of Eastwick Park, and asked Mr. Ager, the gardener, to show me the grounds. Mr. Keswick, the owner, is abroad, but I had heard of the Italian house, and knew the place was rather famous, so I took it *en route*. This place was formerly a seat of the Howards, lords of the manor of Great Bookham. In the church just opposite the humble but hospitable inn, is a painted glass window, interesting as a memorial of Lord Raglan, who died in his command before Sebastopol; and in the neighbouring church of Effingham lie some old lords of that name who held the manor, as the Howards did after them. The name of Effingham would probably sound familiar to many persons who might not at first remember that the Lord High Admiral who dispersed the Spanish Armada was Lord Howard of Effingham. He took his title from this little place in Surrey, became Earl of Nottingham, and was buried at Reigate.

How full of memories is Surrey! Lord Raglan's memorial window was erected by his niece, Lady Mary Farquhar, of Polesden, a place within a mile, where Sir Walter Farquhar, Bart., now lives, and where Richard Brinsley Sheridan formerly resided. In the same church the same lady erected another painted window to her mother, the Duchess of Beaufort, and if these memorials of rank, worth, and genius, do not suffice, the rambler may learn further that enterprise and commerce are also represented in this locality by the present owner of Eastwick Park as they were by a former owner, David Barclay, a merchant of great fame. In the last century, when Mr. Barclay flourished, the Kings of England, on coming to the throne, were accustomed to visit some noted person in the City for the sake of witnessing the Lord Mayor's Show, and it happened, much to Mr. Barclay's honour, that the three first Georges

at their accession each paid him a visit and saw the show from his windows. Eastwick Park is a very pleasant place, a good house, and a well planted park, with a tree in the grounds which puzzled me at a distance, and proved to be a dead Larch, about 80 feet high, covered to the very top with Ivy. Does this stump belong to art or Nature? In either case it seems worthy of a note.

A walk of three or four miles brought me to East Horsley Towers, where I asked, remembering old times, if Lord Lovelace still rode on horseback. He is, and was, Lord Lieutenant of the county, and I used to think, as a boy, that his office occasioned his long rides to distant parts of the county, for you might often meet him many miles from home. The brave old lord still rides, in his eighty-first year. He was on the hill (part of the North Downs) above the house at the time of my call, where he is having a quantity of timber planted, and where he amuses himself for hours daily, inspecting the work, and sometimes helping a little; and as his lordship is [a vegetarian he may earn as much as his dinner costs, perhaps, some days. Live on sixpence a day, earn it, and escape the gout.

Mr. Waldron, the gardener, showed me the grounds. The house stands well in a good park. Flints are easily attainable here, and flints and mortar have entrapped the noble owner into a large expenditure, with great improvement of the original house. Lord Lovelace bought this property thirty-five years ago, when he removed from the old family residence, Ockham Park, which he had inherited as eighth Lord King. I have read somewhere of the added towers here—"two stately towers command the entrance, one of which is circular and surrounded with machiocoules." One cannot help asking why towers are required for this purpose, since a policeman would perform the duty better. On high ground and commanding sites an imitation of the military architecture of old times may be admired, but that can hardly be the case with towers, added or original, in a smooth, delightful park like this. There are very costly cloisters, too, of which any person in a critical humour would say *cui bono?* They lead from a door on the south-east side of the house round and round a long way, enclosing the courtyard of the kitchen entrance, and so on and on to the chapel on the north side. This is far too indirect a route to be much frequented, and unfortunately the passage is too dark for plants. If architects would only consider before beginning, "What good object will this serve?" they might spare their employers great expense and subsequent vexation.

The architect here will be remembered for his oddities, but as long as the noble hedges of Yew and Box surround the courts and fence the grounds, so long at least will the present owner be remembered gratefully: he planted them himself. There are six acres of shrubbery fenced from the park by a low ornamental flint and brick built wall, pierced with narrow openings. The turf is exquisite, such as few soils produce far from chalk which here rises in a ridge within a mile. The Yew is at home here, the Araucaria imbricata dies from the dryness of the subsoil probably. The Cedars of Lebanon are grand, the Hollies ornamental as they ever are, Wellingtonias do well, and two of the noblest Pinsapo Firs that are often met with stand among the ornamental evergreens of the pleasure garden, with foliage finely developed and drooping like that of the Douglas Fir. These are specimens of unusual size and beauty, and the same may be said of an Abies Nordmannia, a grand tree of its kind. Abies cephalonica is here too, with heavy drooping foliage, and must have been planted here, together with several other tender Firs which have just been mentioned, in the earlier years of its introduction. This noble batch of some of the more tender Conifers speaks well for the dry and healthy subsoil, and for the climate of Surrey. On such a soil one would not expect to find a handsome sheet of water on the north side of the house laving the walls of the building, but it is, I believe, artificially retained.

The obvious taste and skill displayed here in gardening extend to the kitchen garden, which is inclosed by a wall well coped, while the ground is planted with Apples and Pears in long rows by the sides of the walks and trained over them, so as to form bowers, very pleasing to stroll through, whether the trees are in blossom or covered with ripe fruit. Among other objects that arrest the eye here I observed one of the largest of Mulberry trees which ripened this year a heavy crop.

I must not omit to notice in connection with this fine park and residence the origin and history of the family who have now made it their chief residence. The first ennobled member was Lord Chancellor King, who was created Viscount King and Baron of Ockham in 1725. He possessed, as we read on his monument in Ockham Church, "a genius superior to his birth," and accordingly his cousin, John Locke, author of the *Essay on the Understanding*, advised him to avoid commerce and devote himself instead to the bar. This encouragement led him to take the loftier flight which carried him to the House of Commons and the Woolsack. His descendant was created Earl of Lovelace in 1838, the year of Her Majesty's coronation, three years after his marriage to Ada, the daughter of Lord Byron, of whom the poet wrote "Sole daughter of my house and heart."

Darkness was gathering when I left the grounds, passed the model cottages of the little village, and took my way down a lane to the railway station—a strange phenomenon to one revisiting this part of Surrey and remembering East Horsley as one of the most retired places in the world. *H. E.*

THE ISLES OF SCILLY.

(*Concluded from p.* 8.)

THE early Potato trade has been a distinct success. The tubers are fit to dig about ten days earlier than in the Channel Islands, and are so much earlier than those on the mainland that gangs of workmen are able to cross over, assist the islanders in the digging and washing, and get back to their home in time for the commencement of the same work there. As a crop of Mangels follows immediately on the same fields, the manuring is extremely heavy. The manure used is taken from a pile formed some time beforehand, consisting of layers of seaweed and ordinary farmyard manure, with an admixture of hypophosphates proportionate to the size of the pile. An additional supply of chemical manure is added later on, when the shaws are about a foot high, to impart a fresh spurt and help the endeavour to swell the tubers. In quality the Scilly Potatos are quite the pink of perfection, as might be expected from the light rich soil.

Fresh seed Potatos are imported every year, those grown in Lincolnshire and the fen districts being found far more reproductive than the supply from the Western Counties. Immediately on being received the Potatos are stored in a loft and encouraged to sprout. The system of storing is well worthy of imitation. The Potatos are put on sliding shelves, so that one tier can be removed in a moment of time without disturbance of the others. The arrangements for the washing of the Potatos, which trade conventions rather stupidly demand, are likewise of a nature to minimise trouble and work as much as possible. As with the Narcissus every protection possible is given to ward off the violence of the wind, which is sometimes so fierce as to whirl the haulms almost from the ground, and invariably lays them as flat as if a roller had passed over the ground. Cultivation in frames is likewise extensively adopted. After the Potatos are removed Tomatos are planted in the frames and grown in a similar way to Cucumbers.

Seakale and Asparagus are likewise lucrative objects of culture. The method adopted with the former is most simple, the rows being simply covered with seaweed. The Asparagus beds were very vigorous. The most successful grower on the islands declares that he uses scarce any stimulant at all to increase the vigour of his beds, but that they are formed entirely of the natural soil of his garden. An inspection of his garden shows how well the Chrysanthemums and Maréchal Niel Roses would do if planted on a large scale, and well tended. In fact, the capabilities of the Scilly Islands for producing what might be termed unseasonable flowers and fruits, are only beginning to be developed. The inhabitants will soon wish that there was double or triple the amount of land available for cultivation.

The islands as a health resort have not been much frequented. The violent gales and long-continued fogginess will never allow them to become a desirable winter residence; but as a bracing summer, spring, and autumn resort, there can be few places on our coasts which have greater recommendations. The islands are so small, that one who sojourns there for a time has a great many of the advantages of a voyage with none of the discomforts, for every breeze is sea-engendered.

In the life, it is almost an autobiography, of George Eliot, the few pages telling of her stay in Scilly show a vivid appreciation of its peculiar beauties. The varied colouring of the rocks, she writes, she has never seen surpassed or even equalled. That "Cornish worthy," Walter Tregellas, boldly claims for the headland of Peninnis that it contains the grandest and most fantastic assemblage of granite rocks in England. Although the rocks are partially undermined, and here and there disclose wide yawning gaps, they are still proudly defiant to the insidious or terrific attacks of the sea. On the ground above the cliffs bouldery rocks and pinnacles afford patent and queer proof of the weathering influence of wind and rain. Peninnis Head is a lonesome and aweful scene, yet one which on a bright summer's day, when the ambient tide is dimpled with scarce visible ripples, seems to carol in the sunlight.

The seaward gazing combes of the North Devon coast are missed, on the slopes of which nestle so prettily cottages with sharp-pointed gable windows and flower-embowered porches—

> "The fair democracy of flowers
> That equals cot and palace."

Instead, the houses are ugly and whitewashed, with heavy stones and thick ropes strapped on to the roof to keep it from being blown away. Again there are no flowery meadows and chattering brooks. Some compensation is made, however, on Tresco, by breezy uplands, where the Heather and Furze lavish purple and gold. The Furze very seldom gets much higher than the Ling, so that the eye ranges over a particoloured plateau to where, on the confines, an old ruined watch-tower gives the same relief to the picture as the windmills in Ruysdael's "Sunny Solitudes." There are some old kistvaens on Sampson, but otherwise there is not much that is antiquated from which the learned in such matters may part the Blackberry vines of old tradition.

It is the sea, however, that makes a residence in Scilly so delightful. The channels between the islands are often shallow, and the water most picturesquely painted. One outlook from old Grimsby harbour is particularly fine.

The sea is studded with islands, some of them sheer masses of granite raised high above the water, the facets of which sparkle brightly, others are desolate-looking and bare of aught but purple Heather and sun-burnt grass. The long line of St. Martin's, which is inhabited and discloses at either end glimpses of the ocean, forms the horizon. The colour of the water in the channels varies from green, purple, black, slaty, brown, to blue—while a fringe of white is given where the waves curl frothily over Golden Bar.

The sunsets are indescribably grand. A favourite vantage ground is Garnson Hill, on St. Mary's, but the visitor will find a still better one on some high ground behind Cromwell's Castle. Immediately in front is the bold, high and serrate point called Shipman's Head, which forms the extremity of the island of Bryher. It is with this headland in the near distance, with ink-black shadows at its feet, that the departing glory of the sun is seen. Southward beyond the rosy-purple is often a soft Daffodil light, while to the northward the dusk thickens on the milk-white sea. *Vagabond.*

New Garden Plants.

ONCIDIUM LEPTURUM, *n. sp.* *

THIS is the first heteranthous Oncid with the fully developed lip of a "Basilata." It is very broad, dilated, heart-shaped at the base, and becoming narrower and narrowed, ending in a very small bifid apex. There is a cushion of finger-like calli at the base. The lateral sepals are spreading and divaricate. The sepal and the petals approximate, all cuneate, oblong acute. The lateral sepals are of the same outline, divaricate at right angles with the dorsal sepal. The columnar wings are large, rounded, lobed. The flowers are of sulphur colour, with numerous light brown spots on the superior part of the lip, and single ones on the sepals and petals. There are numbers of those small fascicles, which are abortive flowers, in the great branched inflorescence (see p. 462 of Dr. M. T. Masters' *Vegetable Teratology*, a book the first edition of which is exhausted, while a second is so much wanted that I know numerous botanists who are well off, and who have to borrow this very useful book they would wish to consult so often from libraries).

Mr. T. Christy, F.L.S., imported this curiosity from Bolivia. It was accidentally shown by this gentleman in the big rooms of Mr. Stevens to a *habitué* of that orchidic centre. This gentleman stated that it was an old well-kown thing; I would delight in learning its name.

I am informed by Mr. Christy, that the inflorescence came from the young growth. The pseudobulb as kindly sketched for me, is a pyriform, 2-leaved body. It is said to be angular, bright green, with slightly shining surface. Leaves cuneate oblong-acute. *H. G. Rchb. f.*

LÆLIA ANCEPS (*Lindl.*) HILLIANA, *Rchb. f.*

This lovely variety appears to possess some extravagance in the mid-lacinia of its lip. There are no two lips alike in the different specimens in my herbarium, and my sketches give the same evidence. I do not know how Mr. W. Lee's brilliant specimens are in this respect. Perhaps the flowers have improved, beautiful as they were in 1881 and 1883, as I know from the lucky possessor's liberality. Now, Mr. B. S. Williams kindly sends me a flower of this Hilliana, stating, "it is the finest I have seen." Though I may not be regarded as an adequate compeer of our veteran, who has the great advantage of seeing constantly the *crême de la crême* of what Albion produces in Orchids, I can yet quite endorse his opinion as to what I have seen. The great charm of this flower is the very great and very broad mid-lacinia of the lip. I learn that it comes from Mr. C. J. Partington, Haton House, Cheshunt. *H. G. Rchb. f.*

LÆLIA ANCEPS OBSCURA, *n. var.*

This is an interesting and fine variety, with narrow, very long sepals and petals, all of very dark colours, the sepals having a white area at the base. The disc of lip is dark orange, and the anterior parts are of darkest purple. There are no lines on the disc of the lip. It was kindly sent by Mr. W. Bull. *H. G. Rchb. f.*

DISEASE OF ODONTOGLOTS, CAUSED BY NEMATOID WORMS.

THE following instance of serious disease in Orchids is one of the most curious that has hitherto been recorded. It was detected by a correspondent of the

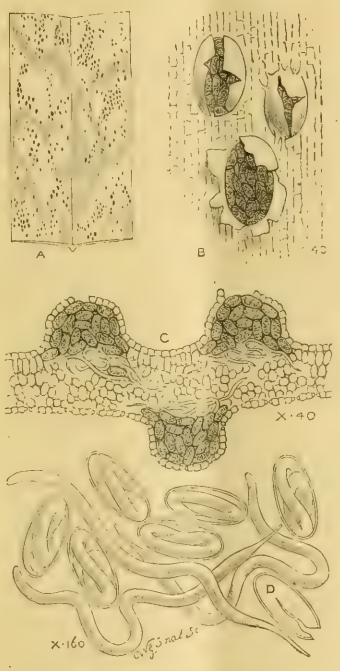


FIG. 7.—LEAF-WORMS OF ORCHID. (SEE TEXT.

Gardeners' Chronicle—Mr. R. P. Percival—who sent numerous leaves of diseased Odontoglots for examination. He very correctly described them (p. 725 of our last volume), and wrote in reference to the disease spots:—"With the aid of a pocket lens you will see groups of small lumps or dots raised on the surface. These I want you to particularly examine." The leaves sent, as Mr. Percival wrote, "were in various stages of decay."

The nature of the disease will be understood from the following notes and the accompanying illustration. A fragment of Odontoglossum leaf is shown at A, fig. 7, natural size. This shows the dark, boldly projecting dots. The dots occur on both sides of the leaf, but, as in many other instances of disease, the lower or softer surface is the more infested. When the spots are enlarged forty diameters they are seen as at B, the membrane of the leaf is torn, and a somewhat dark looking material is seen bursting from the leaf. When viewed with an inch object-glass, and magnified 40 diameters, as shown, no one could distingush the spots here illustrated from spots caused by Uredo, Puccinia, or other fungi. Some persons would term such an instance an example of "mimicry," or "protective resemblance"—terms constantly misapplied. I confess, however, that I was myself deceived by the spots, even after using the inch object-glass, to the extent that I laid the leaves aside (believing the spots to be caused by fungi) till I had looked over lists of fungi likely to be found on Odontoglots. My surprise was great, on removing one of the spots with a needle and applying a high power of the microscope, to find that the bodies I expected to be fungi, were really masses of Nematoid worms and their eggs. A section across a leaf, enlarged forty diameters, is shown at C, the lower surface is downwards, showing the stomata or organs of transpiration. Three dots, or pustules, are seen in section; in the two upper the cellular membrane of the leaf is broken, and the numerous eggs and worms are seen within the leaf, the former being confined to the pustules.

When the Nematodes and their eggs are removed from the spots and enlarged 160 diameters (the scale to which other Nematodes have been enlarged in former numbers of the *Gardeners' Chronicle*) they are seen as at the bottom of the illustration, the object at D being an empty egg case, from which a Nematode has escaped. Three worms are shown free, the others are coiled up within the eggs.

I have on previous occasions recorded Nematodes from the pseudobulbs of Orchids, in which position they cause decay; but I have not before seen them on Orchid leaves. It is curious that the extremities of the leaves are worse infested than the basal portions, so that Mr. Percival cut off the "extreme tip" of one leaf for his own examination. As the Nematodes occur in all parts of the leaf as well as in the pseudobulbs no doubt the mature worms traverse the plants from the basal parts to the extremities of the leaves. It is remarkable that the mature worms should deposit their eggs in masses just under the thin leaf-membrane, and so set up a strong superficial resemblance to a fungus growth.

The microscopic worms reach the host plants through the soil. They are frequently in the water which is supplied to the plants, and they might be readily destroyed by any slightly caustic substance dissolved in the water, which substance need not injure (but might benefit) the plants. Not being attached to any garden, and there being no Orchid-houses conveniently near me, I have no opportunities for experiment. *Worthington G. Smith, Dunstable.*

NERINE.

IN compliance with Mr. Baker's desire, I beg to send you some observations on the species and varieties of this plant, which are not so much intended to supply any deficiencies in Mr. Baker's elucidating work, as to point out some horticultural differences, which it may be useful to know for the sake of distinction.

N. profusa, Hort., is alluded to as synonymous with venusta. Although its position near venusta in the system is perfectly well chosen, yet it differs in many points. It flowers with me about the latter half of August, at least fully four weeks earlier than N. venusta, being the very first of all the Nerines to flower. Its leaves are dark green, those of venusta are pale or pea-green; the perianth segments of profusa are narrower, not so wavy, not so much recurved and very acutely pointed, they have a shade of crimson on the scarlet and a remarkably brilliant metallic hue.

N. corusca major has a peculiar distinctive mark in the shape of its leaves; during their development they are oval, widening in the middle, a form not shown by any other species or variety.

N. insignis, Hort., Leichtlin, nearly agrees with the figure, *Bot. Mag.*, tab. 294, but N. sarniensis, as imported now-a-days from the Cape, is much inferior. The flowers of imported bulbs are, at least in my experience, much smaller and of a duller colour.

N. excellens, Moore, is well placed near flexuosa, but it is a very different hybrid, as I am led to suppose from the peculiarities of the flowers between flexuosa and humilis major. The scape is longer and the pedicels twice as long as those of flexuosa; the very large showy flowers are of a peculiar rosy-pink colour, each of the segments of which bear a well-marked crimson stripe. I regard this variety as a first-rate acquisition. I am, however, of opinion that in consequence of its being a newly raised hybrid, it

* *Oncidium lepturum*, n. sp.—(Heterantha: Lepturum, sect. nov.) Pseudobulbo pyriformi angulato diphyllo; foliis cuneato oblongis acutis; panicula ampla heterantha; sepalis tepalisque cuneato ligulatis acutis; labello basi late cordato, antice lineari bifido; calli dactylis angustis numerosis; columnæ ornithorhynchæ alis oblongis lobulatis.—Ex Bolivia, introd. cl. Christy. *H. G. Rchb. f.*

ought to find its place among those enumerated at the end of the synopsis on p. 810, vol. xxiv.

N. Elwesii I got from my friend Mr. Elwes, who had it from the Kew collection, where he had found it labelled pudica, probably by an accidental change of labels. I observed at once that it was a distinct plant and named it provisionally in compliment to my friend. As the leaves and the construction of the flowers present sufficient botanical characters I hope to see this name sanctioned by a better botanical authority than *Max Leichtlin, Baden-Baden.*

GARDENING IN WESTMINSTER.

If any one will take the trouble to walk down Ship Court, and look in at the adjoining Garden Court, both at the south end of the grounds of the Grey Coat Hospital, or will enter Hendon Court, near the Continental entrance of Victoria Station, or take any of the courts off Francis Street, on the south side of the site of the recently removed Tothill House of Correction, he will find that the following description holds good, with minor differences, for all of them as regards their external appearance.

The cottages are of one storey, with no rooms below ground. The walls are of red brick, in a few exceptional cases plastered and whitewashed, and the roofs are all of red tiles. Those window-frames that are of thick solid wood still remain as they were originally, but some have given place to the more slender modern type. The number of lattice-work door-porches to be seen would seem to indicate that they were "the fashion" when the cottages were built. These rows of cottages all run off from the main thoroughfare. Just as isolated cottages in the country generally have their gable end to the road, so these are built in rows, often at right angles to the road, but always in some way not parallel to it. The most remarkable feature, however, is that those which retain their early condition have gardens, and their walls are covered with creepers. In many cases these in summer are so thick not a brick is to be seen, while the porches are festooned with green, and the windows are shaded by the trailing branchlets. The creepers are Vine, Jessamine, Sweet Pea, Hop, Virginia Creeper, rarely Ivy, and in a few cases Fig. The gardens, with here and there an exception, where what is now called "carpet bedding" with variegated foliage has been adopted, grow the old-fashioned Larkspur, Marigold, Mignonette, London Pride, common Pelargonium, Dahlias, Evening Primrose, Sunflowers, Hollyhocks, Camomile, Old Man's Beard, Gooseberry and Currant bushes. In many cases the paths are of the old-fashioned cobble-stones, very few are gravelled, while for fencing wood is more generally seen than iron.

Such are some of the more readily noticed features of these courts, and it will be seen from this cold and colourless description what there is to delight an artist's eye. When, further, it is mentioned that in these courts children play together without fear of passing traffic or policemen, and that the housekeeping mothers are sometimes seen varying their every-day work by a chat from garden to garden, it requires but little imagination to think of these courts as in some village remote from a railway station—and yet they are in Westminster in 1885.

But how come the squalid courts? The process of degeneration can be traced step by step in other courts in the district.

The exact localities of the courts where gardens still are to be found, and where the loving care for plants is still to be seen, have been mentioned. It may not be agreeable to the occupiers of those which are sinking, or which have sunk, to a lower stage to have the locality mentioned; but they are within the district referred to, and whether the inferences drawn from appearances are correct or not can be easily judged by a personal visit. The first step seems to be to use the garden for some business purpose, such as the erection of a shed for work, or the breaking down of the garden fence to find room for a truck. There is one court at present with only one garden ground intact, all the rest being altered to suit the needs of the cottage occupiers. Want, necessity, remunerative utilisation of space, seems to be the first motive. Then, the love for the garden and its pleasure once gone, and the pride in its trimness lost, carelessness about accumulation of rubbish follows. There are courts which show not only this stage, but the next, where the creepers are gone, and the landlord, removing all paling and rubbish, has whitewashed the outside walls, and paved the court. Such a step is, perhaps, from a sanitary point of view, to be approved. Rubbish has accumulated. To clear it, pave the court, and insist that no rubbish shall be allowed, is, without doubt, one way to remove the evil. But the children have no longer flowers around them in their play. A paved court for tops, or marbles, or for chalking out lines for hop-scotch, is useful. But there still are some who believe in a moral influence in flowers. Another way of meeting the difficulty might, perhaps, be for the landlords to require that garden ground should be kept as such. From the paved court, clean and tidy, to the foul places marked out for demolition, the stages are easily understood. The whole series can be seen in Westminster, and the sight of them affords subject for reflection which here it would be out of place to dwell on.

That the love of flower growing has not died out with the destruction of flower gardens is evidenced by the extent to which what has come to be called "window gardening" is favoured in Westminster. *Journal of the Society of Arts.*

THE LATEST NOVELTIES.

(*Continued from p. 12.*)

Ferns.—The additions to the Ferns have not been numerous in 1885, but several of the newcomers are of excellent quality. Davallia retusa, with its handsome broad frondage somewhat resembling a gigantic form of the favourite D. Mooreana, promises to make a grand and easily managed subject, either in large or small plants, or as specimens for exhibition; and in the latter capacity it will be one of the most telling plants we have. Cyathea divervens is also a noble plant, with long arching fronds, with handsomely arranged pinnæ of a pleasant green. This Fern also promises well as a basket plant as also for general purposes. Lomariopsis buxifolia, which received a First-class Certificate when Messrs. Veitch & Sons exhibited it at the Royal Horticultural Society in September last, is a rare Fern with something the appearance of one of the larger Trichomanes, its shining green pinnæ springing from the blackish rachis, giving it much the appearance of a Filmy Fern. The fine plant exhibited was climbing up a Tree Fern stem, and its scandent habit tells that it will be very useful in many ways. Adiantum cuneatum elegans is a pretty form apparently just intermediate between the true A. cuneatum and A. gracillimum, the elegant form, of the latter being maintained, but the size and texture of the pinnules more nearly resemble those of the original species. Adiantum Mairiesi is another sport or hybrid: it is a handsome form, like a large A. cuneatum with the more massive appearance of A. Capillus-Veneris magnificum. The fronds run about 1 foot in length, and 9 inches in width, and are elegantly and loosely arranged. This section of Adiantum is never too full, and the A. Mairiesi will be well worth its place. Dicksonia Lathami is a grand and distinct Fern, and although included in the list of novelties last year, it should again be noted, if only to call attention to the large engraving of it and its parts which was figured in the *Gardeners' Chronicle*, November 28, p. 689. It is a most extraordinary and handsome plant, raised by Mr. W. B. Latham, of the Birmingham Botanic Garden, between D. arborescens and D. antarctica. In some of its characteristics it resembles the beautiful golden-haired D. chrysotricha. D. Lathami has a stout trunk, and high, spreading, long, tripinnate, narrow, oblong fronds. A reference to the illustration above quoted will give a good idea of its very distinct and handsome character.

Stove Plants.

The proved and certificated flowering plants in this section do not show many additions, although some good things, such as Dipladenias, &c., are known to exist in some trade collections, and more will be heard of them shortly. Amasonia punicea, certificated to Messrs. Veitch both at the Royal Horticultural and the Royal Botanic Societies last year, is a very valuable plant on account of its showiness, durability and easy culture. In habit it is compact and elegant; its long sprays, with crimson bracts and calices to the tubular sulphur-coloured flowers, constituting it a desirable decorative subject, and one which will no doubt be extensively grown for market. The Aristolochia elegans of Mr. Bull, figured in the *Gardeners' Chronicle*, September 5, p. 301, is a gem among climbers, or for training over globes; its habit is neat, and its flowers cream-coloured, with purple markings and golden throat, marvels of beauty, possessing moreover a sweet odour—a quality to which most of the Birthworts cannot pretend. Anthurium chelseiense × is a desirable plant, both for foliage and flower. It is intermediate beween A. Veitchianum and A. Andreanum, and has handsome large leaves, something like those of the former, with showy crimson spathes resembling the latter. A. Veitchianum acuminatum is a distinct form with fine ovate-lanceolate leaves, gradually tapering to an acuminate point; and A. flavidum appears also well worthy of general cultivation. It is a tall grower, with fine bold foliage, having prominent midrib and veins. Pavetta montana, certificated to Mr. B. S. Williams at the Royal Botanic Society, May 20, is one of a well-known class having a strong family likeness. Those who do not know the plant may call it to mind by imagining a rather small-flowered, but large trussed, pure white Ixora.

Pitcher Plants.

Nepenthes cincta—a handsome form, with large pitchers, intermediate between N. Northiana and the Sarawak variety of N. albo marginata, is very handsome and distinct, the rich crimson markings on the soft green ground being even better than that of N. Northiana—has been certificated to Messrs. Veitch, and N. Excelsior to Mr. B. S. Williams. With respect to the latter, it is giving the best of characters to say that it is in the way of N. Rafflesiana; but seems dwarfer and more profuse in producing pitchers, the pitchers, too, are shorter, something like those of N. Hookeri, nearly covered with bright chocolate-crimson marbling. Sarracenia Atkinsoniana, certificated to Mr. Bull, and S. Buchanani, certificated to Mr. Williams, are both good, the latter having handsome short pitchers, the brightest and darkest red of any. S. Patersoni, a hybrid between S. Drummondi and S. purpurea, with something of the habit of S. Chelsoni, but with distinct traces of the white of S. Drummondi at the top of its pitchers, is also a worthy variety.

Amaryllids.

These have received some noble recruits during the year, and the efforts being made to introduce further improvements prove that the genus is one of growing importance. Eucharis Mastersii, of which a fine full-page engraving was given in the *Gardeners' Chronicle*, December 5, p. 720, must be placed at the top of the list, as it is one of the very finest white-flowered bulbous plants ever introduced. In the size and form of its pure white flowers and clear green leaves it is intermediate between Eucharis grandiflora (amazonica) and E. Sanderii. Seldom does a good plant make so determined an invasion, for it seems to have arrived direct both to Messrs. F. Sander & Co. and to Messrs. Hugh Low & Co., of Clapton, with whom it is now in bloom. Mr. W. Bull received a First-class Certificate for it at the Royal Horticultural Society on October 13. Cyrtanthus hybridus × is a fine greenhouse plant, raised in Sir Trevor Lawrence's garden by intercrossing the flame-coloured variety of C. (Gastronema) sanguineus with Vallota purpurea; in every way the plant seems quite intermediate between the parents, the soft scarlet flowers of the Cyrtanth receiving size and firmness of texture from the Vallota. At Messrs. E. G. Henderson & Sons some very pretty hybrid Nerines have bloomed, N. O'Brieni ×, N. O'B. carminata ×, and N. O'B. cœrulea × being fine improvements to the late-flowered section. They are the results of crossing N. pudica and N. Plantii. All the varieties have good showy flowers, that named carminata being of a pleasing soft rosy-red, and that distinguished as cœrulea is the nearest to blue of any Nerine.

The new Amaryllids of 1885 disclose almost unhoped for improvements, it having been commonly supposed that the immense flowers must always be borne on two or three-flowered scapes; but in size of flower Messrs. Veitch have beaten their former best things, and have succeeded in placing them on many-flowered scapes, as the following notes, taken from the plants exhibited, will show. All here enumerated have received First-class Certificates:—

A. Lady Howard de Walden: flowers large and perfectly shaped; the finest white yet obtained; one scape of six flowers. Veitch.

A. Prince George of Wales: deep scarlet shaded with crimson; broad white band; two scapes, each of six flowers. Veitch.

A. Perfection : a grand flower ; rosy-carmine with white medial band ; two scapes, each with four flowers. Veitch.

A. Ne Plus Ultra : an improvement on Empress of India ; rich scarlet with white stripe up segment ; two scapes, each with four flowers. Veitch.

A. The Queen : milk-white, veined and washed with deep rosy-carmine ; three scapes, four to six flowers. Veitch.

A. Niobe : vivid scarlet with central white stripe ; two scapes, each with four flowers. Veitch.

A. Paragon : brilliant scarlet with whitish central star ; two scapes, each with four flowers. Veitch.

A. Basilisk : orange-scarlet with small greenish star, very large flower ; two scapes, each with four flowers. Veitch.

A. Autumn Charm (Leopoldi reticulata) : soft rose veined and netted with rosy-carmine. Foliage ornamental ; one scape of four flowers. Veitch.

A. Comte de Germiny : a lovely improvement on Mrs. Garfield and others of the reticulata hybrids, with well-formed sweet scented flowers, pure white-veined with bright rose ; two scapes, each with four flowers. Williams.

A. Mrs. B. S. Williams : this is a very effective and well-formed flower, and very distinct. Williams.

A. Great Gearies : fine brilliant dark scarlet. Douglas.

A. Fairlop Oak : bright crimson with effective light centre. Douglas.

A. Helen Lodge : a very charming variety, lively crimson with whitish centre. Douglas.

Foliage Plants.

Good novelties have to be recorded among these, many handsome decorative plants having been gained. Dracænas and Crotons have received augmentation, but in view of their now numerous classes it is difficult to compare and particularise them. D. Norwoodiensis, with noble dark green foliage edged and striped with rose, has, however, worthily been selected for a First-class Certificate at the Royal Horticultural Society. Phyllanthus Chantrieri, an elegant plant for table decoration, with upright stems clad with elegant dark green Fern-like foliage, was also awarded a similar distinction ; and so also was Piper ornatum, a pretty plant, useful, for covering pillars or walls in the warm house. It has trailing stems furnished with broadly cordate entire leaves, in colour dark green beautifully marbled with white and rose.

Alocasia Hendersoni is a noble addition, with handsome foliage, in tint somewhat resembling A. metallica, but with a softer greenish hue. A. Sanderiana has handsome deeply cut leaves of a metallic green with prominently coloured veins ; the foliage is borne on long footstalks, which gives the plant a very stately appearance. A. sinuata is also of the Schizocasia habit, and seems to be a connection between Alocasia and the section called Schizocasia ; it comes from the Malay Archipelago, and has handsome cut sagittate leaves. Vriesia Janieriensis variegata is a handsome Bromeliad, which will also produce good flowers. The Caladiums have received fresh variety in the handsome C. albo-luteum maculatum, C. Comte de Germiny, C. De Condeixa, and C. Raymond Lemoinier, certificated to Messrs. Laing & Co. ; and many other new ones of Continental origin are known.

Greenhouse Plants.

Bouvardias, like many other things, after running to the length of their tether in single blessedness, come upon us in double form, and the white Alfred Neuner and pink President Garfield are now followed by Sang Lorraine, double orange-scarlet ; Victor Lemoine, double scarlet ; and Thomas Meehan, a double form of B. elegans, with bright red flowers. These doubles are very useful, as their flowers are more persistent than the singles. Epiphyllum Russellianum Gaertneri is an extraordinary plant, half-way between a Cereus and an Epiphyllum. Its flowers, which are orange-red, are not flattened, as in Epiphyllum, but are borne one to three on the ends of the growths, and not as in Cereus, although they are shaped like it. Aloe insignis ×, which is well illustrated at p. 41, July 11, in *Gardeners' Chronicle*, is another interesting cross-bred variety, which flowered at the Royal Gardens, Kew ; its flowers are very pretty, whitish when open, and coral-red in the bud. Allium Koratavense is singular and attractive, and may ultimately prove hardy ; it is, in habit and appearance, something like Eucomis, with milky-green leaves, and stout spikes of numerous greenish flowers.

In the greenhouse flowering plant section the hybrid Rhododendrons have been by far the greatest gain of recent years, the colours of some of them rivalling a scarlet Pelargonium, while their hard sturdy growth renders them easily managed in any situation. In London conservatories, for example, they grow and flourish well where seemingly hardier plants die. The following have all received First-class Certificates :—To Messrs. Jas. Veitch & Sons, R. militare, bright reddish-crimson ; R. cardinale, fine dark scarlet ; R. Teysmanni, buff-yellow ; R. Apollo, orange-scarlet, very wax-like ; R. Pearl, with clear white flowers, with a delicate pearly tint ; R. Minerva, delicate apricot-yellow with red stamens ; R. incarnatum floribundum, light rose-pink, flowers of fine shape and very freely produced ; R. Indian Yellow, quite a new colour among them ; and R. Curtisii, which last is a little beauty, of compact twiggy habit and producing in great profusion its showy bunches of dark scarlet flowers which are not tubular like the R. jasminiflorum breed. R. Curtisii is a distinct and lovely plant, and in Messrs. Veitch's hands it is destined to become the founder of a new race.

Miscellaneous Plants.

Under this heading may come that charming double miniature Rose, "Rose Button," of Messrs. Veitch, which was so much admired at Kensington, its profusion of pretty light and dark rose flowers covering the short shiny leaved plants forcing it on the notice of all. It is difficult to imagine a more promising plant for decoration in small pots, for market work, for cutting and making up with its own buds and leaves and nothing else, for growing in pots and plunging for flower beds, for permanent beds outdoors, and for anything else that such a lovely and easily managed plant might be used for. It is a double form of the well-known American Rosa lucida. Hydrangea mandshurica is a good form of the best flowering Hydrangea, but differing from those already in commerce by its having dark brownish-crimson stems. Heliotrope Roi des Noirs is one of the darkest violet and best habited of these favourite sweet scented plants. Spiræa palmata alba, certificated to Messrs. Veitch, now that it is advanced for forcing purposes—in which capacity if carefully handled its white flowers will be serviceable—may now again be noted, and the completion of this review of the new levies must remain until next week.

DISA MACRANTHA.

I SEE in late numbers of the *Gardeners' Chronicle* (pp. 374, 440, 470, 501, vol. xxiv.) a correspondence between Mr. N. E. Brown and Mr. Burbidge *re* Disa macrantha. I have before me Mr. Sanderson's drawing from which the copy was taken, a dried specimen from Mr. Sanderson's herbarium, labelled in his own writing, D. macrantha, and a specimen received by me from Kew, labelled Disa macrantha, Thunb., which was collected by Mr. Macowan on the Boschberg : I have compared these three together and am inclined to believe that Mr. Sanderson's drawing and dried specimen represent the same species, and that it is different from, and a more robust plant with larger flowers than the one collected by Mr. Macowan. I cannot spare flowers of either for dissection, but I forward by this mail a single flower taken from Mr. Sanderson's specimen to Mr. Brown for his examination.

In addition to name, number (498), habitat, and date of collection, Mr. Sanderson's drawing has upon it in pencil in upper right hand corner "Kew, No. 68," and in lower corner, "Only one flower coloured to proper depth of tone," and one flower, the upper one on left side of the sheet, is rather more highly coloured than the rest. It is evident, therefore, both by this, and also by the general appearance of the drawing, that it is an unfinished one, and also that the artist had paid special attention to the colouring.

Judging from the excellence of Mr. Sanderson's drawings, the whole of which are at present, by the kindness of Mrs. Sanderson, in my possession, I am of opinion that the sketch represents a species not known to me, and that a plant collected by me up country, and which flowered in these gardens last season, and was believed to be D. macrantha, is the same as Mr. Macowan's specimen.

I am just about leaving for a few weeks botanising in and beyond the district where Mr. Sanderson's specimens were collected, and I have had an exact copy made of Mr. Sanderson's drawing, which I shall take with me, and hope that I may be able to meet with so desirable a plant, and also clear my late friend's memory from any charge of inexactness or exaggeration in this matter. *J. Medley Wood, Botanic Garden, Durban.*

PROLIFERATION IN FERNS.

(*Continued from p.* 11.)

IN the species of Blechnum, too, which are stoloniferous, there is considerable variation, due, I believe, to the same cause. The forms of B. occidentale are exceedingly numerous—far too numerous and variable to be defined ; and similar variation is seen in other species, some of which show evidence of being derivative from other types.

This evidence seems to me to indicate clearly that proliferation exercises a potent influence in the modification of species in Ferns : I do not say that there is no wide modification without it, for there is much, though I think in fewer instances, but those species in which the widest and most varied modification is presented are proliferous. In arriving at this conclusion I have taken account of the other known influences which operate with the same effect, such as geographical range or, its equivalent, altitude (the latter possessing for Ferns the advantage over an equivalent remove of latitude of more equable temperature and greater and constant humidity), and geological relations ; and though most of the types which exhibit a wide range of variation are widely spread, emphasis is given to this view by the important evidence that their widest variation is found within limited and narrow topographical area. Therefore, their variation cannot be ascribed to any of the very potent causes of modification in all forms of organic life, which are connected with freedom of geographical range and topography, the evidence of which is so common in Nature.

As in this tendency to change of type, one case varies from another in the number and forms of the modification it presents, so probably the rate of progress in the modification varies in the different cases. Probably also the progress is not even and uniform in any case, and alike at all periods of time. Certain of the attendant circumstances of their existence and life history must hasten, and the reverse circumstances, as a consequence, retard the operations. But, apart from internal agencies, it is evident that the disposition to vary is greater in some cases than in others. Some, indeed, show a loose dissoluteness of character that runs into endless and indefinite forms, manifest even in the individual plants, of which no two are quite alike. Most likely, too, the disposition in all cases, apart from idiosyncrasy, or external influences varies in the different stages of the course, and the racial, like the individual, life runs through a cycle in its developmental growth which varies in its different stages. But whatever variation there may be in the inherent tendency, or of the active operative forces, there is no doubt that generally any important change of type is, in a state of Nature, effected very slowly, when it does not occur by an unusual alliance in ordinary generation, such as I have before suggested as probably occurring in a wild state sometimes—an inference justified from the new forms among Ferns which arise occasionally in cultivation. Nature is a leisurely matron, always effective, but never in a hurry ; centuries, which seem, from our brief standpoint, infinite, are but a day in her course, so that though the evidence of change which we see may be more or less convincing, as a rule, no change detectable by human faculty marks the period we can scan, and hardly any that is certain and firmly assured regarding existing life, that which the relics of the past enable us to extend our vision over. But though change in a wild state is thus slow, if some of those species which show the greatest tendency to vary were propagated for several years from their buds alone, never breaking the continuity, as Nature does, by the introduction of spore-produced plants, I think it very probable that a marked variation from the original wild state might result. About six or eight years ago a viviparous Jamaican species, Gymnogramma schizophylla, was introduced to cultivation, and already distinct forms of it, which have come from the original stock, are reported, and it is possible have resulted from this mode of propagation. Whether or not thus produced, they are proofs of variation in a proliferous species, and in a remarkably short period, for I believe no plants or spores have been introduced since the original lot was imported. The conditions

pertaining to cultivation must have had a good deal of influence in producing this evidence of rapid variation, for in this species proliferation is not, though firmly established, abundant; and in a wild state I have observed very little variation of the type.

One or two minor points only remain now to be looked at.

I am not aware that proliferation in Ferns has ever been studied in its morphological aspect, and the circumstances under which my observations have been made, in field and forest, chiefly on hasty exploration journeys, have afforded neither opportunity nor satisfactory means for such an investigation. Speaking, then, from what must be regarded under these circumstances merely superficial generalisation, the feature is of a character with that which occurs spontaneously, or may be produced by certain means, in the leaves or other parts of some herbaceous orders, as, for instance, in Gesneraceæ, Begoniaceæ, Crassulaceæ, Liliaceæ, &c., and in casual cases on the roots or leaves of various plants when treated with the object of producing this result by the cultivator. Instances from the families above mentioned are commonly seen in plant-houses, and also, under favourable conditions, in a wild state. They do not differ in any essential character from proliferation in Ferns. A few years ago (and this in the abundance of the feature is among the most striking cases I have met in a state of Nature) I gathered on the rocks at the bottom of the Kaieteur Fall, in Guiana, which sorts are kept ever wet by the spray from the Fall—species of Episcia, in which the margins of the leaves were densely fringed quite round by superficial vegetating buds. A much better known example is that of Bryophyllum calycinum, the leaves of which preserve their vitality long, and if on a damp surface or in a constantly humid atmosphere become viviparous along the edges—a feature so common and characteristic that the plant is popularly known as the "Leaf of Life." Detached leaves of certain Begonias, Gloxinias, &c., kept on a moist surface at the temperature these plants require are readily induced by cultivators to bud in like manner. In all these cases, as in Ferns, humidity is the stimulating agency in the result, for in its absence such proliferation does not occur at all; but in the instances I have witnessed in Liliaceæ extreme humidity seems not to be an essential element. To cite a case I have before alluded to—I have seen on an exposed hill-side under a tropical sun, though in a humid part of the country, hundreds of Fourcroyas with their flower-stem, 15 to 20 feet high, heavily laden and breaking down beneath the weight of the rapidly growing buds, which had replaced the abortive flowers. *G. S. Jenman.*

(To be continued.)

THE ITALIAN GARDEN, LONGFORD CASTLE, SALISBURY.

THIS garden is so well known, and has been so frequently written about that but little remains to be told about it. The chief attraction of the place is the fine Italian garden attached to the Castle (fig. 8), and this is alone worth a long journey to see. It is not often that one sees architectural adjuncts admitted to a garden which please by their appropriateness as such. The Temple of Flora, a simple domed building, just large enough to hold the statue of the goddess, and sufficiently elevated not to be dwarfed by comparison with adjacent shrubs, seems to be the right object in the right place, and that to which the eye is directed when looking away from the Castle terrace, it being almost at the end of the long parallelogram of the garden. Looking, however, in the direction of the Castle, as in our illustration, the incongruity of the temple and of the style of the garden with that of the mansion is but too apparent. Behind the temple, at some short distance, are arranged at the semicircular end of the parterre a number of busts of the Roman Emperors on stout obelisks, standing a total height of 6 feet. A fine broad hedge of Yew, having a thickness of 3 feet, and standing about 5 feet high, surrounds the whole garden, and which from its treatment must almost reckon as an architectural object. This hedge is flat at the sides and top, and is pierced with arches, high enough for an average-sized person to walk through. The arches occur at 6 feet intervals, and give by their frequency a lightsome look to the otherwise gloomy aspect of such bordering to the floral carpet. The beds in the garden are planted with a great variety of subjects, and are of all sizes and shapes, and the one-half of the garden divided longitudinally is the counterpart of the other. Good examples of carpet-bedding were seen last year in those parts adjacent to the mansion, where the design could be observed by an onlooker from the windows; but Mr. Ward, the head gardener, is very tolerant of all things flowering or otherwise which can be used to beautify the scene. The grass verges and subsidiary gravel paths dividing the beds and separating the parterres, are about 18 inches in width, so that it will be seen that the whole is intended to be a picture to be seen from a short distance, and not a garden for a stroll or a lounge, for besides the hedges there is no other shelter from wind or sun. In the spring of the year the beds are gay with bulbs—Myosotis, Silene, Daisies, Erythroniums, Pansies, Iberis, Wallflowers, &c.

No other flower garden now exists at Longford, if we except the small portion lying on one side of the Italian garden, laid out in broad stretches of turf with a few beds planted with mixed subjects, and bounded by great banks of Rhododendrons.

Florists' Flowers.

THE AURICULA IN JANUARY.

THE Auricula during January may be said to be at its lowest ebb of vitality; now is the time of winter rest, and the leaves which formed the garniture of its summer activity have faded away, one by one, until there is little left but the filbert-like centre of the plants. Any one unacquainted with the habits of the plants during winter might be led to suppose a collection had gone to something like swift decay, but it is not so. There is nothing to alarm the young beginner. His plants may be like the leafless trees—"all desolate and bare"—the buds may lie fast locked in their winter sleep, but it will not be for long, and the Auriculas that now appear at their worst will in a few weeks show signs of activity as they feel the quickening influences of the oncoming spring. The rules now to be observed are: Keep the plants moderately dry, any decaying leaves removed, and the surface soil stirred occasionally, so as to prevent the growth of moss that would hinder the aëration of the soil. If the plants are in a low cold frame, where they are near to the glass, and at the same time not far from the soil, a covering of mats will be advantageous during a time of sharp frost. If they are on a raised stage in a roomy house, with an abundance of space, a covering is not so necessary.

Our leading cultivators, like the Rev. F. D. Horner and Mr. J. Douglas, do not insist upon top-dressing the plants as the growers of a generation ago. Those who follow the practice should now prepare the compost ready for the work in the early part of February. Much will depend upon the character of the weather, and I would not advise any one who continues the practice to commence top-dressing unless the weather sets in mild and open, and appears likely to remain so for a time. Then the work can be set about in earnest, taking care at the same time to cleanse the pots. Water may be given to such as are in need of it. I prefer to give the plants a good root-watering after the old soil is removed, and before the new surface-dressing is added, but allowing them to drain well first. I think that the practice of top-dressing is decidedly helpful in the case of those who pot late; it gives something for the new roots that are put forth after flowering to feed upon, and it serves also to sustain in health and vigour the growth that follows after the bloom is past. *R. D.*

THE FORCING PINKS.

With the dawn of the New Year these flowers should be placed in a forcing-house, where they can have just a little heat, and they ought to be in a position close to the glass, in order that they may obtain plenty of light. They will not start into very rapid growth, nor is this desirable at first; if they are pushed along in too much heat at first some of the flowers will go blind, and all of them will be of poor quality. As they form the new growths, these will also become clustered with greenfly—at least they generally are in this state—dipping them in soapy water will destroy the pests, if it is undesirable to fumigate the whole house. In a moderate temperature of 45° to 50° at first, rising to 55°, they will flower early in April, and a succession can easily be kept up to the end of June. Mrs. Sinkins, a very full pure white, is recommended, but I prefer Lady Blanche; the pure white flowers are very charming; the long shaped pod never bursts, while the short pod of Mrs. Sinkins does. Lady Lyons, rosy-purple, with a darker centre is by far the best in this colour. We grow Anne Boleyn, Derby Day, and a few others. The Carnations, Hodge's Bride, Abercrombie's, The Queen, and Souvenir de la Malmaison may be forced with the Pinks. They will flower a month later. The Pinks should be good clumps from cuttings put in the previous year in April, when the forced plants were in flower. Small neatly grown plants are not worth troubling about. *J. Douglas.*

BRECKNOCK BEACONS.

THE relative inaccessibility of these mountains, owing to the extremely toilsome ascent and the circuitous little-known pathways leading to them, is probably the chief drawback to their becoming a popular resort. Nevertheless the view seen from their top is both extensive and magnificent, particularly at certain seasons of the year, when Nature is clothed in her liveliest summer garb, or the fields are waving with the ripening grain as they were towards the latter end of August. The difficulties of ascending the Beacons were tenfold augmented on my making inquiries of some of the local residents about the way. The proper pathway was represented as most intricate and difficult for a stranger to find out, and as the heavy rolling clouds that day threatened a thunderstorm, it would simply be madness to attempt the ascent, and, besides the inconvenience caused by the storm, nothing would be seen.

The vegetation here, especially after rain, is redolent with the odour familiar in the deep recess of woods, and the intelligent observer cannot fail to note many of the more or less interesting members of our native flora. Several of the smaller Aspleniums, such as A. trichomanes, A. ruta-muraria, and A. Adiantum-nigrum, peer from the crevices amongst the stones, or insert themselves between the courses of stonework of old bridges in a very fascinating manner. Epipactis latifolia evidently loves the shade, from its strong, healthy appearance. It is instructive to note how the leaves of Galium cruciatum reflex to conceal the fruit, the stalks of which are also reflexed, and the fruit itself smooth and unprotected in this species. In the thickets Viburnum Opulus is laden with its berries of brilliant scarlet, and demonstrates its fitness as a shrubbery plant that might be more common. Soon the open fields are reached, and Erythræa centaurium, having been cropped by some browsing animal, was again displaying its corymbose panicles of delicate rosy-red flowers in a most attractive way.

As the tourist begins to make the ascent proper, most of these wild and showy flowers disappear, giving place to a less interesting vegetation, and, save for the Furze or Bracken, "close cropped by nibbling sheep." The tediousness of the journey may now be lightened or varied somewhat by following the course of some mountain rill, on the cool moist banks of which some of the finer bog plants flourish. The tufted mountain Fern, Nephrodium oreopteris, is abundant in places, and, although deciduous, early in the season is one of the best of the British forms. Where the sandstone crops out, Cystopteris fragilis secures a footing and seems happy. Here, too, Pinguicula vulgaris maintains a precarious existence, and notwithstanding its carnivorous propensities and other adaptations, its distribution is the more limited and prescribed, on account of its specialised manner of living, and the means to that end. A more attractive or easily cultivated bog plant than Anagallis tenella, when planted in a continually moist peat bed, would be difficult to find, and here it keeps company with Chrysoplenium oppositifolium and Pedicularis sylvatica.

On the dry slopes near the summit Festuca ovina is often almost the sole occupant of the ground, forming the turf. A proliferous variety is very common, in which the seeds are replaced by little plants. A number of popular alpine or rockery plants occupy a precipitous and rocky side of the highest peak, where there is little competition from other kinds of vegetation. Two species of Saxifraga, namely, S. oppositifolia and S. hypnoides, ramble freely over the ledges, especially where sunk so as to



secure a greater abundance of moisture. The matted cushion-like tufts of Arenaria verna occupy similar positions, while Silene maritima appears more at home on the sea-shore, although its robust and healthy appearance is silent evidence that all its requirements are met even in this mountain habitat. The smallest British shrub, and one said on pretty reliable authority to be the smallest of all shrubs, Salix herbacea, forms tufts of the deepest shining green on the brow of some of the most prominent and projecting sandstone ledges. Its distribution is limited to the summits of the highest Welsh, North English, and Scotch mountains. Sedum Rhodiola and S. rupestre are of frequent occurrence in gardens, especially the former, which was at one time almost universal in cottage gardens and used as a rustic vulnerary. This is one of its most southern stations, and it is important to note how it prefers the moist crevices, while its congener, S. rupestre, grows almost on the bare rocks.

Close by, at a lower elevation, is a mountain pool, apparently formed by the damming up of the valley by a moraine. Its placid and clear waters can boast of a few forms of vegetation, such as Potamogeton natans, Litorella lacustris, and the beautiful deep green Chara fragilis. Numerous newts seemed to constitute the largest forms of animal life permanently inhabiting the pool. It would be most interesting to know how the above-mentioned plants obtained a footing in their mountain home; but in all probability they owe their occurrence to wild water-fowl accidentally carrying the seeds and spores. *F.*

The Rosery.

FORTHCOMING FRENCH ROSES.

As we look on early spring for our summer migrants, and welcome even the monotonous chant of the cuckoo as he tells us that the winter is past, so also we look regularly for our autumn arrivals, and amongst them, as sure as the cuckoo in spring, comes the promise of something new to the Rose-loving world, even though, like that bird, their note is somewhat monotonous. Time was, indeed, when we were much more ready with our fraternal greeting, but we have of late years been so often doomed to disappointment—the same sham has been so often indulged in, and the notes, pitched in so high a key, have so often resulted in very decided discord to us, that we take matters much more quietly now. I do not say that those who send us these messengers are altogether to blame; for thirty years and more they have been so in the habit of sending us over sometimes forty, fifty, or even sixty new Roses, that it is hard for them to give up a practice which has been so pleasant and profitable to them. To get £1 a-piece for a plant when Roses of established reputation are to be had for 6*d.*, is a temptation which human nature finds it hard to resist, even although the difficulty becomes greater every year of meeting the requirements of the Rose grower. Nor must it be forgotten that although we have received, and have had to pay for, a vast quantity of rubbish, we have also received our choicest gems from France; a few, and but a very few, English-raised Roses remain amongst our choicest varieties, the bulk of which are still of French origin. Many English Roses have come and gone since the days when Charles Lefebvre, and La France, and Marie Baumann, gladdened our eyes; and, while these remain, the others have passed away altogether. The experience of past years is valuable to us, inasmuch as it guides us in looking for our most likely sources of fresh interest to those who have contributed to our enjoyment in past years. There are some who are content with sending out one or two varieties, while others will not be satisfied unless they can announce ten or a dozen, and it is most likely that the gems will be found among the smaller number. As none of these Roses have been seen, I believe, by Rose growers in England, we must take the raiser's description; and notwithstanding the liberal use of all the adjectives in the French language which can express superiority, there does not seem to be anything very remarkable.

Taking the hybrid perpetuals first, we see that, in point of number, Mons. Eugène Verdier, as usual, heads the list; but whether their quality will equal their quantity remains to be seen. I take the Roses in their alphabetical order:—

Amiral de Joinville (Eugène Verdier).—Very vigorous; flowers large and full, and well formed; colour deep shaded red, flushed with purple.

Auguste André (Schwartz). — Very vigorous; flowers large, full, sweet-scented; tender silvery-rose, centre rosy-lilac, passing into pale rose.

Clara Cochet (Lacharme).—Very vigorous, erect growth; flowers very large, full, cupped, with large, petals; colour clear rose, centre deeper.

Climbing Monsieur Boncenne (Schwartz). — Very vigorous; flowers similar to those of the type.

Climbing Pride of Waltham (Schwartz and Paul & Son).—This has been obtained by both firms, and will be let out by them. It is very vigorous, with flowers similar to the type.

Comtesse Freissinet de Bellanger (Levêque).—Very vigorous, flower large, full; colour beautiful clear rose, shaded with bright rose.

Denys Cochin (Eugène Verdier).—Very vigorous, cupped; colour shaded purplish-red, shaded with velvety crimson, lighted with fiery red.

Docteur Pinel (Moreau).—Very vigorous; flowers very large, full, well formed, flowering in clusters; colour vermilion-red, shaded with carmine.

Frederick Schneider II. (J. Ludovic). — Vigorous; flowers large; colour deep rose, shaded with brilliant red.

Le Châtelain d'Eu (Eugène Verdier).—Vigorous; flowers large, full, well shaped; colour beautiful crimson-red, shaded with brilliant purple, centre violet.

Léon Delaville (Eugène Verdier). — Vigorous; flowers large; colour deep velvety-red, shaded with carmine and lighted well with crimson-violet.

Louis Calla (Eugène Verdier).—Vigorous; flowers large, shell-shaped; colour purplish-reddish-scarlet, marked with white. (This description puzzles me.)

Madame Baulot (Leveque).—Vigorous; flowers large, full, imbricated; colour lively rose, shaded with carmine.

Madame Gomot (Liabaud).—A seedling from Souvenir de la Reine d'Angleterre. Vigorous; flowers very large, nearly full; colour lively glossy rose.

Madame Lefebvre (Moreau).—Very vigorous; flowers large, full, flowering in clusters; colour tender rose, deeper in the centre.

Madame Musset (Liabaud). — Very vigorous; flowers very large, full; colour tender satiny-rose, deeper at the centre.

Madame Ph. Dewolfs (Soupert et Notting).—Vigorous; flowers large, full, centifolia form; colour madder-rose shaded.

Madame Pierre de Beys (Soupert et Notting).—Vigorous; flowers large, full, well formed; colour vermilion-red, passing into shaded carmine.

Madame Rebatel (Liabaud).—A seedling from La Reine. Vigorous; flowers very large, full, well formed; colour lively rose, shaded.

Madame Sanglier (Vigneron).—Vigorous; flowers large, full, globular; colour currant-red, passing into lilac, back of petals silvery.

Madame Vauvel (Eugène Verdier).—Vigorous; flowers extra large; petals very large; colour lively fresh rose.

Madame Villy.—A seedling from Duchesse de Cambacérès. Vigorous; flowers large, full; colour brilliant amaranth-red.

Maréchal Canrobert (Levêque).—Vigorous; flowers large, full, and globular; colour clear cherry-red, shaded with carmine and purple.

Monsieur Moreau (Vigneron).—Vigorous; flowers large, full, and globular; colour lively rose, back of petals silvery.

Nicolas Leblanc (Moreau).—Vigorous; flowers very large, full, globular; colour lively cherry-rose, passing into a lighter tint.

Prince Waldemar (Eugène Verdier).—Plant very vigorous; flowers large, full well-formed, cupped, cherry-carmine-red.

Princesse Marie d'Orleans (Eugène Verdier).—Very vigorous; flowers large, full, well formed; colour cherry-red.

Princesse Amedée de Broglie (Eugène Verdier).—Very vigorous; flowers large, full; colour clear cherry-red, back of petals rose-colour.

Professeur Maxime Cornu (Levêque). — Very vigorous; flowers large, full, well formed; colour clear red, without any shading; very floriferous.

Raoul Guillard (Margottin père). — Vigorous; flowers large, full; colour clear vermilion-red, back of petals amaranth.

Rosieriste Chauory (Gonod). — A seedling from Victor Verdier. Vigorous; flowers large, full; the deepest colour of this series.

Souvenir d'Eugène Karr (Schwartz).—Vigorous; flowers medium size; colour scarlet, passing into puce.

Souvenir de Victor Hugo (Pernet père).—Vigorous; flowers large, nearly full, globular; clear cherry-red.

So much for the H P.'s as I know them. It will be seen that the two best rosarians in France—old Margottin and Lacharme—only send one each, and both of them are good judges.

TEA ROSES.

Camille Roux (Nabonnaud). — Very vigorous, floriferous; flowers large, full, well-formed; colour red, edge of petals rose.

Claudius Levet (Levet père). —Vigorous, firm, stout footstalks; flowers very large, full; colour a beautiful carmine rose, shaded with purple; centre salmon colour.

Comtesse de Frigneuse (Guillot et fils).—Vigorous, very free-flowering, full; a beautiful clear canary-yellow.

Comtesse Horace de Choiseul (Levêque) —Vigorous; flowers large, full, well formed; colour tender rose, shaded with coppery-yellow.

Edmond de Biancat (Levet). —Vigorous; flowers large, full, form globular; peach colour, shaded with light salmon.

Exadelphé (Nabonnaud).—Very vigorous, floriferous; flowers large, full, well formed; pure yellow, very sweet scented.

Flavien Budillon (Nabonnaud).—Very vigorous and floriferous; flowers large, very full, and globular in form, cupped; tender rose colour.

Madame David (Pernet père).—Vigorous; flowers large, delicate rose, shaded with salmon; edges of petals white, not quite full.

Margarese'te Ramet (Levet). — Vigorous; flowers large, full, fine form; bright rose, centre lighter and lightly shaded with carmine-red, reverse of petals bright rose.

Marquise de Vivens (Dubreuil).—Very vigorous; flowers large, buds very beautiful; bright dark rose, edged with yellowish-white. The flowers are not quite double, and from the description it would seem to be one of those Roses which are more beautiful in the bud than when expanded.

Reine Nathalie de Serbie (Soupert et Notting).—Very vigorous; full, well formed; colour flesh-rose, cream-colour at the base, slightly shaded with yellow.

Reine Olga (Nabonnaud).—Very vigorous; perfect form; colour shaded coppery-rose.

Souvenir de Hélène Lambert (Gonod).—Vigorous; flowers full, yellowish-pink, centre darker, full, well formed.

Souvenir de l'Amiral Courbet, (Pernet père).—Moderately vigorous; flowers medium size; colour double dark rose.

Souvenir de Victor Hugo (Bonnaire).—Vigorous; flowers large; good shape, round, pale, lightly edged with yellowish-white, centre yellowish.

Suzanne Blanchet (Nabonnaud).—Very vigorous; flowers large, full, imbricated; of a fine flesh-rose.

It will be seen that Nabonnaud takes the same place amongst Teas that Eugène Verdier does amongst H.P.'s, as to the numbers sent out; but I hardly think that globular and imbricated Tea Roses are much to our taste. It will be seen, too, that they are of a deeper colour than many of us care to see amongst Teas. The one Rose sent out by Guillot promises well, and he has already given us such fine Teas that we may look to him with some degree of confidence.

Besides these there is a Noisette, Comtesse Georges de Roquette Buisson, sent out by the same raiser; a hybrid Noisette, Abane d'Arneville, by Schwartz; two polyantha Roses, Floribunda, Dubreuil, and Princess Wilhelm de Pay Bas, by Soupert et Notting; two hybrid polyanthas, Daniel Lacombe (Moreau), and Max Singer (Lacharme), and a Bourbon, Madame Rochefontane, by Vigneron: thus making up fifty-five in all. There may be one or two others, so that the orthodox number is likely to be completed. He would be a wise man who would be able to say which are the real gems and which the paste. *Nous verrons. Wild Rose.*

The Flower Garden.

PLANTING.

PLANTING of choice trees, Rhododendrons and shrubs, may still be proceeded with. It is better not to delay the planting to a later period, as we may look forward to fierce chilling winds. All newly transplanted trees and shrubs should receive protection from cutting winds, especially evergreens. The quickest and best protection is to get some poles a foot or two higher than the plants, drive them into the ground at distances of from 2 to 2 feet apart round the plant. Procure some Spruce branches and weave them through the upright poles until the desired height is attained. I have seen this system used in the vicinity of the sea, where fierce winds waft the spray four miles or more inland, browning the branches of tender Pinuses. If not yet done, it will be necessary to similarly protect Laurustinus, Sweet Bays, and other easily injured subjects in exposed and high districts. I am averse to digging amongst shrubs, and prefer to give them a top-dressing of soil if it is obtainable. Rhododendrons, Azaleas, Kalmias, and Andromedas, are sure to be injured if the beds are pricked with forks. These are all surface rooters, and enjoy a slight top-dressing of leaf-mould over their roots. This nourishes and also protects the roots from frost and drought. In preparing beds for Rhododendrons, unless the subsoil is sandy they will not succeed without an addition of peat and leaf-mould. In chalky districts it is impossible to grow them in the natural soil. Azaleas are not so particular, but prefer peat and leaf-mould. As a rule, where Rhododendrons thrive well in the natural soil, Laurels do not thrive so well, and *vice versâ*.

This is also the time to prepare ornamental trees and shrubs for next autumn planting, which is doubtless the best time for transplanting such things. Cut a trench, one spade in width and 2 feet deep, all round the plants. Trim all the ends of the roots carefully with a knife, fill in with nice light soil, and an abundance of fibry roots will reward your pains. Plants so treated will grow away and never feel a check.

RESERVE GARDEN.

Remove the sashes from off the cuttings of Phloxes, Penstemons, and Calceolarias, if rooted, on all fine days, and carefully pick over these cuttings, removing all decaying leaves. If they are growing too rapidly pinch the tops out of them. Look over Echeverias and other succulents in cold pits, and see that none are standing under drip. Prepare the soil and the pots for potting Pelargoniums in wet weather, also cutting boxes. The latter will last very much longer if coated with boiling coal-tar. *W. M. Baillie, Luton Hoo Park.*

Fruits Under Glass.

EARLY PEACH-HOUSE.

WHERE there is an early demand for these fruits—viz., Peaches and Nectarines—it would be found necessary to keep the house close since about the second week in October, to give a little air for about two hours in the middle of the day on sunny occasions; but, as we all know that the sun has been almost a stranger to us for the past three months, we hope to have a little more of its assistance soon. Introduce a little artificial heat, keeping the temperature from 45° to 50° at night, with an increase of 5° by day, allowing another rise of 10° with sun before giving air; close early, so as to maintain the required temperature without the aid of artificial heat.

BEST VARIETIES TO FORCE EARLY.

So far as my experience goes, the following varieties will answer best when a supply is required until the second house comes in, viz., Early Beatrice, Hale's Early, Early Louise, Early York, and Royal George, Lord Napier, Elruge, and Victoria Nectarines, these ripening in the order named. Syringe on bright days morning and afternoon with water of the same temperature as the house, taking care to moisten all the branches, but in dull damp weather the morning syringing will be quite sufficient. It will be advisable to fumigate a few times previous to the trees coming into flower to prevent greenfly from putting in an appearance, which in many cases it does before some of the later blooming kinds are set, especially where Strawberries are occupying the shelves, which is most frequently the case. As the blooms open syringing must be discontinued in order to keep them dry, taking advantage of favourable mornings to admit a current of air, and attend regularly to fertilising the blooms with a camel-hair brush each day. Those started at the time above stated will now set, and when sure of a crop syringing may be resumed. The thermometer may now range from 55° to 60° at night with an increase of 10° by day, before giving air. Attend to disbudding as the shoots get forward enough, which must be done judiciously. Keep a sharp look out for greenfly.

The trees in the second house, in the meantime, will have been cleaned, tied, and got ready, and may now be brought forward slowly as above directed.

EARLY STRAWBERRIES,

such as Keens' Seedling and Vicomtesse Héricart de Thury, which should have been brought forward in a gentle bottom-heat of leaves since October, will now be in flower. Having been brought to the Strawberry-house shelves, to ensure a good set; do not allow the temperature to exceed 50° at night, with a rise of from 5° to 10° by day, with a good circulation of air on all favourable occasions. Careful watering is very important, but do not allow damping or syringing of the plants, as at that period the object is to get the pollen dry in good time in the morning, so that it may be distributed with a camel-hair brush from one bloom to another. *J. Vert, Audley End Gardens.*

Hardy Fruit Garden.

BUSH FRUITS, NEW PLANTATIONS, &c.

LAND cannot well be of a too fertile nature for these—comparatively speaking, the more growth the more fruit, and the quicker a new plantation of trees fills out their allotted space the better, which should be from 5 to 6 feet apart each way. The ground should be well trenched prior to planting, at the same time working in a good dressing of manure, which will well repay its cost in after crops of fruit. The fact should not be overlooked at planting time, that bush fruits, in common with others, are expected to remain fruitful and healthy in the same position for a number of years. There should at least be two spits of soil in depth; the nature of the soil, subsoil, and other relative circumstances must decide whether artificial drainage is necessary or not. Firm planting is also a matter of importance, and young plantations should be looked over occasionally the first season after planting, and any trees that have become loose at the collar, again made firm by treading, &c.

PRUNING.

Bushes from which the produce is used for tarts and preserving should not have the wood over-thinned, and in this case mere size of fruit should not be such a consideration as quantity, providing the quality be fairly good. Bushes which are desired to produce fine dessert fruit will require a little extra thinning. Old plantations where the bushes show declining vigour should have some manure worked into the surface, and also some left on the surface as a summer mulching, at the same time digging amongst the bushes to a greater depth than 3 or 4 inches is not advisable. A good mulching amongst the bushes, after acting as a fertiliser, will considerably decrease the labour during summer by preventing the growth of weeds. Bush fruits are best kept together for the convenience of netting, to preserve the fruit from birds, as in many country gardens this precaution means to secure a crop. After the Gooseberry bushes are pruned, should small birds attack the buds, the bushes should be well dusted over with fine lime. Bullfinches, if unobserved, and if something obnoxious to them is nor applied over the bushes, would in a short time destroy an incredible number of fruit-buds. Gooseberries, Plums, and Pears are their favourites. *G. H. Richards, Somerley Gardens, Ringwood.*

The Kitchen Garden.

GENERAL WORK.

PUSH forward all ground operations, taking advantage of frosts to convey manure on to vacant plots where required. The quarters for all main crops should now be selected, and prepared accordingly. Those heavily manured for a previous crop are admirably suited for Parsnips, Carrots, Beetroot, and other roots. Fork over on every favourable opportunity plots intended to receive early Peas, Beans, Carrots, and Potatos. Peas may now be sown in small pots, placed in a gentle heat until they germinate, and gradually hardened off in a cold frame ready for planting out in February. Sow Broad Beans in shallow boxes filled with leaf-soil, and treat in the same way. Where early Carrots and Potatos are grown on hotbeds, the necessary materials should be got together at once, and frequently turned. Cold frames containing young Cauliflowers, Lettuce, and Parsley plants, should have all decayed leaves removed, and abundance of air given on all favourable opportunities. Continue to utilise vacant frames for storing Cauliflowers, Lettuce, and Endive, for present use; also have sufficient quantities of roots on hand to meet requirements. In anticipation of severe frosts, stems of Brussels Sprouts, Leeks, Celery, &c., may be lifted, and placed in a cold, damp shed or cellar for the same purpose. *John Austen, Witley Court.*

The Apiary.

THE LADIES' BEE.

THERE is not much doubt that many people would engage in bee-keeping but for one thing—viz., the littles bee's weapon of defence—its sting. Some people do not much care whether they are stung or not, but with others it is not so, and in certain conditions of the blood a sting cannot altogether be despised. Under these circumstances it seems desirable to inquire whether some bees are more peaceably disposed than others. The ordinary English bee is generally tolerably well behaved, but not always so, and is occasionally perfectly furious, especially if the wind is "beasterly." The Italian or Ligurian bee is good-tempered if kept pure, but that is very difficult, and when they are crossed with English bees they become perfect little demons, and will fly, not only at the intruder, but oftener still at innocent people at a distance. Moreover—and here I am aware I am treading on delicate ground—I do not feel sure that Italian bees are altogether innocent about the introduction of foul brood and other bee diseases into this country. But I will pursue this part of the subject no further, out of deference to our most noted bee-keepers, many of whom hold the contrary opinion.

It is now generally conceded that the Carniolan bee is the best bee for this country, and therefore it seems to be the ladies' bee. This bee is an importation from Carniola, in Austria. It is a most amiable bee, and nothing seems to put it out of temper. Almost anything can be done with them, and this without smoke or veil. Moreover, if they become crossed with ours, as they are sure to be, the queen bee not being at all particular about the nationality of her husband, the good qualities seem to be increased rather than diminished. In a pure state their only fault seems to be a perpetual desire to swarm, and that quality seems to be restrained somewhat when crossed with ours, while the amiable qualities are retained. They are very energetic, and collect a large amount of honey, and our climate seems to suit them well; but the Italians appear to want a warmer climate than ours, and are more adapted for sunny Italy.

Many other races of bees have been introduced, and as close breeding is not good, they may, and probably have, improved the blood of our bees generally, but they are much too fierce for general use. Especially may this be said of the Cyprian, Syrian, and Holy Land bees. I have many times wondered how King Solomon (who said, "My son, eat thou honey, for it is good") managed to get his, and whether he ever was stung. *Agnes.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan. 11	Sale of 9000 Lilliums, from Japan; 5000 Tuberoses, &c., at Stevens' Rooms.
TUESDAY,	Jan. 12	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M.; Scientific Committee at 1 P.M., at South Kensington.
WEDNESDAY,	Jan. 13	Special Show of Late flowering Chrysanthemums, at the Westminster Aquarium (National Chrysanthemum Society). Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms. Sale of Roses, Bulbs, and Lilies at Protheroe & Morris' Rooms.
THURSDAY,	Jan. 14	Sale of Imported and Established Orchids, from Messrs. Shuttleworth, Carder & Co., at Stevens' Rooms.
FRIDAY,	Jan. 15	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	Jan. 16	Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms.

TREE Ferns are so associated in people's minds with a tropical climate, that it is hard for them to realise the fact that some of them at least are quite able to bear the ordinary winter climate of Britain. The Dicksonia antarctica is one of the best known and hardiest, and in Tasmania and New Zealand it is subject at times to temperatures not much, if at all, above what we have here. There is an old saying to the effect that one never knows till trial is made. In fact, we do not know how far a plant can resist or adapt itself to our climate. A very familiar illustration is the Passiflora cœrulea, so ornamental in leaf, flower, and fruit, on the houses in the suburbs of London, where it grows without other protection than the wall affords. Now this is a tropical, or, at least, subtropical, plant, native in South Brazil, and, judging from that circumstance alone, no one would have supposed it hardy. We are sorry not to be able to mention the name of the benefactor who first made the attempt to grow the plant out-of-doors. Doubtless he was well laughed at by his friends, and probably he himself had no great faith in the success of his experiment. Its success, to mention only this one case, should encourage others to make similar trials, when means permit, in the assurance that it is rarely possible to tell beforehand what will or what will not succeed. The Dicksonia whose portrait we are now by the courtesy of the Hon. and Rev. J. T. BOSCAWEN able to give (fig. 9), has, with others, stood well for two winters and three summers in his wild garden at Lamorran, in Cornwall. "Yes," some one will say, "Cornwall enjoys a mild Atlantic climate;" but the climate of Lamorran, as we have often heard, is eminently capricious, and is by no means to be taken as an illustration of the general mildness of the western peninsula as witness the record given in Mr. BOSCAWEN'S letter in another column, and some Camellia leaves grown in the open air but which, from their appearance, might have kept company in the teapot with their near allies of the Tea plant. As to the particular Tree Fern figured, Mr. BOSCAWEN says:—

"It is not the tallest I have, but is, to my mind, in the best position, not being under trees, although well sheltered. Since it was photographed, in July last, it has made no fewer than seventeen new fronds, so you may imagine what a grand head it has now. I have every reason to suppose that 'Tree Ferns' will stand our winters in many parts of England; in fact, I am sure of it, as last winter I found that when our common Ferns were badly cut close to Tree Ferns, these latter were uninjured. The two last winters in Cornwall have, however, been mild, not more than 15° of frost in sheltered places; but, no doubt, if a blanket were wound round the trunks in hard winters, the Ferns would not be killed. Up to the present time not one frond of mine has been injured, when, as I have said, the common Ferns have lost all their fronds."

AMONG secondary LONDON IMPROVEMENTS—if, indeed, they can be called secondary—the first place must surely be given to the establishment of broad open spaces, wide streets, public gardens, and recreation grounds, appropriately planted according to local circumstances and requirements. It affords a curious illustration of some of our national characteristics, first, that it should be necessary to point out the practical utility and beneficence of such works, apart from mere considerations of appearance; and next, that the work should have to be done by private enterprise and not by the municipalties or by the Government. They manage things so differently over the water! It is not our purpose now to discuss which plan is best—that of private initiation or Governmental care—indeed, we are not particular by whom or by what body the thing is done, provided it be done well. It is a rather curious thing that when, a year or two since, we started an inquiry into the condition of some of our large provincial and manufacturing towns such as Glasgow, Liverpool, Leeds, and Newcastle—with reference to open spaces for health and recreation, we very soon found that provincial towns were, as a rule, much better off than the Metropolis, and that the local authorities of these towns and their health officers so well understood the necessities of the case, and had provided for them so well, that we discontinued further inquiry as unnecessary. In London, in spite of the parks, and in spite of what has been done in the last twenty years, it is still far otherwise, so that our sympathies are entirely with the Metropolitan Public Garden Association, over which Lord BRABAZON presides. From the annual report just issued, we learn that the income of the Society is increasing, but scarcely so proportionate to the work still to done. A few extracts from the report may usefully be cited:—

"There is no lack of scope (says the President in his address to the subscribers) for your exertions; the fields in the suburbs are fast disappearing and their places are being filled with rows of houses and monotonous streets. The deserted squares, the disused burial-grounds, the closed playgrounds, &c., which are still available in the crowded Metropolis, and which, with the aid of the Association, could be rendered useful and attractive, can be numbered by hundreds. While the work which you have accomplished is one which increases in value every year, it must be remembered that its benefits are not only directly visible in the large amount of healthful pleasure afforded to thousands of those who dwell in London, but it also has an important indirect influence upon public opinion and public bodies. I would again repeat, that it is not within the sphere of your Association to undertake the permanent maintenance of any open space; but, where you have been obliged to defray the cost of an improvement, to transfer such open spaces, seats, trees, &c., to the local authorities for future maintenance, and in all cases to encourage as far as possible the municipal and other bodies to do their share of the work.

"During the past year you have transferred Horsemonger Lane Playground; the Garden of Trafalgar Square, Mile End; and the twenty Plane trees planted by you in the Mile End Road to the Vestries of the parishes in which they are situated."

During the past twelve months were carried to a successful issue a large number of different undertakings, which may be classified as follows:—

The laying-out and opening to the public of twelve gardens and playgrounds, including five squares, four disused burial grounds, and three church gardens, "unemployed" labour being generally used.

The providing of seats and a caretaker temporarily in three open spaces.

The planting of trees in two thoroughfares.

The placing of seats in five public gardens, on an open space in Rotherhithe, on another in Hackney, and in five thoroughfares.

The providing of "unemployed" labour in the laying-out of two churchyards.

Grants of money to six public gymnasia, a promised grant to a seventh, and a grant to one public garden.

Plans supplied for the laying-out of three open spaces.

The enforcing of certain Acts of Parliament for the preservation of disused burial grounds as open spaces.

Assistance given to public and private bodies in the utilisation of several plots of ground as open spaces.

It was thought desirable to light up some of the gardens on warm summer evenings for the enjoyment of the inhabitants of the neighbourhood. For this purpose was started a fund to meet the expenses of providing lamp-posts, Chinese lanterns, &c., and the Association was enabled to try the experiment with marked success in Trafalgar Square, Carlton Square, and Ebury Square.

Much work remains on hand, some of which has been for a considerable time in progress. It is hoped shortly to open for the use and enjoyment of the public:—

The garden of Soho Square, W.

The disused burial-grounnd of St. James', Bermondsey, S.E.

The disused burial-ground of St. Dunstan's, Stepney, E.

The disused burial-ground of St. Anne's, Limehouse, E.

The disused burial-ground of St. Mary-le-Strand, W.C.

A recreation ground in Winthrop Street, Whitechapel, E.

Assistance will be provided for the laying out of:—

The disused burial-ground of St. Mary's, Lewisham, S.E.

The Marylebone burial-grounds in Paddington Street, W.

And for the planting of trees in Finchley New Road.

We have on various occasions discussed the subject of what should be done, and what is the best way of doing it, from a sanitary and from a hygienic point of view, and we may, in view of the importance and interest attaching to the subject, refer to it again on some future occasion.

—— TURNER MEMORIAL.—A committee meeting will be held at twelve noon, on Tuesday, January 12, in the conservatory of the Royal Horticultural Society.

—— HORTICULTURAL CLUB, 1, HENRIETTA STREET, COVENT GARDEN, W.C.—The monthly dinner and *conversazione* of this Club will take place on Tuesday, the 12th inst., at 6 o'clock. The discussion will be on Cape Bulbs, to be introduced by Mr. J. G. BAKER, of the Royal Herbarium, Kew. The annual meeting of the committee of the Club will be held at the same place at 5 P.M., when the Secretary's annual report will be presented.

—— THE PROPOSED SCHOOL OF FORESTRY IN EDINBURGH.—The report of the Select Committee on Forestry states that it was found impossible to conclude investigations during the past session, and recommends that a committee on the subject should be appointed in the next session of Parliament. On the general subject of the proposed Forest School, Colonel PEARSON, in examination before the committee, expressed himself in favour of a Chair of Forestry at the Edinburgh University, but he further stated that he had no actual faith in lectures in the school unless illustrated by practical instruction. Regarding the extent or scope of the school, Mr. THISELTON DYER, in reply to Sir EDMUND LECHMERE, said he would make the school applicable to India and the Colonies as well as to our own country.

—— ROSES AT CHRISTMAS OUT-OF-DOORS.—We learn from a correspondent of Messrs. CARTER & CO., whose letter was kindly sent to us, that a bunch of Roses from spring planted specimens, and which had been blooming all through the autumn months, had been gathered at Christmas in the garden of Mrs. MORGAN, at Bryn-y-Garn, Pembrokeshire.

—— CITY MARKETS.—We learn from the *City Press* that a Bill has recently been lodged in Parliament by the London Corporation by which they will have power to build dwelling-houses on the site of the present fruit and vegetable market, to make the Central Fish Market smaller, and to place with it the fruit and vegetable market.

—— ROYAL MICROSCOPICAL SOCIETY, KING'S COLLEGE, W.C.—The next meeting of the Society will be held on Wednesday, the 13th inst., at 8 o'clock precisely, when the following papers will be read:—"On the Microbe of Chicken Cholera," Mr. G. F. DOWDESWELL. "Fresh Water Algæ of the Lake District," Mr. A. W. BENNETT. "On Central and Oblique Light in Resolution," Mr. J. W STEPHENSON.



FIG. 9.—TREE FERN (DICKSONIA ANTARCTICA), IN A GARDEN IN CORNWALL. (SEE P. 48.)

—— NEW SOUTH WALES AT SOUTH KENSINGTON.—At the Colonial and Indian Exhibition, to be opened on May 1 next, the New South Wales Court will present many interesting and instructive features. The New South Wales Department of Mines is now engaged in the preparation of a large number of fine specimens of different colonial timbers intended to show their adaptability for various economic purposes. This department will also have a very extensive exhibit representing the mineral resources of the colony, including numerous fossils illustrating the various geological formations. In connection with the mineral collection there will be several trophies to represent the more remarkable sources of mineral wealth, such as gold, copper, tin, antimony, and coal, and probably also silver. There will also be a considerable contribution of both mineral and timber specimens by private exhibitors. The new South Wales Fisheries Commissioners will exhibit not only pictures of fish and specimens preserved in spirits, but also tinned or canned samples of the chief edible varieties. This exhibit will also include fish, leathers, and oils. The exhibit from the Australian Museum at Sydney will supplement that of the Fisheries Commission with an interesting collection illustrating very completely the natural history of New South Wales. One of the features in which this collection will be remarkable is the ethnological section. In this section of natural history exhibits there will also be many private contributions. The Department of Public Works, including the Railway Branch, will send a variety of interesting exhibits, and the Government Printing Office at Sydney will show a large number of photographic views, illustrating the scenery of the city and the interior.

—— THE "ROSARIAN'S YEAR-BOOK."—This attractive little annual has once more come up; it is prefaced by a portrait of Mr. CANT, and an appre-

ciative account of his career. A symposium on mildew follows—a mouldy subject, truly, but well handled by Mr. WORTHINGTON SMITH, Mr. BADGER, and others. Mr. GIRDLESTONE advocates the wider culture of single Roses as decorative plants, in which we most fully agree. We could spare some few hundreds of exhibition Roses from our gardens, provided their room were filled by the, to us, more beautiful because less artificial garden flowers. Mr. MAWLEY descants, as usual, on the weather aspects of the past Rose year, adopting with approval, as all out-of-door gardeners must, Sir JOHN LAWES' dictum, "The harvest depends more upon the year than on the field."

—— TILLANSIA CONFERTA.—Many of the most showy Bromeliads are objectionable for small places on account of their large size and the space they occupy, but in the present species we have a neat and attractive plant that can be accommodated where house-room is limited. The individual flowers are neither very durable nor very conspicuous, but both these characters may be ascribed to the bracts. These are deep crimson, almost scarlet, boat-shaped, and of some considerable size, so that they completely conceal the peduncle that bears them. This latter is about 8 or 10 inches long and covered for the greater part with these bracts, and arises from the centre of a compact vasiform mass of leaves not exceeeding 9 or 12 inches long. The leaves are smooth, light green, entire, ligulate, slightly broader near the tip, and dilated at the base. It is figured in ANTOINE'S *Bromeliaceæ*, t. 3, and in GAUDICHAUD'S *Voyage de la "Bonite,"* t. 68. In the latter figure it is named Vriesia incurva. In the same work is another plant figured as Vriesia conferta. This latter genus is now amalgamated with Tillandsia, which renders these names a little confusing. The plant has flowered in the stove at Kew, and a figure is being prepared for the *Botanical Magazine*

—— COVENT GARDEN MARKET.—Covent Garden is not quite restored to its usual appearance, the evidences of Christmas still lingering in one or two places—for instance, a sprig of Mistleto hung out for sale here and there; but on the whole decorative material of this description has vanished. Bouquets may be seen, consisting of Roses, Tulips (red and yellow chiefly), Azaleas (Indian), Lilies of the Valley, and Camellias. Other cut flowers comprise Eucharis amazonica, some flowers of which are of very fine size; Odontoglossums of various species, but crispum is predominant; Dendrobiums and a few other Orchids; a few pieces of Euphorbia, Bouvardia, Deutzia, Solomon's Seal, and a fair quantity of Acacia, Lilac, Cannas, Hyacinths, and other bulbous flowers, and, of course, Christmas Roses, French White Lilac, and a few Chrysanthemums. In the way of fruits there is as yet no very great alteration, Oranges and Spanish Melons being the prevalent items. Foreign Grapes and the remnants of the English crop are very plentiful. There are large stocks of Nuts, Custard Apples, Tomatos, together with Apples, and Pears, of the former of which a large quantity is American. There is greater variety among vegetables, Celery being largely present, but Seakale, which has lately come in, is rather scarce. Rhubarb, Sprouts, Watercresses, Endive, Cauliflowers, and Asparagus (which is priced at 1*s.* 6*d.* for a very small bundle), besides many others, give a great variety in this section. Peas, which are, of course, foreign (doubtless from the South of France or Algiers), and French Beans may be looked upon as delicacies at this time of year. Mushrooms are now beginning to be plentiful at a price of 1*s.* 3*d.* to 1*s.* 6*d.* per pound. Of plants in pots there are Poinsettias, Cyclamens, Lily of the Valley, Hyacinths, &c., Primulas, Ferns and Palms.

—— REINWARDTIA TRIGYNA.—The generic name here given has been applied to plants belonging to different orders by different authors, but the *Genera Plantarum* has done good service in clearing up many such difficulties, as well as separating the plants of this genus from Linum proper. The members of the latter have narrow entire leaves, five styles, and oblong or linear stigmas, while those of Reinwardtia are shrubby plants, with broad, more or less serrate leaves, three or four styles, and globose stigmas. R. trigyna was figured long ago in the *Botanical Magazine*, t. 1100, besides other works, under the name of Linum trigynum, and that in all probability is the commonest name in gardens, but usage in this manner should be no obstacle to correct nomenclature and progress. For stove or greenhouse decoration at this season of the year it is invaluable, for various reasons. The large bright yellow flowers contrast well with other occupants of the house, and although individually they endure but a short time, a succession is kept up by numerous axillary and terminal short or clustered racemes. Some groups of young and healthy grown plants in the greenhouse at Kew are very effective and prominent at this season, demonstrating its value for such purposes.

—— ROYAL NORTHERN HORTICULTURAL SOCIETY.—At a meeting of the acting directors of this Society, held in the office of the Secretary (Mr. A. M. BYRES, C A., 74, Union Street, Aberdeen), on last Monday evening, Town Councillor LYON was elected Chairman, and Major CROMBIE Vice-Chairman, for the ensuing year.

—— WOODHOUSE MOOR, LEEDS.—This recreation ground of Leeds is now approaching completion, in so far as concerns the walks, drives, and main groups and shrubberies. The local gentry and traders have contributed largely to this, and as have also the working men of the town. We learn from a Leeds correspondent that the turf has likewise been much improved in quality and appearance, and those who knew the Moor in former years will recollect what a rough wild piece of land it then was. This amelioration is due to the employment of the town sewage, and the contents of street gullies, which when allowed to lie a year, are found to be excellent for all kinds of vegetation.

—— CLOVER AND GRASS SEEDS.—The annual circular issued by Messrs. HURST & SON, of Houndsditch, bearing upon the various crops of Clovers, grass seeds, &c., has just been issued, and from it a knowledge is derived that the yield of English red Clover and Cow-grass forms a marked contrast to that of last year. That was the largest on record, while that of the past season is below the average. Some lots of "maiden" seeds were saved in different parts of the country, and will most likely produce good coloured and well ripened samples. A considerable breadth of the second crop was left for seed, but the broken weather commenced just at the time for cutting, and continued long enough to injure, and in many cases quite destroy the crops. This presumable scarcity should point to high prices, but it must be borne in mind that there still remains on hand a large quantity of yearling seed to check any extravagant advance. In regard to foreign red Clover the German crop is reported large, the samples showing good colour, but generally smaller in grain than last year's yield: a few parcels prove exceptionally fine, better in appearance than any home-grown seed yet seen. The French reports speak of a large crop of south country seed, with a correspondingly small one in northern provinces. The former is not recommended for English use, but the latter stands this climate well, and when machine cleaned no objection can be taken to it. American advices report an under-average crop, and it is doubtful if Canada will be able to send any, but much will depend upon prices in England. At present home prices offer no inducement to shippers—in fact, considerable quantities of yearling reds have already been shipped to America. Of white Clover there is but a small English crop, but samples of good quality are expected to come to market. The German crop is much less than last year's, but as there is still a large quantity of yearling seed on hand a high range of prices is not anticipated. Of Alsike there is a fair English, and a good crop from Germany; France has some to send, and good quality is generally shown by the samples forwarded. This article is now cheaper than can be remembered at any previous time. On Clover-sick lands Alsike produces heavy yields, and therefore as an economical crop a larger sale than usual is expected. The supply of Trefoil has lately proved in excess of the demand, and judging by the quantity held over, much higher prices cannot be expected, and they have now receded to a low level. The English crop is a fair average one, but of smaller grain than usual; the French crop is a large one, and of a quality equal to that of the English. Lucerne is represented by a moderate crop of average quality. French crops of Sainfoin are reported to be good and well harvested, while the English yield is much below that of last year. Respecting Italian Rye-grass, the French crop is decidedly under the average, and fine pure seed is very scarce. The Irish crop is very large, and the weight per bushel above the average; very much depends on the way in which the seed is cleaned by the machine, and this process, when thoroughly done, adds materially to the expense. Good crops of bright coloured seed of perennial Rye-grass are reported. The large quantities kept over operates to lower the price of new seed. If these large yearling stocks had been absent, all weights of perennial Rye-grass would have been higher this season, as the average weight per bushel is less than for two years past. Natural grasses maintain generally a high range of prices. The demand for the last few years has been quite up to the supply, and for several articles in excess of it. Cocksfoot and Timothy are scarcer and dearer both than they were last season. White Mustard is represented by an average crop of good quality. Rape is a very large crop, and much lower prices prevail than have ever been experienced.

—— EUCHARIS.—Mr. DAVIES, of the Mote Park gardens, near Maidstone, informs us that he has a plant now bearing six flower stalks, with an average of eight flowers in each truss, this being the fourth time of flowering within twelve months. The plant, Mr. DAVIES says, "is very strong." It must indeed be so. A flower from this plant measures 5 inches across, and has a double row of flower-segments, each row consisting of five, and a central cup of ten stamens in one row. On examination of the flower it is seen to be curiously composite. The two ovaries are side by side, and so united together that it is only on cutting them across that their dual nature is perceptible. In an ordinary Eucharis there should be three cavities in the ovary, here there are five—four normal, while the fifth is really composed of two blended together to form one large central cavity.

—— THE SNOWFALL.—The heavy snowfall suggests the removal of the snow from the boughs of valuable specimen trees and shrubs as early as possible, before the snow becomes frozen, when it is not only more difficult to dislodge, but more dangerous to the tree. It is curious to observe the different effect of the snow according to the habit of tree. Pyramidal trees of tapering habit, with long slender leaders, are laid flat. The branches of the Arbor-vitæ are forced away from the trunk. Fastigiate trees, and in which the branches are tolerably firm, as in the Lombardy Poplar, are little affected; Birches of similar habit, but with very slender twigs, are forced open as the Arbor-vitæ. Araucarias have boxing-gloves on the ends of their branches. Rhododendrons are covered with a thick fleecy quilt. The trees in the Parks and other situations were transformed into objects of great beauty, not, however, without in some instances being injured, many large branches being broken off by the weight of the snow. An old Elm in Hyde Park, which stands on the ground covered by the Exhibition of 1851, has had several branches wrenched off. It was in a dilapidated condition previous to this accident, which has lessened it considerably.

—— GARDENING APPOINTMENT. — Mr. J. MCINTOSH, of Letham Hill, Glasgow, as Gardener to A. A. WATT, Esq., Thornhill, Londonderry.

PLANT PORTRAITS.

BRUCKENTHALIA SPICULIFLORA (Ericaceæ), *Garten Zeitung*, November 12, 1885.

CITRUS TRIPTERA, *Revue Horticole*, Nov. 16, 1885.

EPIDENDRUM TRACHYCHILUM, *Gartenflora*, t. 1205.

HOULLETIA BROCKLEHURSTIANA, *Revue Horticole*, November 1, 1885.

MYOSOTIS DISSITIFLORA VAR. GRANDIFLORA, *Garden*, October 24, 1885.

NIDULARIUM AMPULLACEUM, *Belgique Horticole*, 1885, t. 14.

PHALÆNOPSIS SANDERIANA, *Orchid Album*, t. 209.

PHALÆNOPSIS VIOLACEA VAR. SCHROEDERI, *Illustration Horticole*, t. 576.

PODALYRIA SERICEA, *Garden*, October 17, 1885.—Greenhouse Papilionaceous plant with beautiful rosy-lilac flowers.

PRUNUS MUME VAR. ALPHAUDE, *Revue Horticole*, December 16, 1885. — A beautiful hardy double-flowered Peach.

POTATO CULTURE.

THE following summary of results of experiments made at Chiswick in 1884 and 1885, for the purpose of testing the efficacy of the system of "earthing-up" advocated by Mr. Jensen, was read by Dr. Masters, on behalf of the sub committee appointed to carry out the experiments, at the last meeting of the Scientific Committee of the Royal Horticultural Society :—

The experiments made at Chiswick for the purpose of testing the value of the Jensenian plan of moulding Potatos as a preventative of the Potato disease were carried out in the present year in essentially the same manner as in the preceding year. A few slight modifications were adopted to facilitate the making of the record, and the tubers were placed at rather wider distances, the rows being now 4 feet apart, but these changes did not in any way interfere with the fair comparison of the results of the two years, the number of plants in each row being the same. The chief difference in 1885 consisted in the longer time the Potatos were left in the ground. Thus in 1885 the longest duration of moulding was 118 days on section I. of each row, as contrasted with 83 days in 1884. The shortest moulding period in 1885 on section V. was 62 days as compared with 27 days in 1884. The Potatos were examined on March 31 by the committee, previous to planting, and all diseased and "suspicious" tubers eliminated. During growth they were inspected at stated intervals, and their condition noted. The season was for the most part warm and unusually dry, and no appearance of disease was noticed at any time on the haulms. On October 10, the weather for some days previously having been wet, the tubers were lifted and carefully examined by Mr. Shirley Hibberd, Dr. Masters, and Mr. Barron. Two unmistakeably diseased tubers were noted during the uplifting on row 3 (Adirondack); and three on row 2 (Recorder). Others that appeared suspicious were sent to Mr. George Murray, who, after adopting appropriate methods of cultivating the fungus, reports that only one was really diseased. It should be remarked that the peculiar red spots in the substance of some of the tubers noted the previous year were not observed at all, though carefully looked for.

As the immediate object of the experiments has again failed in its fulfilment, owing to the slight development of the fungus, a detailed report seems unnecessary, though the documents are at hand for preparing it if thought desirable. A few general remarks, based on the results of the two years taken together, may be of interest.

1. The amount of produce under the varied conditions of the experiment.

2. The effects of long or short periods of earthing-up, and of not earthing-up at all.

1885.

Sections.	Duration of Moulding.	Bent Tops. Recorder. Row 1. Cut.	Bent Tops. Recorder. Row 2. Whole.	Bent Tops. Adirondack. Row 3. Cut.	Bent Tops. Adirondack. Row 4. Whole.	Control. Recorder. Row 5. Whole.	Control. Adirondack. Row 6. Whole.	Erect Tops. Recorder. Row 7. Cut.	Erect Tops. Recorder. Row 8. Whole.	Erect Tops. Adirondack. Row 9. Cut.	Erect Tops. Adirondack. Row 10. Whole.	Control. Recorder. Row 11. Cut.	Control. Adirondack. Row 12. Cut.	Lapstone. Row 13. Whole.	Regents. Row 14. Whole.
	Days.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.	Lb. oz.
V.	62	8 12	10 0	12 0	13 4			9 8	10 0	14 4	15 8				
IV.	76	6 4	8 8	7 8	11 4	*		8 8	7 4	10 0	11 8	*	*	*	*
III.	99	6 4	7 4	7 8	8 12			9 4	10 0	10 8	13 8				
II.	104	6 0	6 4	12 0	12 0			9 0	9 4	13 12	14 8				
I.	118	6 0	4 8	11 8	14 8			6 8	9 0	17 8	21 8				
	Totals	33 4	36 8	50 8	59 12	32 8	04 12	42 12	45 8	66 0	76 8	41 0	87 4	62 4	75 8

1884 and 1885.

RECORDER.

Sections.	Years.	Duration of Moulding.	Moulded. Bent Tops. Row 1. Cut. Totals.	Moulded. Bent Tops. Row 2. Whole. Totals.	Unmoulded. Control. Row 5. Whole. Totals.	Unmoulded. Control. Row 11. Cut. Totals.	Moulded. Erect Tops. Row 7. Cut. Totals.	Moulded. Erect Tops. Row 8. Whole. Totals.	Years.
		Days.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	
V.	1884	27	7 1 / 15 13	8 8 / 18 8					1884
	1885	62	8 12	10 0			9 8	10 0	1885
IV.	1884	41	5 13 / 12 1	10 5 / 18 13			6 8	7 4	1884
	1885	75	6 4	8 8	*	*			1885
III.	1884	55	4 11 / 10 13	10 1 / 17 5	47 12 / 100 4	43 7 / 87 0	9 4	10 0	1884
	1885	90	6 4	7 4	52 8	44 0			1885
II.	1884	68	8 10 / 14 10	9 4 / 13 8			9 0	9 4	1884
	1885	104	6 0	9 4					1885
I.	1884	83	8 10 / 14 10	9 1 / 13 4			37 4	46 5	1884
	1885	118	6 0	4 3			6 8 / 42 12	9 0 / 45 8	1885
	Totals for the two years ..	....	63 1	84 0	100 4	87 0	80 0	91 13	

ADIRONDACK.

Sections.	Years.	Duration of Moulding.	Moulded. Bent Tops. Row 3. Cut. Totals.	Moulded. Bent Tops. Row 4. Whole. Totals.	Control. Unmoulded. Row 6. Whole. Totals.	Control. Unmoulded. Row 12. Cut. Totals.	Moulded. Erect Tops. Row 9. Cut Totals.	Moulded. Erect Tops. Row 10. Whole. Totals.	Years.
		Days.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	Lb. oz. Lb. oz.	
V.	1884	27	10 11 / 22 11	16 5 / 29 9			9 6 / 23 10	10 12 / 32 4	1884
	1885	62	12 0	13 4			14 4	15 8	1885
IV.	1884	41	11 9 / 19 1	14 0 / 25 4			12 15 / 22 15	9 12 / 21 4	1884
	1885	79	7 8	11 4	*	*	10 0	11 8	1885
III.	1884	55	10 3 / 17 11	10 1 / 18 13	91 4 / 186 0	95 10 / 182 14	12 7 / 22 15	14 0 / 27 8	1884
	1885	90	7 8	8 12	94 12	87 4	10 8	13 8	1885
II.	1884	68	14 14 / 26 14	14 7 / 29 7			14 5 / 28 1	15 7 / 29 15	1884
	1885	104	12 0	15 0			13 12	14 8	1885
I.	1884	83	15 6 / 26 14	14 7 / 28 15			13 5 / 30 13	18 7 / 39 15	1884
	1885	118	11 8	14 8			17 8	21 8	1885
	To als for the two years ..	....	113 3	129 0	186 0	182 14	128 6	150 14	

* In 1884 the results of each section in the rows marked with an asterisk were not taken separately, but collectively only.

3. The consequences of bending the haulms in the manner recommended by Mr. Jensen.

4. The results obtained from planting whole tubers and cut sets.

1. *The Aggregate Produce* from all the rows of Recorder in 1884 was 257 lb. ; in 1885, 254 lb. 8 oz. ; showing a decrease of 2 lb. 8 oz. in 1885, and a total amount for the two years of 512 lb. 8 oz. The corresponding figures in the case of Adirondack are 455 lb. 9 oz. in 1884, 434 lb. 12 oz. in 1885, showing a decrease of 20 lb. 13 oz. in 1885, and a total amount for the two years of 890 lb. 5 oz. Thus the actual produce of all the rows of each variety was so nearly alike in the two years as to be all but practically identical. On the whole, there was a decrease in 1885, in spite of the tubers having been allowed to remain longer in the ground than in 1884. This decrease may, perhaps, be accounted for by the prolonged drought, but the close approximation in the amounts of produce in the two years respectively seems to afford an indication of the success of the method employed in carrying out the experiments.

2. *Effect of Earthing-up on the Amount of Produce.*—When the results of the two years are combined it comes out clearly (in the case of Recorder), under all conditions of growth, that the greatest weight of produce (irrespective of quality) was obtained from those sections (IV. and V.) which were earthed-up for the shortest time. Some of the largest tubers were met with in these sections, but mixed with a large number of smaller tubers, while their general quality was uneven and relatively bad.

The same general remarks do not, however, apply to Adirondack, which shows more variation in this respect, and in which the largest, as well as the best and most even tubers, were frequently found in those sections which had been earthed-up for the longest time. It may be suggested that the results obtained show the probability that the process of earthing-up differs in its effects materially in the case of different varieties of different habit of growth, texture, &c. At any rate, it may be useful to call attention to this subject, with a view to future experiments, the more so, as little or nothing is known of the relative effect of earthing-up on different varieties.

Potatos Grown Without Earthing-up.—In both years four "control rows" were planted, two of each variety, the object being to afford a comparison between the Jensenian system of moulding and the natural condition of growth, in which no "moulding" at all occurs.*

The total produce, for the two years, on row 5 (Recorder, whole), amounted to 100 lb. 4 oz., an amount considerably in excess of the yield from any of the moulded rows of this variety (row 2, 84 lb. 6 oz. ; row 8, 91 lb. 13 oz.). On row 11, where cut tubers were planted, the yield for the corresponding period was 87 lb.—also somewhat in excess of the crops on the corresponding two rows subjected to moulding (row 1, 68 lb. 1 oz., and row 7, 80 lb.). The tubers on row 5 and row 11 were noted as much mixed in size ; some of those on row 5 being much coarser and larger than on the other rows of the same variety, while many others found lying on the surface were green and small. They had also been the subject of insect attack and injury by slugs and millipedes to a much greater extent than the tubers in the other rows.

Of Adirondack left to itself the total produce of the whole tubers (row 6) for the two years was 186 lb.—an amount greatly above the quantity on the corresponding moulded rows (row 4, 129 lb. ; row 10, 150 lb. 14 oz.). In the case of the cut sets (row 12), the total amount (for the two years) was about the same, viz., 182 lb. 14 oz., and also largely in excess of the corresponding moulded rows (row 3, 113 lb. 5 oz. ; and row 9, 128 lb. 6 oz.). The same remarks as to quality apply to the unmoulded rows of Adirondack as to those of Recorder.

It is clear, then, that under all circumstances the actual produce was greater in the unmoulded rows, but that, while some excellent tubers may be grown in this way, the general bulk is much mixed, comprising numerous tubers unfit for consumption, but which might possibly have some advantage (so far as the plant is concerned, in point of physical health, over those moulded-up. The small green tubers, for instance (if not affected by disease), might furnish stronger plants than those grown beneath the surface, while their noxious flavour might repel rather than attract predatory insects, &c.

3. *The Effect of Bending the Haulms or otherwise.*—In each year two rows of each variety were allowed to grow without interference, while in other two rows of each variety the haulms were at regular intervals of time bent downwards. There was no opportunity afforded in either year of testing the value of this practice as a preventative of disease, but the average amount of produce for the two years from the erect and the bent tops respectively shows the effect of the check to growth occasioned by the bending. The average produce of the two years on rows 7 and 8 (Recorder, erect tops) was 81 lb. 6 oz., on rows 1 and 2 (bent tops) 76 lb. 2 oz.

The corresponding figures in the case of Adirondack are 139 lb. 10 oz. for the unbent haulms (rows 9 and 10), and 126 lb. 1 oz. for the produce of the bent tops (rows 3 and 4).

4. *The Effect of the Employment of Whole Tubers or of Cut Sets.*—In the control rows, as before stated, the greatest weight of produce of Recorder in both years was obtained from the whole tubers, the totals being 100 lb. 4 oz. on row 5 (whole), and 87 lb. on row 11 (cut).

In the case of Adirondack, the total produce in the case of the whole tubers (row 6), = 186 lb., shows only a slight excess over the yield from the cut tubers (row 12), = 182 lb. 14 oz. In 1884 the produce from the cut tubers (95 lb. 10 oz.) was slightly in excess of that from the whole tubers (91 lb. 4 oz.) ; in 1885, however, the balance is much in favour of the whole tubers, *i.e.*, 94 lb. 12 oz. as against 87 lb. 4 oz.

The whole tubers of Recorder subjected to moulding in various degrees, yielded in the two years a total crop of 176 lb. 3 oz., *i.e.*, 91 lb. 13 oz. from erect, and 84 lb. 6 oz. from bent tops.

The cut tubers of the same variety for the same period supplied 148 lb. 1 oz., = 80 lb. from the erect, and 68 lb. 1 oz. from the bent tops.

The whole tubers of Adirondack produced a yield of 279 lb. in the two years, of which 150 lb. 14 oz. were yielded by the erect, and 129 lb. by the bent haulms.

The cut tubers of the same variety yielded during two years a total of 241 lb. 9 lb., viz., 128 lb. 6 oz. from erect, and 113 lb. 3 oz. from bent haulms.

In general terms it may be stated, as a result of these experiments, that—(1). Earthing-up produces a crop of more uniform and of superior quality, though less in actual quantity. (2). That bending the haulms occasions a diminished yield. (3). That a larger aggregate produce is derived from planting whole tubers than from the employment of cut sets.

The tables on preceding page show first the actual amount of produce of each variety under all conditions of growth in 1885 ; and next a similar comparative statement of the results for the two years, 1884 and 1885, for each variety.

* It may here be noted that no special rows of Recorder or Adirondack were set apart and moulded in the ordinary way, because, for the immediate object of these experiments such a course was unnecessary, the experimental rows being contiguous to a large area devoted to the cultivation of numerous kinds of Potatos in the usual way, so that had the disease appeared, ample means of testing the effects of the ordinary, as compared to the Jensenian system, would have been afforded.

THE COMMITTEES OF THE ROYAL HORTICULTURAL SOCIETY.

THE following gentlemen have been appointed to serve on the different committees for the year 1886. [Members of Council are, we believe, members, *ex officio*, of all committees. ED.] :—

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Bennett, Alfred W., M.A., B.Sc., F.L.S., 6, Park Village East, W. [borough.
Berkeley, Rev. M. J., F.R.S., Sibbertoft, Market Harboulger, G. S., 18, Ladbrooke Grove, W.
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Glaisher, James, 1, Dartmouth Place, Blackheath.
Houston, D., F.L.S., 179, Mayall Road, Herne Hill, S.E.
Lee, Wm., Downside, Leatherhead.
Lowe, Dr. Wm. Hy., Woodcote, Inner Park Road, Wimbledon.
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Lynch, R. Irwin, A.L.S., Botanic Gardens, Cambridge.
McLachlan, R., F.R.S., West View, Clarendon Road, Lewisham.
Michael, Albert D., Cadogan Mansions, Sloane Square, S.W.
Murray, G., Natural History Museum, South Kensington, S.W.
O'Brien, James, Harrow-on-the-Hill.
Pascoe, F. P., F.L.S., 1, Burlington Road, Westbourne Park, W.
Plowright, C., 7, King Street, King's Lynn.
Ridley, Henry N., B.A., Natural History Museum, South Kensington, S.W.
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Cannell, Henry, The Nurseries, Swanley.
Dean, R., Ranelagh Road, Ealing.
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Duffield, G., The Gardens, Bamford Lodge, Winchmore Hill, W.
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Kellock, W. B., F.L.S., Stamford Hill, N.
Laing, John, The Nurseries, Stanstead Park, Forest
Lendy, Major, Sunbury-on-Thames. [Hill, S.W.
Low, Hugh, The Nurseries, Clapton, E.
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Masters, Dr. Maxwell, F.R.S., Mount Avenue, Ealing, W.
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Paul, George, "Old" Nurseries, Cheshunt, N.
Perry, Amos Isaac, Stamford Road, Page Green, Tottenham.
Pollett, H. M., Fernside, Bickley, Kent.
Turner, Harry, Royal Nursery, Slough.
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Crowley, Philip, Waddon House, Croydon
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Ellam, Joseph, The Gardens, Cliveden, Maidenhead.
Ford, Sidney, The Gardens, Leonardslee, Horsham.
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Miles, George T., The Gardens, Wycombe Abbey, High Wycombe.
Norman, G., The Gardens, Hatfield House, Hatfield.
Paul, William, The Nurseries, Waltham Cross, N.
Roberts, J., The Gardens, Gunnersbury Park, Acton.
Ross, Chas., The Gardens, Welford Park, Newbury.
Rutland, F., The Gardens, Goodwood, Chichester.

Saltmarsh, T. J., The Nurseries, Chelmsford.
Silverlock, Charles, 412, Strand, W.C.
Smith, James, The Gardens, Mentmore, Leighton Buzzard.
Sutton, Arthur W., The Nurseries, Reading.
Veitch, H. J., F.L.S., Royal Exotic Nursery, Chelsea, W.
Warren, W., Worton Gardens, Isleworth.
Weir, Harrison, Henwick Lodge, Lansdowne Road, Tunbridge Wells.
Willard, Jesse, The Gardens, Holly Lodge, Highgate, N.
Woodbridge, John, The Gardens, Syon House, Brentford.

TREES AND SHRUBS.

THE TULIP TREE.

I THOROUGHLY agree with the remarks of your correspondent, "W. N.," in reference to the Tulip tree. Few trees surpass it in beauty, and in every respect it is well adapted for beautifying the garden where space is ample. There is a grand specimen growing in the grounds here, the height of which is over 75 feet; its trunk, 3 feet from the ground, is 12 feet. Its erect stem, with slightly diminished circumference, is free from branches until it reaches a height of nearly 30 feet, the branches then breaking away from the stem form a splendid head. Year by year it is loaded with its fragrant flowers in July, and truly is a sight not easily forgotten. The situation is remarkably well sheltered, being protected from the north and east winds. *W. Masson, Cookham Grove, Berks.*

—— I have in my garden a Tulip tree in some respects finer than that mentioned by your correspondent "W. N." It is over 80 feet in height, and its trunk, at 3 feet from the ground, is 10 feet in circumference; at 4 feet from the ground it is considerably more; the spread of its branches is about 60 feet. I wrote about this tree to the *Gardeners' Chronicle* about eight years ago, and it was afterwards stated that it was believed to be the tallest tree but one of its kind in Great Britain, but I have mislaid the reference. My tree seems very healthy, although it must be very old. *Arthur Mesham.*

THE MAIDENHAIR TREE.

Within 100 yards of the Tulip tree I have described stands a remarkable form of the Salisburia adiantifolia. This tree is growing within 10 feet of the river wall which surrounds the lawn, and when there is high water the roots of this tree, or the most of them, are under water for several days at a time. The situation is fully exposed to the north-east winds, nevertheless the tree is in perfect health, many branches showing an annual growth of over 1 foot in length. The stem, which is only 2 feet in height, measures 4 feet 6 inches in circumference; at that point it breaks into many branches, some going upright to a distance of over 30 feet, while others grow in almost a horizontal direction, the spread of the branches being 45 feet. The spreading graceful habit of this tree is remarkable for its beauty, and when in autumn the leaves assume that rich golden hue the effect is really charming, and claims for this tree a first place among ornamental trees. *W. Masson, Cookham Grove, Berks.*

HOLLIES.

It would be interesting to learn whether that dense-growing and somewhat formidably spined Holly, the Hedgehog (Ilex Aquifolium ferox), is a male kind or not I have had it blooming here several times, but have not found it to berry, and if it be shown that it is a pure male of course I shall look for fruit no longer. On the other hand, should any kind produce only pure female blooms, from whence does it obtain pollen to set its fruit, assuming that it is growing singly and remote from any other kinds? Or is it correct to assume that a tree or bush fruits only when it produces both kinds of sexual flowers? The Hedgehog Holly above alluded to bloomed most profusely this season, but I noticed that it was less conspicuous than is usually the case. I have frequently noted that trees and bushes somewhat stunted, or exhausted, perhaps, with frequent fruiting, seem to fruit more regularly than do trees full of robust growth and leafage. Does this lack of coarseness promote the production of both kinds of sexual bloom, whilst only one kind is developed on robust trees? Or are there some Hollies which never bloom, hence have no sexual features? This year exceptionally young and strong growing plants have fruited freely, thus showing that every rule has its exceptions. In nurseries oft moving will create that checked condition of growth sometimes found in old trees; hence it is not an unusual feature to find many small trees heavily berried in nurseries. This year well established and almost luxuriantly growing trees have done so; hence it seems evident that something during the autumn of 1884 proved exceptionally favourable to the development of fruiting wood in the Holly. We shall probably see that many a grand old bush, faithful in its production of fruit almost annually, has this year been sacrificed because of the unusual and wonderful crop of fruit produced, and future years may suffer until time has once more ripened and matured the new growth. We have good reason to be thankful that we possess so handsome and so hardy an evergreen shrub as the Holly, for truly it lends enchantment to Christmas seasons, when miserable weather renders such enchantment sadly needful. *A. D.* [See *Gardeners' Chronicle* for December 26, 1885, p. 815. ED.].

CONTINENTAL NOVELTIES.

AQUILEGIA SKINNERI FLORE PLENO. — This (fig. 10) is a new double flowering hybrid of A. Skinneri, which Messrs. Haage & Schmidt are sending out. The nice very double flowers, partly with double yellow, and partly with double white corollas, may be described by comparing them to double-flowered Fuchsias, as they resemble these latter very much in form and beauty. The plants are of the same free growth, hardiness, and as free flowering as the single-flowered species.



FIG. 10.—AQUILEGIA SKINNERI FLORE PLENO.

ACER PLATANOIDES VAR. COMPACTA.

M. Paillet, Chatenay, near Paris, has just introduced what appears to be a very striking novelty in the shape of a Norway Maple with a round head, like that of an Acacia. M. Paillet recommends it for avenue work, and for street planting it would be very suitable. We have not yet seen this tree, but, judging from the figure and description, it must be very remarkable.

MR. H. B. MAY'S NURSERY, EDMONTON.

A WALK round the flower market at Covent Garden on a "market morning" has probably prompted a desire in the mind of the visitor to see some of the specialties (which are there displayed so well) at their home quarters, and learn a little of "how the thing is done" at the plant manufactories. I have lately inspected one of these "manufactories," and a few brief notes on what was noted there may not be out of place at the present time. If one were asked to state the specialty at the above nursery the answer would at once be Ferns. Not that other things are not grown well, but the Ferns are grown in such great quantities that they arrest attention. A look into some of the houses gives one the idea of gazing upon a meadow of Ferns. As giving some idea of the number of 48-sized pots used in this nursery alone during the past season it may be mentioned that 2000 "casts" have been disposed of, and as each "cast" contains forty-eight pots the sum-total is something enormous. Beginning with the Adiantums we find that popular variety, A. cuneatum, grown in the greatest number. Of this type and useful varieties are A. Pacottii, A. scutum, and A. pubescens. With regard to A. cuneatum it is grown "hard," that is to say it is not coddled; under this system of treatment the fronds assume a yellowish tinge—a point of some importance, it appears, to *connoisseurs* in the market line, as giving the plants a higher commercial value.

We may also mention Pteris cretica and its varieties, the best of which is the crested form of albo-lineata; Pteris serrulata and the crested forms, P. s. cristata compacta—what a name!—a beautifully compact Fern, and a variety which originated at this nursery; it is undoubtedly an acquisition amongst this class of plants.

Pteris hastata, P. tricolor, P. argyrea, Cyrtomium falcatum, Doryopteris palmata, and Doodia aspera multifida may be also noted as Ferns useful for small pots.

Amongst these we found suspended from the roof, and thus having a very graceful effect, some grand specimens of the lovely Adiantum farleyense grown in this way, and therefore somewhat exposed: the fronds assume a beautiful pinky tint, suggestive of A. tinctum; A. dolabriforme, a variety particularly adapted by its gracefully pendulous habit for basket-work; Davallia Mariesii, one of the best; D. Mooreana: this in a small state is very useful; Nephrolepis davalloides furcans: some very fine plants of these, roof-suspended and running the whole length of a house, had a very effective appearance, and admirably illustrated its adaptability to this kind of work.

A system has been introduced in this nursery of planting two varieties together in a pot, for the purpose of effect; they are largely used in this way for table decoration. It may be that for this purpose one plant alone may not look well, but when associated with another the combination produces a pretty result. The following were remarked as living happily together in pairs, and their enumeration may be instructive, viz., Pteris argyrea and P. hastata, P. argyrea and P. serrulata, Doryopteris palmata and Adiantum decorum, A. scutum and A. pubescens, Pteris cretica albo-lineata cristata and Adiantum cuneatum. The idea is an original one, and seems well worthy of further adoption.

An effective plan for displaying Crotons is adopted at this nursery; they are suspended on shelves from the roof, and running down the centre of the house its whole length, their bright foliage giving a brilliancy to the house. This would appear be the best way to grow them when in this stage, as they receive the full benefit of the light, the leaves in consequence showing a high state of coloration. The following are a few of the best sorts:—Massangeana, one of the best for colouring; Princess of Wales, a good companion to Warreni; Hawkeri, Earl Derby, spiralis, tortilis, Comte de Germiny (good), Lord Wolseley (fine), and Youngii, in the way of majesticus. Dracænas Cooperi, terminalis, and rubra, are the three staple varieties grown. With regard to D. rubra (or what is grown for it), the variety grown here is a broad-leaved sort, and is altogether a better variety than is usually met with under this name, realising a higher price in the market.

Of other things there were noticed batches of young plants of Aralias, A. leptophylla, A. Veitchii, A. gracillima, and Ficus elastica, one of the favourite market plants; of this a great quantity is grown from cuttings made in March, which may now be seen as thriving bushy plants, from 18 inches to 2 feet in height. Cyperus alternifolius is a plant much in request, judging from the quantity of it grown, its gracefully drooping foliage giving it an effective appearance. The Begonias of the Rex type give a change from the glowing, bright-flowered tuberous race. Hedera maderiensis variegata, a fine stock, is also a favourite here; it is exceedingly pretty and useful in many ways; a good number were seen.

Clematises are largely cultivated, Lady Londesborough and alba Mossiæ—the latter said to be one of the best whites, being still in a flowering condition.

A house of about 100 feet in length is devoted to the cultivation of Général Jacqueminot Rose; the three favourite Teas grown being the well-known

Isabella Sprunt, Niphetos, and Souvenir d'un Ami. W. F. Bennett, one of the new pedigree Tea Roses, a purplish-crimson flower, very bright in the bud, is being tried; it is thought it will be found to be a useful Rose for cutting purposes, being well adapted for buttonholes and bouquets, and it is withal an extremely fragrant variety.

Amongst Tree Carnations the three favourites are Miss Joliffe, of which an immense stock is grown, Andalusian, and Lucifer. Of the old crimson Clove some thousands are cultivated; they are being forced, and about February next a fine display of bloom may be expected. Gloire de Nancy, said to be the best white, is also grown in quantity. Of those useful winter flowers, Bouvardias, a fine stock is grown, the varieties being corymbiflora, Humboldtii, jasminoides elegans, Dazzler, Alfred Neuner, and candidissima. A word or two must be said about some new double-flowered varieties raised by M. Lemoine. They are welcome additions to this class of plants, are valuable for cutting purposes, their compact trusses of flowers being well adapted for sprays and work of this kind. Victor Lemoine, fine bright scarlet; Sang Lorrain, scarlet, very proliferous plant of vigorous growth; Triomphe de Nancy, flowers soft rosy-salmon, very free.

Amongst Azaleas Fielder's White and A. indica alba are useful for cutting purposes. This operation was begun last month, and from the appearance of the plants it will doubtless go on for some little time yet. The old double white flowered Camellia imbricata alba still holds its own among the whites, and at Edmonton it is highly valued, the flowers being always in request during the winter time. Eucharis amazonica is much grown, the plants being in rude health, the principal requisites to success being plenty of heat and little shade. Zonal Pelargonium Niphetos, a very pure white of the nosegay section—good trusser, and very free—we noted as a good thing and a valuable market variety. Primulas, double and single, are well done, but these will be seen in their beauty a little later on. A good batch of herbaceous Calceolarias is coming on wonderfully well considering that the seed was only shown in August last. Cinerarias, too, will doubtless give a good account of themselves at a later period. It may prove of interest, and by way of a concluding note, to state that forty-three houses are devoted to the culture of plants, and all well utilised, averaging in length from 50 to 120 feet each.

It will, therefore, be well understood that in a cursory description such as this is it has been quite impossible to go fully into details: space forbids it. I have, therefore, only touched upon the principal features of the establishment, and leave it impressed with the idea of the magnitude of the work performed there. *B.*

COLONIAL NOTES.

AUCTION SALES OF CROWN LANDS IN NEW SOUTH WALES.

THE aggregate area allowed to be sold by auction, for the whole colony, in any one year, is 200,000 acres. Two or three months' notice is always given of any sale, and the minimum upset prices are fixed for town lands at £8; suburban lands, £2 10s.; and other lands £1 5s. per acre. But a higher upset may be determined upon, and the value of any improvements may be added thereto; and if the improvements were made in misapprehension, their value may be remitted to the improver. Twenty-five per cent. of the purchase money must be paid at time of sale, and the balance within three months, or the deposit may be forfeited and the sale declared void. The maximum area which may be sold under the empowering section is, in the case of town lands, one-half acre; suburban, 20; and country lands, 640 acres.

KILLING SEEDS FOR SALE.

It must be very satisfactory to seedsmen in general all over the world to see the bold and independent step taken by one of the leading houses in London (Hurst & Son) to check this nefarious practice. I feel certain that if a general fund was opened to prosecute all implicated it would be supported by many colonists, for the colonial trade in seeds is being rapidly driven into the United States of America in consequence. Between the excessive charges for inferior samples and the thoroughly bad stuff exported some steps will have to be taken in this matter if Great Britain is to retain her position and her unsullied reputation in the seed market. Take a single instance which lately occurred to myself. In June last season, 1885, I had a consignment of seeds from a London house (which here shall be nameless, but to a commission of inquiry I would not hesitate to divulge the name), and the whole lot were perfectly valueless, even Turnips, Radish, and Cucumbers, which retain their virality longer than most other seeds, were included. They were all carefully tested in different ways before being condemned. They must have been skilfully and deliberately killed, for to heighten the deception they looked bright and fresh. Such conduct is highly reprehensible, and is nothing more or less than a commercial fraud, and ought to be severely punished. *T. Smith, Timaru, New Zealand.*

HOME CORRESPONDENCE.

Potato Grafting.—In the spring of last year I made some experiments in Potato grafting, the results of which I append. The object I had in view was the determination of the possibility or non-possibility of securing intermediate forms by grafting or budding. Ninety-six Potatos were used, forty-eight were stocks, and forty-eight were used for buds or plug-grafts. The sets were planted 2 feet apart all ways. The Potatos used were good types. My mode of grafting or budding was as follows:—From the stock I carefully and deeply removed every eye. This was done with the greatest possible care, for it is an easy matter to overlook an obscure eye, and if anything like an eye is left in the stock the result must become valueless. Two of the holes from which eyes were removed were in each instance specially and most carefully prepared and cut to exactly receive long conical closely-fitting plug-grafts or buds from a Potato of a different breed. Each plug possessed a good healthy eye, and this plug was so carefully cut that it exactly fitted the hole cut in the stock to receive it. The plugs were tied in position with twine. Stock—Webb's Early Ashleaf, kidney; plug-grafts from Early Regent, a round variety. Result: tubers intermediate in form between round and kidney, but with the slightly rough skin of Early Regent; tubers inclined to be curved and to show gouty swellings, none decidedly ugly. Stock—Mr. Bresee, a kidney; plug-grafts, Paterson's Victoria, round. Result: some kidneys, others rounds; skins intermediate in character. The results in this case, astonishing as regards form, some examples suddenly curved at the end like shepherd's crooks; others like the letter U, with both limbs closely depressed; some very irregular, with large gouty projections; some curved like the letter C, with the two ends almost touching; some like letters L and Z. Stock—Beauty of Hebron, kidney; plug-grafts, Schoolmaster. Result: form intermediate between kidney and round, but extremely irregular in form, and in the highest degree ugly and ill-formed; some rudely triangular, others with bluntly pointed conical ends; skin striped with rosy smears, flesh within unstriped. Stock—Magnum Bonum, kidney; plug-grafts, Early Border, round. Result: all kidneys, but remarkable for lumpiness, ugliness, twisting, and folding. Most of the examples ugly monstrosities, some curiously flattened, others rudely resembling a mason's hammer. Ungrafted or unplugged examples were grown in adjoining rows, these all came true. In nearly all the instances the stock perished and the contents appeared to have been absorbed by the growing plugs. The absorption of the stock I take to be a proof of the "taking" of the buds. I planted a few tubers with all the eyes carefully removed and no plugs, these did not perish, but when lifted at the end of August were as sound and good as when planted in April. I observed the following fact in lifting the eyeless tubers. In some of the examples little buds were developed on the edge of cut surface; the little buds would, no doubt, have produced plants next year. Here I conclude; numerous other points might have been noted, as the style of the haulm and foliage, the flesh, the taste when cooked, &c. These may possibly be attended to another time. Circumstances prevent me from giving fuller particulars than the notes above printed, and I am not acquainted with any experiments or results similar to the above, although the Editor of this paper has just informed me that something of a like nature has been done by Mr. Fenn. *W. G. Smith, Dunstable.* [See our columns for the years 1869, 1870, 1871, and 1876. As the possibility of the occurrence was denied, we ourselves experimented in a similar manner to that described by Mr. Smith, but on a very much smaller scale—sufficient to convince us, however, that the thing was practicable. ED.]

Italian Daffodils.—*Apropos* of Mr. Frank Miles' note on p. 22 may I say that if any one can obtain specimens, single or double, of the wild N. Pseudo-Narcissus, which Dean Herbert mentions as common near Naples, he would be doing a service to some of us who are at present studying the natural history of the Daffodil? The only Daffodils of the large-crowned section which are known to have come to us as yet from Italy are from Tuscany, and are found in abundance in the valley of the Arno between Florence and Pisa, growing double and single mixed together, the former being the more common. We now have plenty of these, and they differ widely both in size and shape from the English wild Daffodil, the double form resembling the large double Daffodil of English gardens, whether identical with that variety or not. There is no evidence that these common large double Daffodils ever degenerate, when naturalised, into the single wild English Daffodil. Could such evidence be obtained it would supply a much wanted but missing link in the proof of the identity of the two varieties. Besides these large Daffodils I know of two small forms of wild Trumpet Daffodil found in the Maritime Alps, distinct from one another, and from the English wild Daffodil. One was given to me by a friend who found it in a wild spot near Grasse; the other was exhibited at the Daffodil show of the Royal Horticultural Society last April by a gentleman who found it near Nice. These are the only wild large-crowned Daffodils I have ever seen from Italy or near it. Others, as I said, are eagerly looked for. I have received specimens with double flowers of the common English wild Daffodil from many English counties, where it is found growing mixed with the single form; also from Ireland, but most plentifully from South Wales. *C. Wolley Dod, Edge Hall, Malpas, Jan. 2.*

Musa coccinea.—During the past autumn I have used this plant extensively for house decoration, with most satisfactory results. For hall, corridor, or staircase work few plants have so noble and commanding an appearance, especially when lighted up with one or more of its brilliant scarlet flower-spikes, which are carried well up above the foliage and remain in beauty from two to three months. Moreover, I find that this plant stands the temperature of a room without injury better than most plants. Some of ours stood in the Painted Hall in the window recesses close to the glass for upwards of two months, and they appeared almost as fresh when taken out as they were when first placed in the hall, although for many nights in succession we had from 10° to 19° of frost. Our largest plants, grown from suckers early last year, are about 7 feet high, and 3 to 4 feet through, with foliage down to the pot, each bearing one or more flower-spikes. Suckers potted later and grown on in 7-inch pots have done equally well, and flowered as freely, and for general purposes no doubt this size will be found the most useful. *Owen Thomas, The Gardens, Chatsworth.*

The Frost in December.—The last frost—16° at least—has played sad vagaries in my garden. Eucalyptus globulus killed; 30 feet high. Camellias, 8 feet high, that have stood for years, much injured; Cyclamens in blossom looking as if there had been no frost, and, strange to say, moreover, Cyclamen persicum uninjured. The strangest thing of all is that a large plant of a Masdevallia on the rockwork is only slightly injured! I have always thought that these cool Orchids would prove nearly hardy. This flowered with me magnificently, and is so large and healthy a plant that my friends entreated me to take it up this

winter and only leave a piece of it out. All my Hydrangeas are killed, a usual, but at Tregothnan and elsewhere in Cornwall uninjured! It is impossible to lay down rules for this place or elsewhere in Cornwall. Many plants do well in places in Kent, Sussex, and even near Liverpool, that are killed here most winters. Lapageria rosea is still in flower against a wall. L. alba was lovely before the frost, but my people covered it up. There are, however, leaves, &c., uncovered which look perfectly green. I send leaves of plants injured and uninjured. *J. Townshend Boscawen, Lamorran, Probus, Cornwall, Dec.* 29.

Forcing French Beans.—Calling upon a brother gardener a few days ago—one who is famous for his success in forcing French Beans—it was found that the old Fulmer's Early Forcing (of which he possesses what might be termed the original stock) is his favourite variety. He commences by placing three seeds in a 4-inch pot, using a light soil and leaf-mould in equal proportions, giving them a good sprinkling of water after sowing, and placing them in a propagating-house, where they remain until the plants are 2 or 3 inches above the level of the pots, and well rooted; when this stage is reached they are shifted into 12 inch pots, which are two-thirds filled with light maiden soil, leaf-mould, and a little rotten manure, the two former in equal proportions, with proper drainage; they receive a slight watering, and are then placed on trellises over the hot-water pipes or flue. When the plants have taken to grow freely the weakest plant of the three is removed, leaving but two, and when they have made a joint of growth they are stopped by pinching once only. The plants are earthed-up with a rich light compost as the roots make their appearance on the surface. In watering the cultivator is always careful to water the undersides of the leaves as well as the surface and soil; by so doing thrips and red-spider are kept down. The pots are kept as near the lights as possible, and the plants supported with small branches. *R. D.*

Taxed and Untaxed Trading.—I send you the enclosed correspondence for publication because it might be the means of eliciting from correspondents information bearing upon the point at issue. As it is no use waiting "till the clouds roll by," I intend furnishing Lord Iddesleigh all the information in my possession, so that parties in power, if they choose, may endeavour, at all events, to give us "fair trade" at home. *James Anderson, Meadowbank Nurseries, Uddingston, Glasgow.*

"Royal Commission on Trade Depression.

"Right Hon. Earl of Iddesleigh.

"My Lord,—Enclosed find cutting from *Gardeners Chronicle* on Taxed *versus* Untaxed Traders. (See *Gardeners' Chronicle*, December 5, 1885, p. 719.) Would your Lordship be disposed to give this matter your consideration in any Report the Royal Commission may frame on trade anomalies? I do not know whether you take oral evidence in such matters, and whether the Commission moves from centre to centre for that purpose, or whether the evidence is entirely documentary. I might be able to furnish you some particulars bearing upon the point, but until I know whether you consider it within the scope of your inquiry, it would not only be gratuitous on my part, bu entrenching upon your valuable time to make any comments. Your Lordship, I trust, will excuse me address ing you, but as I am an interested party, you wil understand my object.—I am, &c., *James Anderson.*"

"Royal Commission on the Depression of Trade and Industry,

"8, Richmond Terrace, Whitehall, S.W., Dec. 29, 1885.

"Dear Sir,—In reply to your letter of the 26th inst., I am directed by Lord Iddesleigh to say that if you will forward the further particulars to which you refer, he will be better able to judge whether the question is of sufficiently general importance to be the subject of special attention at the hands of the Royal Commission. —Yours faithfully, *T. H. Elliott.*"

—— The question of taxes is not the only element of unfairness to those growers who have to pay rents, taxes, wages, repairs, and all expenses connected with their business and after that live themselves —but in the case of the surplus being sold from private gardens the cost of production is not calculated, but the best price that can be got without too much trouble is obtained. The buyers know the gardeners have not the time to seek the best market, and take the opportunity of offering extremely low prices, which the gardener is glad to take rather than run all over the country for a better customer. The buyer being able to get these goods at a low price, naturally refuses to give the market-grower any better prices—consequently he suffers from unfair competition. *W. B. S.*

Eucharis amazonica.—The year 1885 will be remembered here as the year for Eucharis blooms. We timed our first lot to come in at Christmas, and sixty-five dozen blooms have been cut. The next batch was wanted particularly for the middle of January. They are equally as prolific in bloom, and will be ready to the day. *R. Gibbert, Burghley.*

Skimmia oblata.—I am sorry Mr. Webster should think that I considered him to have over-valued Skimmia japonica as a berry-bearing shrub. I only wished to point out the superiority of the var. oblata, which I hold to be the best thing of the kind we have except the Holly. As to the question of the berries being eaten by birds, it would almost seem as if the Colwyn Bay birds had read Mr. Webster's article, for since I wrote, some bird has stripped nearly every berry off my plant! I suspect Mr. Webster's suggestion that pheasants are the culprits is correct, for till this season we have had none in our neighbourhood, but about a month ago I put one up within 20 yards of the bush, a gentleman having begun to preserve game in an adjoining property. *O. Walker.*

Tree Carnations in Winter.—Without saying a word against those selected by "W. J. R.," p. 22, I think Miss Jolliffe ought to be included in any collection on account of its freedom in flowering. I know its flowers are smaller than some, but to balance that objection it is one of those fancy colours which always please a lady. I lately saw a quantity of this variety at Burghley which fairly astonished me with the quantity of flowers and buds they were carrying, and another batch was just over the bulk of its flowers; so that if "W. J. R." finds them so difficult to get in winter, perhaps this variety might help him, as it evidently receives no special attention at Burghley beyond striking the plants early in the season, a good liberal treatment in the summer, and a minimum temperature for winter of 45° to 50°. I find Carnations in pots are more particular as to soil than the majority of soft-wooded plants, but the splendid turfy loam at Burghley seems to suit them to perfection, as, indeed, it does everything. I know many of the varieties are not worth much for winter flowering, but in my opinion the summer treatment is the principal thing towards success. *W. H. Divers, Ketton Hall.*

—— I called at the Royal Nursery, Slough, in the middle of November, and saw in the large house devoted to Tree Carnations a number of plants in bloom, and the names of the varieties I gave were those supplied to me by one of the responsible foremen. But "W. J. R." must be aware that during the winter months, and especially at the Christmas season, there is a great demand for cut flowers, and Mr. Turner is not likely to leave his blooms of Carnations to fade on the plants when he can sell them. Why is it "an absurdity to talk of winter-flowering Carnations at all?" Who does not remember the basket of charming varieties Messrs. Hooper & Co. sent from their nursery at Twickenham to the meeting of the Royal Horticultural Society in the middle of October last? I saw these again three weeks after, and they were as finely and freely in flower as in October. What can be done at the middle of November is possible at Christmas with care and due attention, but it cannot be reasonably expected that at mid-winter a Carnation will carry as many blooms as in July, when the conditions are so favourable to its well-being. *R. D.*

—— I note that your correspondent, "W. J. R.," speaking of these charming flowers, says, "It is an absurdity to talk of winter-flowering Carnations." If "W. J. R." will pay me a visit any time this month I think I can convince him that he is in error. My stock is from 125 to 150, and this day (January 3) I counted six expanded flowers, and forty bursting buds on one plant, and I feel certain the whole of my plants will average three dozen buds and blooms on each. I find small pots to grow them in better than large ones, 32's being my favourite size. I must here note, to be accurate, that my plants are in two batches. The first we have been picking from since October, and from the second we picked six dozen blooms on December 23. These plants were all struck last February and March. In conclusion, permit me to say, if it is not convenient for "W. J. R." to come and see them, I shall have much pleasure in forwarding him a plant at any time he will send me his address. The variety is Miss Jolliffe. *R. Gibbert, Burghley, Stamford.*

Orchid Pruning.—I was much interested in reading "B. T. L.'s" notes on Orchid pruning in last week's *Gardeners' Chronicle*. The system is surely awakening an interest amongst cultivators, and gaining converts to its principles. "B. T. L." says that he is going to try his hand on Cattleyas and Lælias next. If it will be any advantage to him to know how these plants will bear the knife I can assure him that the plant of Lælia anceps, of which I wrote in these pages last summer, and which has had all the old bulbs removed as soon as their foliage was dead for the past thirteen years, is still as vigorous and free to bloom as ever. The specimen has thirty-six bulbs, with a healthy leaf to each—ten spikes of bloom. Five of the spikes have four blooms each, four of them have three blooms each, and one has two blooms—a total of thirty-four. Should the weather be sufficiently mild next week this plant will be sent to the Royal Horticultural Society's meeting on the 12th inst., and I dare say it will be thoroughly examined by the Floral Committee and others. It must not, however, be supposed that this plant is thirteen years old, but both it and the plant from which it was taken six or seven years ago have been pruned as described. If "B. T. L." will allow me I will give him a word of caution, not to cut off Cattleya bulbs which have good foliage on them. Extremes are dangerous. *N. Blandford.*

Fruiting of Stephanotis floribunda.—In reference to the article in your issue for December 26 on the fruiting of the Stephanotis, the following facts may be of interest to your readers:—During the past summer I had a small plant on a balloon that I wished to keep fresh for exhibition at a certain date; to do so I removed it to a pit with a northern aspect just as the bulk of the trusses were commencing to open, where it remained—as near as I remember—six weeks, during the hottest parts of the summer. On its return from the show tents it was placed in the conservatory for a short time, and then removed to a vinery, where it now is. Out of about fifty trusses nearly twenty had fruit set on them, a few of them having set every pip, while others had only one or two set. I had them all taken off with the exception of one, when about the size of Peas, to prevent exhaustion to the plant. The fruit left is now about half the size of the one figured, no doubt owing to the cold treatment the plant has received. I see in the article referred to the setting is attributed to insect agency; but if so, what is the cause that in a house not 10 yards distant from the pit mentioned I had a plant covered with bloom at the time, but exposed to the sun and the usual stove treatment, which did not set a single fruit, and has not done so during the four years I have bloomed it? From the above facts I am inclined to think that it is the long duration of the flowers, preserved as they were for such a long period in an equable temperature, which aided and conduced to fertility. *John Wilkes, The Hayes, Stone, Staffordshire.*

Nerine Meadowbankii.—As Mr. Baker has probably placed this plant under the head of N. sarniensis corusca in consequence of a statement which I made to him, I must come forward to say a word about it. I had my plant of that variety from Mr. B. S. Williams, and am under the impression that he sent me the plant true to name. This admitted, I cannot help stating that it comes very close to corusca major, which I possess in authentic specimens. It has even the peculiar shape of leaf of corusca major, which is oval, strap-shaped; they are in my specimen at present about 7 inches long, and 1½ inch in width at the broadest part. The tone of the very bright scarlet colour of the flowers is, perhaps, somewhat more brilliant than with corusca major; it flowers about ten days later, and perhaps is more floriferous than corusca major. As Mr. James Anderson is good enough to record its history, its place in the system must be among the hybrids enumerated at the end of the synopsis on p. 810, vol. xxiv. I wish by no means

to depreciate Mr. Anderson's beautiful production, but simply make this statement for the sake of elucidation. Of course, if by any chance or mistake my plant is not true to name then my statement is erroneous. *Max Leichtlin, Baden-Baden.*

An Orchid Society. — Your correspondent, Mr. Ogilvie (see p. 21) is quite right in his suggestion, that an Orchid Society be formed in Scotland, and that one or more exhibitions of these now favourite tropical flowers be held in Edinburgh under its auspices. Indeed I have often wondered that our English amateur and trade growers have not long ago formed such a society for themselves in connection with the Royal Horticultural Society. One special Orchid Society could be formed with its headquarters in London, but with powers to form one or two sub-committees—one, say, at Manchester for the convenience of the Midland growers, and one in Edinburgh for the Northern ones. In this way, two or three exhibitions might be held during the year. I believe an Orchid Society located in London would be more likely to be successful than if started elsewhere, but if this is done, at least one of its exhibitions should be held in Edinburgh, for the convenience of the Northern growers. As your correspondent points out, it is too much to expect Scotch or Northern orchidists to risk their plants, to say nothing of the expenses of a 300 to 400 mile journey. The Orchid Conference at South Kensington last spring was by no means a national one, nearly all the exhibits being limited to the southern division of England. Besides, no one exhibition can yield us the sight of more than a tithe of the Orchids in cultivation, hence the necessity of periodical exhibitions from time to time. I firmly believe that an Orchid Society, founded on a broad basis, would at the present time prove a most useful institution, and its exhibitions and transactions a source of much interest to both amateur and practical cultivators of these bewitching flowers. The questions of nomenclature and culture which crop up from time to time could be more effectually coped with by a well organised society than by any one individual, however gifted, and one result would be, as I believe, that an impetus would be given to the more extended culture, study, and enjoyment of these plants: hence I propose to your readers, that—1, an Orchid Society be formed in connection with, and under the auspices of, the Royal Horticultural Society of London, open to all, both North and South; and, 2, that at least two exhibitions be held annually, one in London and one in Edinburgh. If a third exhibition should be practicable, then Manchester would be a good point at which it might be held. In this way, and by the aid of local executive committees, the members of each locality might practically retain the management of their own exhibition—a most desirable privilege in many ways. If, however, the centralisation of an Orchid Society as here recommended be impracticable, then by all means should the Scotch and Northern growers band their forces, and hold an Orchid exhibition themselves in their own capital city. I am most in favour of a broad central society in London, but the whole matter deserves the attention and ventilation of those most interested, all of whom will assuredly give their sincere thanks to the Editor for having opened these columns for communications furthering this project. *F. W. Burbidge.*

Lycopodium complanatum.—With reference to the note in this week's *Gardeners' Chronicle* on Lycopodium complanatum, having been collected lately in Exmoor, it may be of interest to mention that, though not yet recorded as occurring in the Irish flora, a specimen was found some years ago on the coast of North Wexford—the nearest river being the small river Ounavarra, not more than 20 miles or so in length, which flows through a flat part of the County Wexford. But the mouth of the larger river Ovoca, which flows through the Wicklow Mountains, is not more than about 10 miles north of the part of the seashore where this Lycopodium was found. Dr. Alfred Wallace, to whom the specimen was shown, suggested the probability of this plant being found (perhaps tolerably plentiful) in the Wicklow Mountains, if searched for. *C. M. Owen.*

NATIONAL ROSE SOCIETY. — A meeting of the General Committee will be held, by the kind permission of the Horticultural Club, at their rooms, 1, Henrietta Street, Covent Garden, on Tuesday, January 12, at 3 o'clock.

THE CINCHONA IN JAVA.

(*Continued from p. 21.*)

Cinchona Ledgeriana.—At about 5200 feet above the sea level was a large area devoted to Cinchona Ledgeriana. At present the whole interest of Cinchona planters is centered in this plant. The story of its introduction is probably known to many of you.* An Englishman, Charles Ledger, resident for the time in Bolivia, engaged in business chiefly in connection with the alpaca trade, but in constant communication with the native bark-collectors, conceived the idea of obtaining the seed of the "famous white flower, Rogo cascarilla" from the valley of the Yungas. The difficulties were known to be almost insuperable. The Indians had a deep-rooted superstition that if their Cinchonas ever came to be successfully cultivated in other countries all their own trees would perish, and of course no precaution was left unheeded to prevent such a catastrophe. "More than half-a-dozen times," says Mr. Ledger, "I have had my luggage, bedding, &c., searched when coming out of the Yungas;" and the strictest vigilance was exercised even by the local Prefects to prevent any one taking seed or plants out of the country. This was as far back as 1856. A Bolivian Indian, Manuel Tucra Mamani, with his two sons, accompanied Mr. Ledger in his travels, and one of the sons subsequently went with him to Australia. Previous to leaving Bolivia, Mr. Ledger had hinted to Manuel that he might require some of the seeds and flowers of the coveted species of Cinchona for the preparation of an important medicine, and the reputation which he enjoyed as a doctor was sufficient to give an air of probability to the story. On the return of the son from Australia in 1861, Mr. Ledger sent the sum of 200 dols. to Manuel by him, with a message that he looked to him to procure 40 or 50 lb. of seed from a certain specified batch of trees that they had visited together ten years before. Of the precise locality nothing is known to us, except that it is in the Caupolican district of the eastern Yungas.

Ledger himself returned to South America in 1865, and Manuel met him at Tacna, in Peru, bringing with him the coveted seed. Under any other supposition than that it was required as a medicine, probably even the faithful Indian would have made no attempt to obtain it; and poor Manuel himself lost his life seven or eight years later in endeavouring to procure a further supply from the same source. Even after the seed was secured there was considerable difficulty in disposing of it, but eventually a portion of it was bought for our own East Indian plantations and the remainder was sold to the Netherlands Goverment for £50.

So far as is known the seed sent to India was in every respect similar to that supplied to Java. At first Manuel had endeavoured to keep the produce of each tree separate, but the contents of his packets became accidentally mixed, and no further attempt was made to preserve any distinction. But for some reason the results from British India have not, as a whole, been equal to those obtained in Java. Mr. David Howard tells me that at Nadwattam, where the seed was sown, the soil and climate did not suit the species, and almost all the original trees died, whilst the neighbouring C. succirubra was allowed to hybridise the flowers of those that remained; so that there the strain was lost. Lower down in the Wynaad, however, on Captain Cox's plantation, the true Ledgeriana is now being grown, and produces bark quite equal to the average of the Java trees. There is also good promise of bark of the same sort from Ceylon; though the essential conditions, a rich deep soil and good drainage, are not there so common, and though at present much of their so-called Ledgeriana has no claim to the name beyond the fact that the seed was bought and paid for as such.

The Java consignment of seed was sown in 1866 at the Tjinjiroean plantation, on the opposite side of the valley to Nagrak, and produced about 7000 plants. These original trees were seen by Mr. Forbes on his visit in 1880, and are described by him as, at that time, "somewhat scraggy-looking, about 2 feet in circumference, and between 20 and 30 feet in height." The story of the incredulity, astonishment, and delight of the Government chemists on their first analyses of the bark is also graphically recounted by the same author, who doubtless had the narrative from Dr. Moens himself; nevertheless these early results were not comparable with what have since been obtained.

To return now to the Ledgeriana plantations of Nagrak. The trees one sees collected there are supposed to be of the purest strain, yet I could not avoid being struck with the great diversity of their botanical characters; and I may confess that had some of them been shown to me separately as specimens I should probably have assigned them, not only to distinct varieties, but perhaps to different species. I can express no opinion as to the precise botanical position that C. Ledgeriana should occupy. I was assured by Mr. Van Romunde that the plant is always identifiable; and he agrees with his predecessor, Dr. Moens, in the opinion that it is a true species. The late Mr. John Eliot Howard, you are aware, regarded it as a variety of C. calisaya, and this view is shared by many other botanists; whilst it has been treated by Dr. Otto Kunze as a hybrid between C. officinalis and C. micrantha. The present Director lays particular stress on the angle of the axil of the branches as a distinctive feature—the angle in C. Ledgeriana being always acute. The leaves, though of variable outline, are usually relatively long, narrow and pointed; and under all circumstances the upper side exhibits what, for want of a better term, one may call a velvety surface, that is to say, it has a soft deadish lustre, very different from the evergreen gloss of the typical calisaya. The most valuable trees, from a quinine-yielding point of view, have small and pure white or creamy flowers; any red tinge is said to indicate the presence of quinidine rather than quinine in the bark. It is worth remembering that a few years ago the highest percentage of quinine was said to have been produced by one or two trees with a tinge of red in the flowers; but by the way in which the fact is stated it appears as though it was regarded as something exceptional, and in any case the proportion then attained has since been much exceeded.

The barks of the various trees of the Calisaya type—that is to say, of C. calisaya var. javanica, C. Ledgeriana, C. Hasskarliana, C. Josephiana, and the Schuhkraft hybrid, grown under the same conditions of locality and soil, cannot, I was assured, be distinguished one from another by any well defined physical characters, the cracks and superficial markings being very much alike in all, though the epidermis of C. Ledgeriana sometimes exhibits a tendency to peel off, not noticeable in true Calisaya. The barks of C. officinalis and C. succirubra are, of course, much more easily identified.

All the Ledgerianas in this plantation had had their tops lopped off to prevent further growth in height—a precaution dictated by practical convenience since the introduction of the process of scraping the bark, concerning which I shall have something to say presently.

Having wandered about the grounds until we were tired, and examined the plantings of all the more important species under culture, we returned to the nurseries, in order to inspect the seedlings of various ages not yet ready to be planted out. These, for the most part, are kept in beds covered with roof-like shades made of split Bamboo. The young plants are carefully protected in this way for two years before being transferred to the open ground. When planted out the young trees are placed at different distances apart, according to the needs of each species—C. Ledgeriana, for example, being spaced 4 feet apart; C. succirubra, a much larger tree, about 7 feet apart, and so on. The ground is at first kept carefully weeded; subsequently, as the trees grow up, the close shade of the foliage prevents any considerable undergrowth. Long narrow holes or trenches, a foot or more in depth and several feet in length, are dug between the rows, chiefly for the purpose of drainage, but they are useful also in collecting the soil, which would otherwise be washed away during heavy rains.

The primary aim in Cinchona culture is to obtain the maximum quantity of bark containing the largest percentage of alkaloids, especially of quinine. With this object various experiments have been made in connection with the propagation and cultivation of the trees, as well as in the manner of harvesting the bark.

A large number of plants are raised from seed. There is, however, an element of uncertainty in the result, arising from the cross-fertilisation of the

* An exceedingly interesting letter, written by Mr. Ledger to his brother, giving a history of the steps by which the original seed was procured, appeared in the *Field* for February 5, 1883, p. 161.

flowers by insect agency, and the consequent production of hybrids, the bark of which generally yields a smaller proportion of alkaloids than either of the parents. It has been stated, how far correctly I do not know, that in the case of C. Ledgeriana the first two or three crops of seed are most liable to yield hybrid plants, and that the subsequent produce comes much more uniformly true. The better species are also propagated to a considerable extent by means of cuttings.

GRAFTING.—But the process of cultivation most in favour at the present time is that of grafting. The different rate of growth of the different species of Cinchona, and their diversity of habit, are almost as remarkable as their difference in alkaloidal value. The quick-growing species, however, are not those which yield the richest bark; and the object sought has been to endow the latter with the vigorous habit of growth of the stronger sorts. The most easily cultivated and in every way the most eligible of the rapid-growing species is C. succirubra, and this is used as the stock whereon are grafted shoots of C. Ledgeriana. The stock may either be a plant obtained from seed or one grown from a cutting. The graft is inserted whilst the foster plant is still very young—in the case of a seedling, as soon as it possesses a firm enough stem. The young plants, after the insertion of the grafts, require care and protection for several months before being placed in the open ground, but when once established they are as hardy as the rest. The grafts are always taken from trees of which the bark has given satisfactory results on analysis, and the plants produced retain the chemical characters of the parent. There are now large plantations of grafted Ledgerianas, the bark of which is known to contain 13 per cent. of quinine.

Some years ago coppicing was tried as a means of increasing the yield of bark, but the results were not satisfactory, and it is no longer practised. *Pharmaceutical Journal.*

(*To be continued.*)

Orchid Notes and Gleanings.

ORCHIDS IN FLOWER AT LYTHE HILL.

THERE is at the present time a beautiful display in the different departments; the first to note is the flowering compartment of a span-roof house—this is extremely gay, having over 200 spikes of Calanthes in different varieties. There are to be seen some of the best varieties of C. Veitchii, carrying spikes 4 feet 6 inches long, with between forty and fifty blooms on a spike: these vary from very deep to light shades of pink: there is a distinct appearance in the bulbs; the best are produced from the smooth or straight bulbs. C. vestita is very good, also C. lutea, and C. Turneri, being a late one, is also appreciated; it is now just coming in. Cypripedium Sedeni, a fine specimen and well bloomed; C. barbatum, venustum, Spicerianum, and Harrisianum; Zygopetalum Mackayi and Stanhopea grandiflora: these are all arranged with Maidenhair Fern as a groundwork, with small Palms mingled with the flowers, and draped to the ground with American Smilax (Myrsiphyllum asparagoides).

The next to note is the span-roof Odontoglossum-house; this is very cheerful with O. Alexandræ. One is an extra good variety for this time of year, there being many forms and shades. O. Pescatorea in variety; one of these is carrying seventy-eight blooms. O. Uro-Skinneri and triumphans, O. gloriosum, O. Lindleyana, O. constrictum, O. grande, Lycaste Skinneri, in various shades; Sophronites grandiflora, with good pans of the old Cypripedium insigne, and Masdevallia Davisii, M. Veitchii, M. amabilis, also a gem of a plant of Masdevallia tovarensis, with over one hundred healthy leaves, and carrying thirty-five spikes, most of them with three and four blooms on a spike.

In the Cattleya-house there is C. candida, C. dolosa, Lælia anceps and L. Dawsonii, Odontoglossum Rœzlii alba, Calanthe densiflora, Trichopilia laxa, Maillaria maculata, Dendrobium giganteum, with Cypripedium Spicerianum, C. insignis, C. Maulei, C. barbatum var. nigra, and several pans of Cœlogyne ocellata, and C. maxima and C. intermedia just coming into bloom, as well as Cattleyas and other things.

In the East Indian-house there are a few spikes of Phalænopsis and Vanda; the whole are in beautiful condition, and reflect great credit on Mr. Evans for the way things are carried out in the various departments. *H. S.*

LÆLIA PERRINII, WHITE VARIETY.

A distinct form of this comes from Mr. J. Charlesworth, of Heaton, Bradford. Coming from a small plant the flowers are not up to the good type in size, but they are very chaste and distinct, being wholly pure white, except the crimson tip to the labellum, and blush tint on the petals.

SACCOLABIUM HARRISONIA.

Several plants of this rare old species are in bloom with R. H. Measures, Esq., The Woodlands, Streatham, one of them bearing seven long spikes of pure wax-like flowers. This is an exceptionally fine variety as compared even with the other good ones in bloom. The whole of them are delightfully cinnamon-scented.



STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 6, 1886.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Range.	Temperature of the Air. Mean for Day.	Temperature of the Air. Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Degree of Humidity. Sat = 100.	Wind. Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°	°			In.
31	29.38	−0.12	48.0	32.0	16.0	42.7	+5.5	40.1	90	N.W.	0.00
Jan.											
1	29.89	+0.06	49.0	43.0	6.0	46.5	+9.3	41.6	94	W.; S.W.; S.W.	0.03
2	29.79	−0.01	50.5	43.7	7.2	47.3	+10.4	41.0	91	S.W.; W.N.W.	0.01
3	29.79	+0.02	49.0	32.8	16.2	42.0	+5.3	40.9	96	S.W.	0.00
4	29.50	−0.26	49.5	37.0	12.5	44.7	+8.1	42.8	93	S.W.; S.S.W.	0.29
5	29.46	−0.29	49.3	32.6	7.7	36.6	+0.1	31.0	81	N.W.; W.N.W.	0.03
6	29.44	−0.30	33.4	30.0	3.4	32.0	−4.1	25.8	74	N.E.; E.N.E.	0.63
Mean	29.66	−0.13	45.7	35.8	9.9	41.7	+4.9	38.0	89	Variable	0.97

1885.
Dec. 31.- Very dull day throughout.
1886.
Jan. 1. Very dull; slight rain in morning.
" 2.—Fine day.
" 3.- Fine in early morning; dull day.
" 4.—Heavy rain in early morning; drizzling rain all day.
" 5.—Very fine day; windy.
" 6.—Snow began falling from 5.15 A.M. to 1.30 P.M., to the depth of 7 inches.

LONDON: *Atmospheric Pressure.*—During the week ending January 2, the reading of the barometer at the level of the sea increased from 30.46 inches at the beginning of the week to 30.56 inches by 9 A.M. on Decsmber 27, decreased to 29.72 inches by 5 P.M. on the 28th, increased to 29.93 inches by 9 A.M. on the 29th, decreased to 29.85 inches by 5 P.M. on the same day, increased to 30.18 inches by 9 A.M. on the 30th, decreased to 29 91 inches by 9 A.M. on December 31, increased to 30.12 inches by 9 A.M. on January 1, decreased to 29.95 inches by 1 P.M. on the 2d, and was 29 98 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.07 inches, being 0.27 inch lower than last week, and 0.01 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 50°.5, on January 2; on December 30 the highest temperature was 37°.2. The mean of the seven high day temperatures was 44°.

The lowest temperature was 26°, on December 30, on January 2 the lowest temperature was 43°.3. The mean of the seven high day temperatures was 33°.9.

The greatest range of temperature in one day was 16°, on December 28 and 31; the smallest on December 29 and January 1 was 6°. The mean of the seven daily ranges was 10°.1.

The mean temperatures were, on December 27, 34°.5; on the 28th, 41°.1; on the 29th, 34°.7; on the 30th, 32°; on December 31, 42°.7; on January 1, 46°.5; and on the 2d, 47°.3; and these were all above their averages (excepting the 27th, which was 3°.1 below), by 3°.6, 2°.7, 5°.3, 5°.5, 9°.3, and 10°.4 respectively.

The mean temperature of the week was 39°.8, being 1°.2 higher than last week, and 4°.8 above the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 57°, on January 2. The mean of the seven readings was 50°.9.

The lowest reading of a minimum thermometer placed on grass was 25°, on December 30. The mean of the seven readings was 32°.2.

Rain.—Rain fell on four days, to the amount of 0.45 inch.

ENGLAND: *Temperature.*—During the week ending January 2 the highest temperatures were 52°.6 at Cambridge, 52° at Truro, Plymouth, Bristol, Sheffield, and Leeds; the highest at Brighton and Preston 48°, at Bolton 48°.1. The general mean was 50°.8.

The lowest temperatures were 19°.8 at Wolverhampton, 23°.7 at Bolton, 24° at Cambridge and Hull; the lowest at Truro 38°, at Liverpool 31°.9, and at Plymouth 30°. The general mean was 26°.9.

The greatest ranges were 30°.4, at Wolverhampton, 28°.6 at Cambridge, 27° at Sheffield and Hull; the least ranges were 14° at Truro, 19°.2 at Brighton, 20° at Liverpool. The general mean was 23°.9.

The mean of the seven high day temperatures was highest at Truro, 49°.7, at Plymouth 48°.7, at Bristol 47°.7, and was lowest at Blackheath, 44°, at Bolton 44°.1, at Brighton 44°.6. The general mean was 46°.1.

The mean of the seven low night temperatures was highest at Truro, 41°.6, at Liverpool 39°.2, at Sheffield 39°.1; and was lowest at Wolverhampton, 31°.6, at Hull 33°, and at Bolton 33°.8. The general mean was 35°.8.

The mean daily range was greatest at Wolverhampton, 13°.7, at Bristol 13°.3, at Plymouth and Hull 12°.7; and was least at Liverpool, 7°.9, at Truro 8°.1, Sheffield 8°.2. The general mean was 10°.3.

The mean temperature was highest at Truro, 45°.5, at Sheffield and Liverpool 43°.1; and was lowest at Wolverhampton, 38°.3, at Bolton 38°.8, at Hull 39°.4. The general mean was 40°.9.

Rain.—The largest falls were 2.68 inches at Bolton, 1.32 inch at Preston, 0 78 inch at Liverpool. The smallest falls were 0.24 inch at Leeds, 0.26 inch at Hull, and 0.27 inch at Bristol. The general mean was 0.64 inch.

SCOTLAND: *Temperature.*—During the week ending January 2, the highest temperature was 57°, at Glasgow; at Greenock the highest temperature was 51°. The general mean was 53°.3.

The lowest temperature in the week was 22°.7, at Dundee; at Aberdeen the lowest temperature was 26°.8. The general mean was 25°.2.

The mean temperature was highest at Glasgow, 43°.1; and was lowest at Dundee, 38°.7. The general mean was 41°.3.

Rain.—The largest fall was 2 46 inches, at Greenock; the smallest fall was 0.25 inch, at Edinburgh. The general mean was 0 76 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

BOOKS: *Mrs. D. Botanical Names for English Readers*, by R. H. Alcock, published by L. Reeve & Co., 5, Henrietta Street, Covent Garden; but this only applies to British plants. Cooke's *Manual of Botanic Terms* is very useful; published by Hardwicke.

CHOU DE BURGHLEY: *R. G., Burghley.* The sprouts were excellent, being as large as the finest strain of

Brussels Sprouts. They are more delicate in flavour than those, and are cooked in one-third less time. Every one should grow this desirable novelty.

CINERARIA LEAVES DISFIGURED : *One of the Craft.* The foliage is channelled in all directions by one of the leaf-miners, probably Tephritis onopordinis, the species so commonly found ravaging the leaves of Celery. The maggots go down into the earth to change to pupæ, and you may possibly have employed soil infested by them in the one state or the other. From the pupæ springs the perfect fly, which punctures the leaves, depositing her eggs therein. To check the ravages of this insect any foliage in the garden found to be attacked by them should be burnt, not thrown to the rubbish-heap, as it has great endurance, and will stand damp and mouldy surroundings. The ground on which the insect has been found should be trenched and limed, and the soil from pots shou'd be burnt. Sprinkling foliage with clear soot-water will often keep the fly away from it, and the grubs may be crushed with the finger and thumb when discovered on the leaves.

ERRATUM.—In last week's number, p. 24, col. 3, in obituary notice of Mr. William Cole, read Barnes, not Baines.

EUCHARIS BULBS : *J. F. C.* Yes, the bulbs are swarming with mites of various kinds—some harmless, others destructive. You had better destroy your stock, and plant healthy bulbs in fresh soil. Any other treatment is unsati-factory.

GOLD FISH IN GLOBES : *P. K. E.* The water must be partially changed every other day, by simply lading some out, replacing it with fresh water—river water is best, and filtered water the worst, for the fish. Do not use rain-water in towns, nor any that is not comparatively fresh. With river or pond water no feeding is necessary. Small insects may be given at times, and hard biscuit, when very pure water is used.

INSECTS : *H. G. I.* We found one small hemipterous insect (Anthocoris nemorum) in the box with the shoot of a young Spruce. This insect has a strong rostrum and sucks plants in the same manner as aphides, and where numerous may be injurious. *I. O. W.*

KILLING WEEDS ON WALKS : *Constant Reader.* Mix carbolic acid (No. 5 quality) 1 in 100 parts water, and apply with a rose watering-pot. The Box edging or turf must be protected by some means from contact with the stuff. Do not touch it with the hands, as it will cause much injury to the skin.

LAWN : *C. C. Turner.* Take up the turf on your lawn carefully so as to be able to relay it (1 foot square is a good size). Dig over the ground and tread it down well afterwards, and make level, then relay the turf.

NAMES OF FRUITS : *L'Allegro. Apples :* 1, Roundway Magnum Bonum ; 3, Cox's Orange Pippin ; 6, Spice Apple. Others not known. *Pears :* 1, Beurré Diel ; 2, Beurré Bosc.

NAMES OF PLANTS : *W. H.* 1, Saccolabium giganteum ; 2, Eria alba ; 3, Epidendrum ciliare ; 4, Liparis longipes.—*W. Low.* Stanhopea Wardii.—*Camjee.* 1, Læelia acuminata ; 2, Grevillea Preissii ; 3, Jatropha urens probably.

ORCHID BLOOMS : *A. E.* The Odontoglossum Alexandræ was very beautiful, and of great substance, and the Calanthe Veitchii was a fine, well-coloured spike for any season of the year.

PRICE OF GREENHOUSE : *A. P.* The cost of construction will depend on the price of labour and materials in your locality. It will likewise be governed by the amount of ornamentation, the thickness of the glass, and the finish and dimensions of the woodwork. There should be a tank for water, and guttering, doorsteps, &c. Such a house can be built for £38, and it could cost, with superior materials and finish, £60.

TO PRESERVE HOP POLES FROM ROTTING : *Constant Reader.* Char the ends somewhat higher than the depth to which they will be inserted in the earth. Whilst still warm dip into gas tar the entire charred end, afterwards pushing the stake into a heap of wood-ashes and lime, which should be in a dry, powdery state. This is cheaper and more effectual than creosoting, and any one can do it. Young Larch or coppice-grown Chestnut are both better than Ash, still Ash-poles treated in the above manner would last five years. It may be necessary to repoint them and redress the points after a year or two.

*** All communications intended for publication should be addressed to the "*Editor*," and not to the Publisher, or to any member of the staff personally. The Editor would also be obliged by such communications being *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

WILLIAM PAUL & SON, Paul's Nurseries, Waltham Cross—General Catalogue of Seeds, &c.

WILLIAM CUTHUSH & SON, Highgate, London, N.—Seed Catalogue.

ERT VEITCH & SON, 54, High Street, Exeter—Kitchen Garden and Flower Seeds.

JAMES DICKSON & SONS, 108, Eastgate Street, Chester—Vegetable and Flower Seeds.

R. B. LAIRD & SONS, 17, Frederick Street, Edinburgh—Kitchen Garden and Flower Seeds, Roots, &c.

W. TOOGOOD, 58, Above Bar, Southampton — Seed Catalogue.

BIDDLES & CO. (THE PENNY PACKET SEED COMPANY), Loughborough—Catalogue for 1886.

JAMES DICKSON & SONS, 32, Hanover Street, Edinburgh—Vegetable and Flower Seeds.

WILLIAM FELL & CO., Hexham—Spring Seed Guide.

BARR & SON, 12 and 13, King Street, Covent Garden, London, W.C.—Seed Catalogue.

COMMUNICATIONS RECEIVED.—H. J. Ross, next week.—W. B. S. R. W. Adlam.—J. Tyerman —W. E.—R. D.—J. G. Baker.—C. I.—E. J.—H.—De B. C.—A. B.—J. D.—W. N.—M. D.—W. I. J. W.—A. D. W.—C. N. C. W. D., many thanks ; your illustrations are in the hands of the engraver.—R. W. A., Natal.—J. L.—W. B., Elvaston, best thanks.

Enquiries.

"He that questioneth much shall learn much."—BACON.

INACCURATE ADDRESS.—Professor Reichenbach writes that he recently received two flowers in a large broken cardbox and moss—Catasetum gnomus—sender unknown. Also a glorious inflorescence of Odontoglossum crispum fastuosum (not to be found in Mr. Williams' *Orchid Manual*, 6th edition)—sender, Mr. W. S., at Mr. W. T.——'s, gives names of two English places, which both have a number of homonymes, in very different counties, so that there is little hope of the arrival of any answer. Addresses cannot be given with too great accuracy.

Markets.

COVENT GARDEN, January 7.

THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

BUSINESS at a standstill, owing to the frost, with little or nothing reaching us. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0
Arbo. vitæ (golden), per dozen	6 0	18 0
— (common) dozen	6 0	12 0
Arum Lilies, dozen	12 0	18 0
Azaleas, per doz.	24 0	42 0
Begonias, per dozen	6 0	12 0
Bouvardia, doz.	12 0	18 0
Cineraria, per doz.	10 0	12 0
Cyclamen, 12 pots	12 0	24 0
Cyperus, per dozen	4 0	12 0
Dracæna terminalis, per dozen	30 0	60 0
— viridis, per doz.	12 0	24 0
Erica, various, doz.	12 0	24 0
Euonymus, in var., per dozen	6 0	18 0
Evergreens, in var., per dozen	6 0	24 0
Ficus elastica, each	1 6	7 0
Ferns, in variety, per dozen	4 0	18 0
Foliage Plants, various, each	2 0	10 0
Hyacinths, per doz.	2 0	9 0
— Roman, per pot	1 0	1 3
Marguerite Daisy, per dozen	8 0	12 0
Myrtles, per dozen	6 0	12 0
Palms in var., each	2 6	21 0
Pelargoniums, scarlet, per dozen	6 0	9 0
Poinsettia, per dozen	12 0	18 0
Primulas, single, 12 pots	4 0	6 0
Tulips, 12 pots	6 0	9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Abutilon, 12 bunches	2 0	4 0
Acacia (Mimosa), Fr., per bunch	0 6	1 0
Arum Lilies, 12 blms.	4 0	9 0
Azalea, 12 sprays	1 0	1 6
Bouvardia, per bun.	0 4	0 6
Camellias, 12 blms.	3 0	6 0
Carnations, 12 blms.	1 0	3 0
Chrysanth., 12 blms.	2 0	4 0
— 12 bunches	9 0	18 0
Cyclamen, doz. blms.	0 6	0 8
Epiphyllum, dozen blooms	0 6	1 0
Eucharis, per dozen	4 0	6 0
Gardenias, 12 blooms	6 0	13 0
Hyacinths, Rom., 12 sprays	0 9	1 6
Lapageria, white, 12 blooms	2 0	3 0
— red, 12 blooms	1 0	2 0
Lilium longiflorum, 12 blooms	9 0	12 0
Marguerites, 12 bun.	3 0	6 0
Pelargoniums, per 12 trusses	1 6	2 0
— scarlet, 12 trusses	0 9	1 0
Poinsettia, 12 blms.	4 0	8 0
Primula, double, bun.	1 0	1 6
— single, per bunch	0 6	..
Roses (indoor), per dozen	1 0	3 0
— Tea, French, doz.	0 9	1 6
— red, French, doz.	2 0	4 0
Tropæolum, 12 bun.	2 0	3 0
Tuberoses, 12 blms.	1 6	2 6
Violets, 12 bunches	1 0	1 6
— Czar, Fr., bunch	1 0	2 0
— Parme, French, per bunch	4 0	6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	6 0	..
Beans, Kidney, lb.	2 0	..
Beet, red, per dozen	1 0	2 0
Broccoli, bundle	0 9	1 0
Cabbages, per dozen	1 6	..
Capsicums, per doz.	0 6	..
Carrots, per bunch	0 6	..
Cauliflowers, per doz.	2 0	3 0
Celeriac, per root	0 3	..
Celery, per bundle	1 6	2 0
Coleworts, doz. bunch	4 0	6 0
Cucumbers, each	1 0	1 6
Endive, per dozen	1 0	2 0
Herbs, per bunch	0 2	..
Leeks, per bunch	0 3	0 4
Lettuce, per dozen	1 0	1 6
Mushrooms, punnet	1 0	1 6
Mustard and Cress, do.	0 4	..
Onions, per bushel	4 0	..
Parsley, dozen bunch	2 0	3 0
Parsnips, per dozen	1 0	..
Potatos, per cwt.	4 0	5 0
— kidney, per cwt	4 0	5 0
Salsafy, per bundle	0 9	..
Scorzonera, p. bundle	1 0	..
Seakale, punnet	2 6	..
Shallots, per pound	0 3	0 9
Spinach, per bushel	4 0	6 0
Sprouts, per pound	0 3	..
Sprue, bundle	1 0	..
Tomatos, per lb.	1 0	1 6
Turnips, bunch	0 6	..

POTATOS.—Magnum Bonums, bad trade, 50s. to 80s. ; Regents, 60s. to 80s. per ton ; German Reds, 2s. to 2s. 6d. per bag.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Apples, per ½-sieve	1 0	3 0
— Canadian, barrel	10 0	20 0
Grapes, per lb.	1 6	4 0
Kent Cobs, 100 lb.	30 0	..
Lemons, per case	8 0	10 0
Pine-apples, Eng., lb.	1 0	..
— St. Michael, each	2 6	7 0
Pears, per dozen	1 0	2 6
— per ½-sieve	1 6	3 0

SEEDS.

LONDON : *Jan.* 6.—The heavy snowstorm of to-day completely prohibited business in farm seeds ; consequently, as regards values no change can be noted. The samples of new English Clover seed which are now being offered show poor quality. For Hemp seed quotations remain at low figures, owing to the liberal supplies now arriving. No attention is yet devoted to spring Tares : some of fine quality are now obtainable at a moderate price. Feeding Linseed is dull. In Canary seed there is no change. Blue boiling Peas and Haricot Beans sell on last week's terms. *John Shaw & Sons, Seed Merchants* 37, *Mark Lane, London, E.C.*

CORN.

MARK LANE : *Jan.* 4.—Trade in Wheat continues very dull, and both English and foreign are cheaper to sell. For flour the market is very flat. Beans show a decline of 6*d.* to 1*s.* on the week. Oats, with a fair amount of business, are 3*d.* to 6*d.* dearer. Barley quiet, and without material change.

Jan. 6.—Very little was done in either Wheat or flour to alter Monday's values. Barley was quiet, and Monday's rates were unaltered. Beans and Peas sold in retail on the basis of previous value. There was a fair demand for Oats, and rates were 3*d.* higher in some cases.

Average prices of corn for the week ending Jan. 2 : —Wheat, 30*s.* 3*d.* ; Barley, 29*s.* 1*d.* ; Oats, 18*s.* 1*d.* For the corresponding week last year :—Wheat, 31*s.* 11*d.* ; Barley, 31*s.* 4*d.* ; Oats, 19*s.* 6*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London) : *Jan.* 6.—Moderate supplies of all kinds of vegetable produce. Trade fair. Quotations :—Apples, 2*s.* to 4*s.* per sieve ; Pears, 2*s.* to 4*s.* do. ; Savoys, 4*s.* to 7*s.* 6*d.* per tally ; Cabbages, 2*s.* 6*d.* to 5*s.* do. ; Beetroot, 2*s.* to 5*s.* do. ; Cauliflowers, 1*s.* 6*d.* to 3*s.* per dozen ; Spinach, 2*s.* to 3*s.* 6*d.* per sieve ; Brussels Sprouts, 3*s.* 6*d.* to 4*s.* do. ; bunch greens, 3*s.* to 4*s.* per dozen bunches ; do. Turnips, 2*s.* 6*d.* to 3*s.* 6*d.* do. ; do. Carrots, 1*s.* 6*d.* to 2*s.* 6*d.* do. ; do. Parsley, 1*s.* to 2*s.* do. ; Onions, 4*s.* 6*d.* to 5*s.* per cwt. ; Cattle Turnips, 30*s.* to 60*s.* per ton ; Swede do., 25*s.* to 28*s.* do. ; Carrots, 30*s.* to 48*s.* do. ; Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD : *Jan.* 5.—During the past week the market has been well supplied with all kinds of produce, and a fair trade was transacted at the undermentioned prices :—Cabbages, 4*s.* 6*d.* to 5*s.* per tally ; Savoys, 4*s.* 6*d.* to 7*s.* do. ; greens, bunch, 3*s.* 6*d.* per dozen ; Sprouts, 3*s.* 6*d.* to 4*s.* per sieve ; Mangels, 20*s.* to 22*s.* per ton ; Swedes, 22*s.* to 25*s.* do. ; Turnips, 50*s.* to 70*s.* do. ; do., bunch, 3*s.* to 4*s.* per dozen ; Onions, for 70*s.* per ton ; Carrots, cattle feeding, 18*s.* to 35*s.* do. ; do. household, 40*s.* to 60*s.* do. ; Parsnips, 9*d.* to 1*s.* per score ; Horse Radish, 9*d.* to 12*s.* per dozen ; Celery, 8*s.* to 12*s.* per bundle.

POTATOS.

BOROUGH AND SPITALFIELDS : *Jan.* 5.—Supplies were more than adequate to demand, and the condition of some of the supplies rather indifferent, giving prices of inferior grades a lower range. Quotations :—Regents, 70*s.* to 120*s.* ; Magnum Bonums, 50*s.* to 100*s.* ; and Champions, 50*s.* to 70*s.* per ton.

COLUMBIA (East London) : *Jan.* 6.—Trade rather dull. Quotations :—Champions, 50*s.* to 60*s.* ; Victorias, 50*s.* to 70*s.* ; Regents, 60*s.* to 80*s.* ; and Magnums, 50*s.* to 70*s.* per ton.

STRATFORD : *Jan.* 5. — Magnums, 50*s.* to 60*s.* ; Regents, 60*s.* to 70*s.* ; Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 1620 bags from Hamburg, and 18 bags from Rotterdam.

HAY.

WHITECHAPEL : *Jan.* 5 —Supplies were short, and owing to finer weather the inquiry rather better. Quotations :—Clover, prime, 90*s.* to 105*s.* ; inferior, 60*s.* to 85*s.* ; hay, prime, 70*s.* to 88*s.* ; inferior, 50*s.* to 65*s.* ; and straw, 28*s.* to 37*s.* per load.

CUMBERLAND (Regent's Park) : *Jan.* 5. — A moderate supply of meadow hay, the trade remaining very quiet. A very dull trade for Clover. Quotations :—Clover, best, 90*s.* to 105*s.* ; second, 70*s.* to 90*s.* ; hay, best, 72*s.* to 85*s.* ; second, 60*s.* to 70*s.* ; and straw, 30*s.* to 36*s.* per load.

STRATFORD : *Jan.* 5.—Hay, 70*s.* to 85*s.* ; Clover, 75*s.* to 110*s.* ; and straw, 30*s.* to 36*s.* per load.

Government Stock.—Consols closed on Monday at 99⅛ to 99⅜ for both delivery and the account. Tuesday's figures were 99⅜ to 99⅝ for delivery, and 99⅜ to 99⅝ for the account. The final quotations of Wednesday and Thursday were 99⅛ to 99⅜ for delivery, and 99⅜ to 99⅝ for the account.

CHRYSANTHEMUMS.—Five Hundred varieties, including the best of the Exhibition, Decorative, Early Flowering, and Single Varieties. Strong Cuttings now ready, buyer's selection, 1s. 6d. per dozen, 10s. per 100; Plants, 2s. 6d. per dozen, 16s. per 100; now ready. Many of the best growers in the country are supplied from this collection. For the grand new sorts, see CATALOGUE, one stamp.
WM. ETHERINGTON, Manor House, Swanscombe, Kent.

Mushrooms for the Million.
MORLE'S celebrated MILLTRACK SPAWN, 4s. 6d. per bushel (16 cakes), 6d. per bushel, extra for package; 2 cakes as samples, post-free 1s. 3d. Trade price on application.
MORLE AND CO., Child's Hill Farm, N.W., and 1 and 2, Feachurch Street, E.C.

Platanus occidentalis (London Plane).
W. RUMSEY has still a fine lot of well-grown Trees to offer:—10 to 12 feet, 30s. per dozen; 12 to 14 feet, 42s. and 48s. per dozen. A few thousand very fine Dwarf H.P. ROSES: prices (low) on application.
Joyning's Nurseries, Waltham Cross.

STRAWBERRIES (Sir Joseph Paxton).—100,000 strong, well-rooted Runners for sale. Apply.
JAMES GUYTON, Strawberry Grower, Belton, Great Yarmouth.

Seeds arrive within eight days after receipt of order.
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PREFERRED IN ALL ENGLAND,
at 10s., 20s., 30s., 40s., 60s., Post-free.



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4d. per bushel: 100 for 25s.; truck (loose, about 2 tons), 40s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks 25s.; sacks, 4d. each.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. per half ton, 26s. per ton in 2-bushel bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—H. G. SMYTH, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

COCOA-NUT FIBRE REFUSE: newly made. The same as supplied to the Horticultural Society.—Truck-load of 2 tons, 22s.; twenty sacks of same, 14s.; forty, 25s.; sacks included. All Free on to Rail. Cash with orders.—J. STEVENS AND CO., Cocoa nut Fibre Merchants, "Greyhound Yard," and 153, High Street, Battersea, S.W.

12-oz. Sample Packets, free by post 12 Stamps.
FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4s. 6s. per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton per Truck. Sample Bag, 5s.; 5 Bags, 22s. 6d.; 10 Bags, 45s. Bags included. Fresh SPHAGNUM, 12s. 6d. per Bag. SILVER SAND, Coarse or Fine, 30s. per Truck of 4 Tons.
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G. C.
Jan. 9, 1886.

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PEAT, best brown fibrous .. 4*s.* 6*d.* per sack ; 5 sacks for 20*s.*
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PEAT, extra selected Orchid 5*s.* 6*d.* ,,
LOAM, best yellow fibrous ..
PREPARED COMPOST, best } 12*s.* per bush., sacks included).
LEAF MOULD, best only ..
PEAT MOULD, ,, ..
SILVER SAND, coarse, 12. 3*d.* per bush., 12*s.* half ton, 22*s.* ton.
RAFFIA FIBRE, best only .. ,, .. 1*s.* per lb.
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 18*s.*
TOBACCO PAPER ,, (Specialité) 8*d.* lb., 28 lb. 18*s.*
MUSHROOM SPAWN, finest Milltrack .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each ; 10 sacks, 9*s.* ; 15 sacks, 13*s.* ; 20 sacks, 17*s.* ; 30 sacks, 25*s.* ; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

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Trade liberally dealt with. Prices on application to
GATERELL AND SON, Wholesale Peat Merchants, Ringwood, Hants.

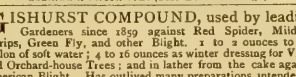
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FRESH COCOA-NUT FIBRE REFUSE, 4-bushel Bags, 1*s.* each ; 30 for 25*s.*—bags included ; 2-ton Truck, free on Rail, 25*s.* BEST BROWN FIBROUS KENT PEAT, 5*s.* per Sack ; 5 for 22*s.* 6*d.* ; 10 for 35*s.* ; 20 for 60*s.* BEST BLACK FIBROUS PEAT, 4*s.* 6*d.* per Sack ; 5 for 20*s.* ; 10 for 30*s.* COARSE BEDFORD SAND, 1*s.* 6*d.* per Bushel ; 14*s.* per ½ Ton ; 25*s.* per Ton. SPECIALITE TOBACCO PAPER, 10*d.* per lb. ; 28 lb., 21*s.* ; cwt., 70*s.* FINEST TOBACCO CLOTH, 8*d.* per lb. ; 28 lb. for 18*s.* LEAF-MOULD, 5*s.* per Sack. PEAT MOULD, 4*s.* per Sack. YELLOW FIBROUS LOAM, 3*s.* per Sack. CHARCOAL, 2*s.* 6*d.* per Bushel ; Sacks, 4*d.* each. BONES, GUANO, SPHAGNUM, &c. LIST Free. Special Prices to the Trade for Cash.
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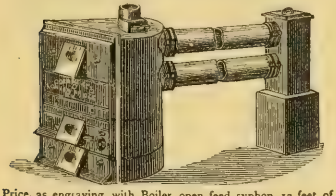
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Price, as engraving, with Boiler, open feed syphon, 12 feet of 4-inch hot-water pipe, and patent joints complete, £4 4*s.* Delivered free to any station. Discount for cash.
This is the simplest, cheapest, and most powerful apparatus made. It requires no brick setting, no stokehole, and no hot-water fitter for fixing. The Boiler stands in the Greenhouse, the front only being outside and flush with the outer wall, so that the whole of the heat from the boiler itself is utilised.
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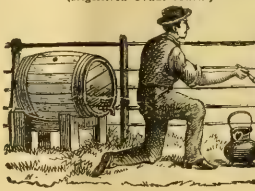
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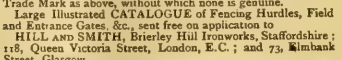
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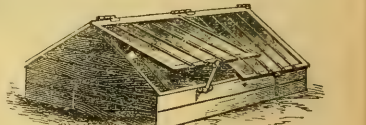
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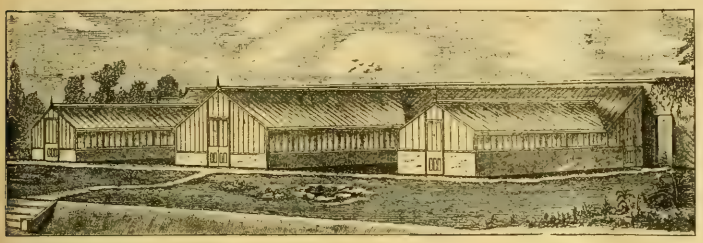


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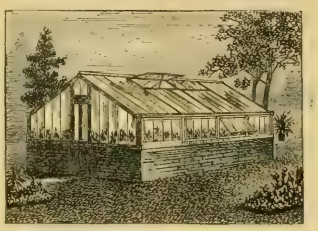
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30 ft.	15 ft.	£71 0	£12 5
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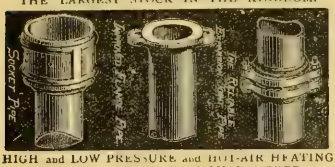
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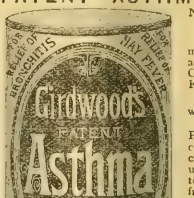
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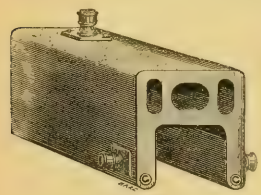
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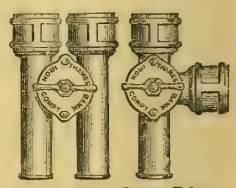
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WM. ETHERINGTON, Manor House, Swanscombe, Kent.

FOR SALE, a quantity of the best description of PEAR TREES, in Pots. For prices apply to Mr. W. WILLIAMS, Land Agent, 4, Salop Road, Oswestry.

Mushrooms for the Million.
MORLE'S celebrated MILLTRACK SPAWN, 4*s.* 6*d.* per bushel (16 cakes), 6*d.* per bushel, extra for package; 2 cakes as samples, post-free 1*s.* 3*d.* Trade price on application.
MORLE AND CO., Child's Hill Farm, N.W., and 1 and 2, Fenchurch Street, E.C.

New Tea Rose "Sunset."
WM. PAUL AND SON can supply good Plants of this ROSE (for which they received a First-class Certificate from the Royal Horticultural Society), at 2*s.* 6*d.* each, 24*s.* per dozen. A few extra large plants at 5*s.* each.
PAUL'S Nurseries, Waltham Cross, Herts.

Double Tuberoses.
MORLE AND CO. offer:—AMERICAN PEARL, very fine, 10*s.* per 100; DOUBLE AFRICAN, extra fine, 10*s.* per 100; ditto, largest ever offered, 15*s.* per 100; much cheaper by the 1000.
1 and 2 and 162, Fenchurch Street, E.C.

PRIVET.—A Large Stock of exceedingly fine bushy oval-leaved Privet, 4 to 6 feet high. Price on application to
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

Limes for Avenues.
CHARLES TURNER has splendid Trees, 20 to 25 feet high and 10 to 12 inches in girth.
The Royal Nurseries, Slough.

LILIUM AURATUM (Large Home-grown).
Very Grand Bulbs; 15*s.*, 24*s.*, and 36*s.* per dozen.
Extra Varieties, 2*s.* 6*d.*, 3*s.* 6*d.*, and 5*s.* each.
Rare Indian LILIES, WALLICHIANUM, NEILGHERRENSE, and the rare POLYPHYLLUM. LILIES and BULBS of all kinds.
NEW PLANT AND BULB COMPANY, Colchester.

LARCH, 1-yr. 1-yr., 5*s.* 6*d.*; 1 to 1½ foot, 10*s.* 6*d.*; 1½ to 2 feet, 16*s.*; 2 to 3 feet, 20*s.*; 3 to 4 feet, 25*s.*; 4 to 5 feets, 32*s.* 6*d.* per 1000. Nett cash. Ground wanted. Trade prices on application. Apply at once.
The Nurseries, Flanybyther.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.
The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Strset, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

LAXTON'S NEW APPLE, SEPTEMBER BEAUTY, DARTMOUTH CRAB, and other New FRUITS. Particulars from
T. LAXTON, Bedford.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots.
F. R. KINGHORN, Nurseryman, Richmond, Surrey.

GRAPES THIS YEAR.—Grand Fruiting Canes, 7*s.* 6*d.*, 10*s.* 6*d.*, and 12*s.* 6*d.*; also Planting Canes, 3*s.* 6*d.* and 5*s.* Perfectly ripened without bottom-heat.
JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

POT VINES.—100 2-yr.-old, chiefly Black Hamburgh. Failing to Fruit satisfactorily, will be sold cheap, for immediate planting.
D. WILLIAMS AND SON, Florists, Macclesfield.

LAXTON'S "WHITE HEBRON" and "UTILITY," New Early and Late Keeping POTATOS. Particulars from
T. LAXTON, Seed Grower, Bedford.

Seed Potatos.
H. AND F. SHARPE will be pleased to make Special Offers of their choice selected stocks of SEED POTATOS, comprising all the best kinds in cultivation. Purchasers of a quantity treated liberally.
Seed Growing Establishment, Wisbech.

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH AND BARNHAM.
ACCOUNT SALES sent daily, and CHEQUES forwarded weekly.
BANKERS and TRADE REFERENCES.
BASKETS and LABELS supplied.

Floral Commission Agency.
A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of choice CUT FLOWERS in any quantity. A. Hill having had a large personal experience as Salesman in Covent Garden Flower Market for many years, is thus enabled to obtain the Highest Market Prices. Account Sales sent daily. Bankers' and good Trade references. All Consignments to be addressed as above. Boxes, Baskets, and Labels supplied.

WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers' and Trade references.

WANTED, Choice CUT FLOWERS WISE AND RIDES, Salesmen, Covent Garden, W.C.

Spanish Chestnut.
WANTED, strong well-rooted Plants, from 3 to 4 feet high. Send particulars and price to
JAMES VEITCH AND SONS, Royal Exotic Nursery, Chelsea, S.W.

JAMES VEITCH AND SONS' SEED CATALOGUE for 1886, containing Lists for Choice Vegetable and Floral Novelties, Horticultural Implements, and other Garden Requisites, has now been Posted to all Customers. Any one not having received the same, a duplicate copy will immediately be posted, post-free, on application.
Royal Exotic Nursery, Chelsea, London, S.W.

To the Trade.
CHARLES SHARPE AND CO.'S Wholesale Seed LIST is now ready, and will be forwarded, post-free, on application.
CHARLES SHARPE AND CO., Seed Merchants, Sleaford.

OFFER of DAHLIA TUBERS is now ready, and may be had upon application to
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Platanus occidentalis (London Plane).
W. RUMSEY has still a fine lot of well-grown Trees to offer:—10 to 11 feet, 30*s.* per dozen; 12 to 14 feet, 40*s.* and 48*s.* per dozen. A few thousand very fine Dwarf H.P. ROSES: prices (low) on application.
Joyning's Nurseries, Waltham Cross.

LILIES of the VALLEY.—Cut, or with their roots, for making up pots. A thousand blooms daily, at a moments notice. 1*s.* 6*d.* per dozen, package (at cost price) and postage extra. Cash from unknown correspondents.
T. JANNOCH, Lily of the Valley Nursery, Dersingham, King's Lynn.
TELEGRAMS—"JANNOCH, DERSINGHAM."

WHOLESALE SEED CATALOGUE.—Our Catalogue of Garden and Flower Seeds, Novelties, and Bulbs for Spring Planting, is now ready, and may be had on application. All our Customers should have already received one by post, and they will oblige by advising us if not to hand.
The above also includes List of a few choice Lilies just to hand from Japan—L. auratum, L. longiflorum, L. Krameri, &c.
WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 20 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12*s.* to 24*s.* per dozen, strong plants. Descriptive LIST on application. Plants may *now* be knocked out of pots and sent by parcel post.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

Cedrus Deodara.
H. LANE AND SON have the finest Stock in the country—fine, well-grown Trees, with good roots, from 3 to 12 feet and upwards, to offer cheap. CATALOGUE free.
The Nurseries, Berkhamsted, Herts.

100 Herbaceous and Alpine Plants for 25s.
RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

LILIUM AURATUM.—Good, plump, sound Bulbs, 6*s.*, 9*s.*, 12*s.*, 18*s.*, and 24*s.* per dozen; extra strong, 30*s.* and 42*s.* per dozen. All other good LILIES at equally low prices.
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

Seeds.
CHARLES TURNER'S New List for 1886, is ready, and may be had free on application.
The Royal Nurseries, Slough.

ROSES—Dwarf Gloire de Dijon, exceptionally fine stuff, and common Moss Rose. Prices on application to
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

1886—Trade Price-Current—1886.
PETER LAWSON AND SON (Limited), Edinburgh, have to intimate that their Annual CATALOGUE of GARDEN SEEDS, &c., has now been distributed, but should any of their Correspondents not have received one, a Copy will be posted upon application.

HARDY HERBACEOUS PLANTS.
One Hundred good clumps, one of a sort, for 10*s.*
Must sell to clear ground. Cash.
EDWARD MORSE, Nurseryman, Epsom.

STRAWBERRIES (Sir Joseph Paxton).—100,000 strong, well-rooted Runners for sale. Apply JAMES GUYTON, Strawberry Grower, Belton, Great Yarmouth.

LAXTON'S "CHARMER," GRAND NEW PEA; "OPEN-AIR" TOMATO "CZAR," RUNNER BEAN, and other first-class Novelties, in sealed packets, of all Seedsmen. Particulars from
T. LAXTON, Seed Grower, Bedford.

CROWN BOB GOOSEBERRY.
Extra fine 3-yr. old Trees, true stock, £5 per 1000.
E. QUINCEY, Fulney, Spalding.

SALES BY AUCTION.

Wednesday Next

3000 very fine Bulbs of LILIUM AURATUM, and 30 distinct and beautiful varieties of IRIS, just received from Japan; a magnificent importation of LILIUMS and CALOCHORTI from California, including splendid Bulbs of L. Washingtonianum, Bloomerianum, Parryi, superbum, and Humboldtii; 400 Standard and other ROSES from an English Nursery; CAMELLIAS, AZALEAS, FICUS, and other plants, from Belgium; FRUIT TREES, Hardy AZALEAS, 300 CARNATIONS PICOTEES, PINKS, and CLOVES; CYPRIPEDIUMS, LILY of the VALLEY, BEGONIAS, TUBEROSES, and a general assortment of LILIES and BULBS for the Garden and Greenhouse.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on WEDNESDAY NEXT, January 20, at half-past 12 o'Clock precisely.

On view morning of Sale and Catalogues had.

Friday Next.

VALUABLE IMPORTED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, as follows, on FRIDAY NEXT, January 22, at half-past 12 o'Clock precisely—

By order of the NEW PLANT and BULB COMPANY.

Mr. EDWARD WALLACE'S First Consignment of ORCHIDS from Ocana, South America, consisting of fine masses of Odontoglossum Pescatorei, O. triumphans, O. Phalænopsis, O. æavium (true), and O. crocidipterum; Oncidium zebrinum and O. superbiens; Cypripedium Schlimmi C. urophedium, C. Lindeni, C. anguloa, C. sobralia alba, C. Warrea, C. Huntleya violacea, &c., collected and packed under his immediate supervision; 400 lots

From Messrs. SHUTTLEWORTH, CARDER AND CO., ODONTOGLOSSUM CRISPUM (Alexandræ) of the best type and in good condition, CATTLEYA MOSSIÆ (very fine), and the White LÆLIA ANCEPS, from the same importations as those which have recently flowered.

Also numerous ORCHIDS in flower from Messrs. F. HORSMAN AND CO., including White and Dark LÆLIAS, CATTLEYAS, and splendid varieties of ODONTOGLOSSUM ROSSII MAJUS.

On view morning of Sale, and Catalogues had.

Flowering Orchids.—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SPECIAL SALE of the above will take place on TUESDAY, January 26, for which they will be glad to RECEIVE NOTICE of ENTRIES as early as possible.

Central Sale Rooms, 67 and 68, Cheapside, E.C.

Tooting, S.W.

(Ten minutes' walk from the Station.)

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor, Mr. Rees, to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on WEDNESDAY, January 27, at 12 o'Clock precisely, a portion of the capital NURSERY STOCK, including 3000 Aucubas, 6 inches to 1 foot; 6000 Laurels of sorts, 1000 English Yews, several thousands of Ornamental Shrubs and Trees in border, 3000 Limes, 8 to 10 feet; 2000 Currants, Herbaceous Plants in great variety, and large quantities of Standard Trees, Rhododendrons, Conifers, Hollies, and other useful NURSERY Stock.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, or of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.

BY ORDER OF THE EXECUTORS.

The American Nurseries, Leytonstone

(adjoining the Station), and the Wanstead Nursery, Wanstead Flats.

GREAT UNRESERVED SALE of valuable NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises as above, on TUESDAY, February 10, and two following days, a large portion of the valuable NURSERY STOCK, covering several acres of ground, which has been carefully prepared for transplanting.

Fuller particulars will appear.

IN LIQUIDATION.

The Cranston Nursery and Seed Company, Limited, King's Acre Nurseries, Hereford.

PRELIMINARY NOTICE.—Important to Noblemen, Gentlemen, Nurserymen, and others extensively engaged in Planting.

GREAT UNRESERVED SALE of NURSERY STOCK, affording an opportunity of securing Stock in such quantities as is seldom met with at an Auction.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from the Liquidator to make preparations for the SALE by AUCTION of the whole of the extensive stock of EVERGREENS, CONIFERS, FRUIT TREES, ORNAMENTAL and FOREST TREES, &c., during the present year.

The FIRST SALE will take place on TUESDAY and WEDNESDAY, February 23 and 24, fuller particulars of which will appear in further Advertisements.

Auction Offices, 67 and 68, Cheapside, E.C.

Monday Next.—(Sale No. 7065.)

5000 splendid Bulbs of LILIUM AURATUM, from Japan; American and South African TUBEROSES; 1000 FREESIA REFRACTA ALBA, from the Cape; 100 fine clumps of the American LADY'S SLIPPER, TIGRIDIAS, GLADIOLI. Home-grown LILIES, Berlin LILY of the VALLEY crowns, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, January 18, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale, No. 7068.)

SPECIAL SALE of ORCHIDS in FLOWER.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Room, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, January 20, at half-past 12 o'Clock precisely, about 350 lots of ORCHIDS in Flower and Bud, comprising fine varieties of Odontoglossum crispum and O. Pescatorei, O. mulus, O. hybrids, Cœlogyne cristata, Cattleyas, Dendrobiums, Cypripediums, and Phalænopsis of sorts; several hundred plants of a large-flowered form of Saccolabium violaceum from a new district, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7058.)

The first portion of the valuable COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on WEDNESDAY, January 20, at half-past 12 o'Clock precisely, by order of the Executors, about 120 lots of ESTABLISHED ORCHIDS, from the above Collection, consisting of plants in flower and bud, comprising well-grown Cattleyas, Lælias, Odontoglossums, Cypripediums, Dendrobes, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7067.)

ROSES, FRUIT TREES, BORDER PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, January 20, at half-past 12 o'Clock precisely, several hundred first-class Standard, Dwarf, and Climbing ROSES, Pyramid and Dwarf-trained FRUIT TREES, of sorts, GRAPE VINES, CLIMBERS, Hardy BORDER PLANTS in great variety, LILIUMS, GLADIOLI, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7070.)

GALEANDRA BAUERI, 2000 ONCIDIUM JONESIANUM, LÆLIOPSIS DOMINGENSIS, LYCASTE BARRINGTONIÆ, LYCASTE in Flower, similar to plana; ONCIDIUM TRIQUETRUM.

MR. J. C. STEVENS will SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, January 21, at half-past 12 o'Clock precisely, a splendid importation of the exceedingly rare and beautiful GALEANDRA BAUERI; the flowers are 3 inches long and number about fifteen on a spike; the upper half of the lip is golden-yellow, the lower half purple-crimson; spikes are about a foot high. One of the finest importations of ONCIDIUM JONESIANUM yet received, in grand order. This fine Oncidium has been often eulogised in the *Gardeners' Chronicle*, *Garden*, &c., of late; the masses are of great size. A fine lot of the rare and fine LÆLIOPSIS DOMINGENSIS, and ONCIDIUM TRIQUETRUM, a most pretty Oncidium, rose-coloured, with white margin and crimson spotted lip. LYCASTE BARRINGTONIÆ, very scarce; CATASETUMS, in variety; ODONTOGLOSSUM CITROSMUM, in fine masses; ONCIDIUM URO-GUTTATUM, CATTLEYA CITRINA, in grand masses; and many other fine ORCHIDS.

On view morning of Sale, and Catalogues had.

Collection of Orchids.

The extensive collection of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS has received instructions from the Executors to SELL by AUCTION, without the least reserve, at his Great Rooms, 38, King Street, Covent Garden, W.C., the valuable collection of ORCHIDS, formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands, consisting of hundreds of fine plants of Cattleya Mendelii, C. Mossiæ, C. Trianæ, C. amethystoglossa, C. Dowiana, C. aurea, and C. gigas; spendid plants of Cœlogyne cristata, including Chatsworth var.; Cypripediums of sorts; Lælia elegans in variety. Also a magnificent lot of Odontoglossum crispum, O. Pescatorei, O. Halli, O. Rossi majus, and others—all in splendid health.

Dates of Sale will be announced in future Advertisements.

Important to those Seeking a Nursery, Florist, or SEED BUSINESS.

MESSRS. PROTHEROE AND MORRIS are about completing a new issue of their "HORTICULTURAL REGISTER," containing particulars of numerous Businesses for Sale requiring a capital of £300 to £10,000.

Gentlemen and others are invited to write for a Copy, giving a description of the property that is required, and a Register will be forwarded marked with those places that appear most suitable. No charge made to applicants.

This Register will also be found a valuable medium for the Disposal of Businesses. Terms and Forms for Inserting Particulars sent free of charge.

Auction and Estate Offices, 67 and 68, Cheapside, London, E.C. (First Floor).

Valuable Collection of Orchids for Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, The Vineyard and Nurseries, Garston, Liverpool, wish to announce that they will shortly offer for SALE the large and valuable COLLECTION of ORCHIDS made by the late R. P. Percival, Esq., of Birkdale, Southport.

Catalogues will be ready in a few days, and will be sent post-free on application.

The Company are also daily expecting fresh importations of East Indian and Mexican Orchids, particulars of which will also be sent on application.

WANTED TO RENT, a HOUSE of about 8 Rooms, with 1 to 3 acres of good Land (with Glass preferred), suitable for Growing Fruit, within 20 miles of London. Apply by letter to WINTER, 4, Old Jewry, E.C.

Seed Business.

The Cranston Nursery and Seed Company (Limited), in Liquidation.

TO BE SOLD, as a going concern, the old-established SEED BUSINESS now carried on in Broad Street, Hereford

Apply to the LIQUIDATOR, King's Acre, Hereford; or to Messrs. Protheroe & Morris, 67 and 68, Cheapside, London, E.C.

To Florists, Market Growers, &c.

FOR SALE, a NURSERY (South London), about 3½ miles from Covent Garden, containing Seven modern Greenhouses, 40 feet long, and Four Frames, 50 feet long, with Six-roomed Cottage, Two-stabled Stable, Sheds, &c. Houses well stocked. Lease nearly nine years, which can be renewed. A capital opportunity for any one wishing to start a Market Business.

Particulars on application to FLORIST, Messrs. Flannagan & Son, 98, Cheapside, E.C.

Splendid Chance for an Industrious Man.

DWELLING-HOUSE (double-fronted), six large Glass Houses (some heated), and Garden Ground at Tottenham. Rent only £30; may be purchased at £40 per year, without interest.

Apply, Mr. READ, 6, Worship Street, E.C.

To Florists.

In leading thoroughfare, Liverpool—handsome block.

TO LET, a FLORIST'S SHOP, with Fixtures and Established Business. One-third the rent of adjoining shops of same size will be accepted from a first-class Florist. Apply, A., 81, Dale Street, Liverpool.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 67 and 68, Cheapside, London, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

PURSUANT TO AN ORDER of the HIGH COURT of JUSTICE (CHANCERY DIVISION), made in the matter of the Estate of JOHN FIGGESS, Deceased; and in an action, Kedgley *v.* Figgess, 1885, F. No. 3069, the CREDITORS of JOHN FIGGESS, late of No. 7, Stoney Street, Borough Market, in the County of Surrey, Fruit and Potato Salesman, who died on February 12, 1885, are on or before JANUARY 30, 1886, to send by post, prepaid, to Mr. John Howard Russel, of No. 1, Wrotham Road, Gravesend, Kent, the Solicitor of the Defendants, their Christian and Surnames, addresses, and descriptions, the full particulars of their Claims, a Statement of their Accounts, and the nature of the securities (if any) held by them; or in default thereof they will be excluded from the benefit of the said Order. Every Creditor holding any security is to produce the same before Mr. JUSTICE PEARSON, at his Chambers in the Royal Courts of Justice, Strand, London, on MONDAY, February 15, 1886, at 12 o'Clock at noon, being the time appointed for adjudicating on the claims.

J. HOWARD RUSSEL, Defendants' Solicitor,

Dated this January 7, 1886.

SEAKALE for Forcing.—Excellent large roots, 90s. per 1000. A quantity of Forcing ASPARAGUS, Black CURRANT BUSHES, and RHUBARB of the leading varieties. Orders to be accompanied by a remittance.

ALFRED ATWOOD, Grower, 51, Shillington Street, Battersea, S.W.

CHOICE FLOWER SEEDS for 1886. ONE FARTHING A PACKET!

AGENTS WANTED EVERYWHERE. Specimen Parcel of Eighty-four different Packets post-free, 1s. 9d.

LLOYD BOOTH, Flower Seed Merchant, Loudwater, High Wycombe.

Chater's Superb Named Hollyhock Seed.

WEBB AND BRAND (late W. Chater) can supply a limited quantity of this world-famed and unrivalled strain as below:—

Collection No. 1, twelve extra fine named varieties, 10s. 6d.
Collection No. 2, six extra fine named varieties, 5s. 6d.
Collection No. 3, twelve fine named varieties, 7s. 6d.
Collection No. 4, six fine named varieties, 4s.
Collection No. 5, twelve good double, with colours attached, 5s.
Collection No. 6, six good double, with colours attached, 3s.
Mixed, 1s., 2s. 6d., 5s. 6d., and 5s. per packet.

Nurseries, Saffron Walden.

CLEARANCE SALE of DAFFODILS.—All sorts, mixture for naturalising grass, Orchards and Plantations; per 1000, 21s., per 100, 3s. 6d.

DAFFODILS, Varieties of INCOMPARABILIS, a mixture; per 1000, 30s., per 100, 4s. 6d.

YELLOW CROCUS, Large Roots; per 1000, 10s. 6d., per 100, 1s. 6d.

SMALL CLUMPS of WINTERACONITES, just bursting into flower; per 10, 3d. 6d. Other Bulbs at very cheap prices, and all in fine condition.

LIST free on application.

BARR AND SON, King Street, Covent Garden, W.C.

HAMPTON COURT BLACK HAMBURGH VINES.—Extra strong Fruiting Canes of the above and all other leading varieties at greatly reduced prices.

T. JACKSON AND SON, Nurseries, Kingston-on-Thames, and Royal Kitchen Gardens, Hampton Court.

Vines—Vines—Vines.

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.

The Vineyard and Nurseries, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

FOR SALE, 50,000 well-rooted Plants of GENISTAS, at 6s. per 100, sent by post or otherwise for cash only. Post-office Orders payable at Leyton Green.

T. BALDWIN AND SON, Edith Nursery, Burchall Road, Leyton.

FOR SALE, a few thousands of Scarlet, White, and Pink GERANIUMS, 8s. per 100, £3 per 1000; also 4000 Crown Bob GOOSEBERRIES, 3-yr., at £6 per 1000.

J. B. BUTTERFIELD, Freezywater, Waltham Cross, and Flower Market, Covent Garden, W.C.

ROSES—ROSES—ROSES.—50 Choice Perpetuals for 21s.; purchaser's selection from 400 best varieties. List of names on application. 24 Choice Standards or Half-standards, 21s.; purchaser's selection.

Cash with order.

JAMES WALTERS, Rose Grower, Mount Radford, Exeter.

The Best, the Cheapest.

TRAINED PEACHES and NECTARINES; extra fine, clean grown trees, well-rooted and thoroughly ripened; FRUITING TREES in Pots, GRAPE VINES, ROSES, and SEAKALE. Large stock at reduced prices. Cash Price Liston application to

WILL TAYLER, Osborn Nursery, Hampton, Middlesex.

ACER PLATANOIDES COMPACTA.—This very splendid variety has been obtained from a seedling of Acer platanoides. This variety is of compact form and close, the foliage is like that of Acer platanoides, but it differs in the form of growth. When grown as a standard this variety of Acer makes a compact round head; as a tree planted by itself, or in groups, it produces a splendid effect. When planted for an Avenue it makes a very agreeable and handsome sight, quite different from other trees, such as Horse Chestnut, Tilia, and other trees employed for that purpose. When trained in pyramid or column, and many together, it makes a splendid effect. This novelty is one of the finest that has been sent out to the Trade for some time. A Plate will be sent on application.

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PRUNUS PISSARDI.—The very finest Ornamental Trees ever seen, foliage of deep red colour, keeping until frost. Wood of a fine deep black colour; brilliant; very hardy and vigorous. Young Plants, about 1½ foot high, per 100, £3; per dozen, 10s. Middle-size Plants, 2 to 3 feet, per 100, £4 to £5; per dozen, 12s. to 15s. Strong Plants, bushy and pyramid, 4 feet to 5 feet, per 100, £10; per dozen, £1 5s. Strong pyramid, bushy, 5 to 7 feet, per dozen £1 10s. to £2. Extra strong pyramid, bushy, 6 to 8 feet, per dozen, £2 to £3. Standards, fine specimen, per dozen £1 15s. to £3.

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CATALOGUES, printed in English, of Fruit Trees of every description, trained or not trained, Roses, Peonies, Clematis, New Plants, and others, sent free on application.

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LILIUM LONGIFLORUM (grand variety).
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- „ ELEGANS, rich apricot.
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- 500 CHESTNUT TREES, 10 to 12 feet.
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A few thousand strong MANETTI.

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The COLONEL, First-class Certificate, Royal Horticultural Society, 1885.

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And other sterling Novelties in SEED POTATOS.

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PICEA CONCOLOR, 2 to 5 feet, hundreds.
- „ GRANDIS, 5 to 7 feet.
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- „ MAGNIFICA, 2 to 3 feet, hundreds.
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- „ PINSAPO, 6 to 10 feet, hundreds.

PINUS AUSTRIACA, 3 to 3½ and 4 feet, well furnished and transplanted October, 1884, thousands.
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RETINOSPORA OBTUSA AUREA, 3 to 6 feet.
- „ PISIFERA AUREA (true), 3 to 6 feet.
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THUIOPSIS BOREALIS, 4 to 6 feet, hundreds.
- „ DOLABRATA, 3, 4, and 6 feet, hundreds.

THUIA LOBBII, 4 to 5 feet, hundreds.
- „ OCCIDENTALIS LUTEA, 3 to 6 feet.
- „ SEMPER AUREA, 2½ to 3 feet, hundreds.

YEWS, Common, 3, 4, and 5 feet, thousands.
- „ Common, 6 to 10 feet, hundreds.
- „ Golden, of all sizes up to 10 feet.

We have many thousands as Pyramids, Globes, and Standards, in point of variety and size unequalled.
- „ Golden, Seedlings, 3, 4, 5, to 8 feet.
- „ Irish, 5 to 10 feet, hundreds.
- „ Irish, Golden, Seedling, 3, 4, and 5 feet.

AZALEAS, Hardy, the finest varieties known, 2, 3, 4, and 5 feet, thousands.

RHODODENDRONS, 3, 4, 5, 6, 8 to 10 feet, thousands of finer plants than can be found in any other Nursery.

☞ The fine Standard and other Rhododendrons annually planted in Rotten Row, Hyde Park, are supplied by ANTHONY WATERER.

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BOX, Green and Variegated, 3, 4, 5, 6 to 7 feet, thousands.

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- „ ALTACLARENSE,
- „ HODGINS',
- „ LAURIFOLIA,
- „ MYRTIFOLIA,
- „ SCOTTICA,

} 3, 4, 5 up to 10 feet, many thousands.
- „ Yellow-barked and other sorts.
- „ Variegated, of sorts, 3, 4, 5 up to 10 feet, thousands.
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ACER DASYCARPUM, 12 to 15 feet.
- „ NEGUNDO VARIEGATA, Standards, 8 to 10 feet.
- „ REITENBACHII, 8 to 10 feet.
- „ SCHWEDLERI, 12 to 14, and 14 to 16 feet.
- „ WORLEYII, Standards, 12 to 14 feet.

BEECH, Common, 10 to 12 feet.
- „ Purple, Pyramids, 9 to 12, and 12 to 14 feet.

BIRCH, Silver, 12 to 14 feet.
- „ Purple, 14 feet.

CHESTNUT, Horse, 14 to 16 feet.
- „ Horse, Scarlet, 12 to 14 feet.
- „ „ Double, 10 to 12 feet.

ELMS, English, 10 to 12 feet.
- „ Guernsey, 10 to 12 feet.

LIMES, 10 to 12, 12 to 14 feet, and 14 to 16 feet.
- „ Silver-leaved, 12 to 14 feet.

LIQUIDAMBAR, 6 to 8 feet.
ASH, Mountain, 10 to 12 feet.
MAPLE, Norway, 14 to 16 feet.
OAKS, American, 12 to 14 feet.
- „ English, 10 to 12 feet.

PLANES, 14 feet and upwards.
POPLAR CANADENSIS NOVA, 12 to 15 feet.
- „ BOLLEANA, 8 to 10 feet

SYCAMORE, Common, 14 to 15 feet.
- „ Purple, 15 to 16 feet.
- „ Variegated, Standards, 10 to 12 feet.

Weeping Trees.

BEECH, Weeping, Pyramids and Standards, 10 to 12 feet.
- „ Weeping, Purple (true), Standards, 8 to 10 feet.

BIRCH, Young's Weeping, Pyramids, 10 to 12 feet.
- „ Young's Weeping, Standards, 14 feet.

ELMS, Weeping, Standards, 10 feet stems.
HAZEL, Weeping, Standards, 8 to 10 feet.
LARCH, Weeping, 6 to 10 feet.
POPLAR, Weeping, Standards.
SOPHORA JAPONICA PENDULA, Standards, 8 to 9 feet.

Intending planters are invited to inspect the Plants growing; no one interested in such matters will regret the trouble. Catalogues convey but a very inadequate idea of such a Stock.

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By Order,
EDWD. R. CUTLER, Sec.

November 3, 1885.

To the Trade.

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- HELLEBORUS NIGER, common variety, 4s. p. doz.
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HEPATICA TRILOBA, single blue, 2s. per dozen.
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Is now ready, and may be had Free on application.

EAST LOTHIAN INTERMEDIATE STOCK (Methven's Choice Strain).—White, Purple, Scarlet, Crimson, and Snow-white Wall-leaved. In Packets, 1s., 2s. 6d., and 5s. each colour.

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GALEANDRA BAUERI, 2000 ONCIDIUM JONESIANUM LÆLIOPSIS DOMINGENSIS; LYCASTE BARRINGTONIÆ; LYCASTE IN FLOWER, SIMILAR TO PLANA; ONCIDIUM TRIQUETRUM.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander on THURSDAY NEXT, January 21, at half-past 12 o'Clock precisely, a splendid importation of the exceedingly rare and beautiful GALEANDRA BAUERI. The flowers are 3 inches long and number about fifteen on a spike; the upper half of the lip is golden-yellow, the lower half purple-crimson; spikes are about a foot high. Also the finest importation of ONCIDIUM JONESIANUM yet received in grand order. This fine Oncidium has been often eulogised in the *Gardeners' Chronicle*, *Garden*, &c., of late; the masses are of great size. A fine lot of the rare and fine LÆLIOPSIS DOMINGENSIS, and ONCIDIUM TRIQUETRUM, a most pretty Oncidium, rose-coloured, with white margin, and crimson spotted lip; LYCASTE BARRINGTONIÆ, very scarce; CATASETUMS in variety; ODONTOGLOSSUM CITROSMUM, in fine masses; ONCIDIUM PINGUICULATUM, CATTLEYA CITRINA in grand masses; and many other fine ORCHIDS.

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ROYAL EXOTIC NURSERY, CHELSEA, LONDON, S.W.,

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Were the only Melons Awarded First-class Certificates by the Royal Horticultural Society in 1885.



LONGLEAT PERFECTION, WHITE-FLESH.

"A white-fleshed, smooth-skinned, handsome fruit; its flesh is soft, melting, and luscious, really one of the best we ever tasted."—*The Garden*, July 18, 1885.

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The longest podded and heaviest cropping Runner Bean.

A magnificent variety, specially selected at our Seed Farm, and greatly in advance of all other sorts; abundantly prolific, bearing in clusters enormous, long, thick, fleshy pods of a dark green colour.

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A magnificent variety, of dwarf, upright, compact growth, with beautifully curled light green leaves.

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A grand, new, Main Crop, Green Wrinkled Marrow variety, raised by Mr. Culverwell. It grows about 5 feet in height, and is enormously productive, bearing in pairs an abundance of extra long, massive, handsome, broad pods closely filled with Peas of delicious flavour.

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A distinct and remarkably prolific variety, specially selected at our trial grounds. Fruit dark green in colour, about 18 inches in length, straight, uniform in thickness, and of excellent quality. *Per Packet*, 2s. 6d.

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"A distinct green-fleshed variety, remarkable for the handsome appearance and superb quality of its fruits. These are rather large, roundish-oval, the skin deep orange and thickly netted, the flesh pale green, very juicy and richly flavoured."—*The Gardeners' Magazine*, June 13, 1885.

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"An extraordinary cropper, large in size, and of smooth form, some slightly corrugated, bright colour, and a heavy solid fruit. One of the best varieties grown."—*Journal of Horticulture*, October 1, 1885. *Per Packet*, 1s. 6d.

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A most distinct, compact-growing variety, of a rich deep green colour, forming very early a close solid heart, beautifully crisp, juicy, and tender, and of excellent flavour.

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This new, distinct, and prolific variety is by far the best of Mr. Muir's raising; the fruit is of handsome globular form, creamy white in colour, and of finest table quality.

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Received the Highest Awards for Beauty, Heavy Cropping, and Table Quality, from the Royal Horticultural Society, 1885.

A splendid new White Round Seedling variety, grown at the Royal Horticultural Society's Gardens, Chiswick, where it proved so eminently satisfactory that it was accorded the highest awards. It is of robust growth, a great cropper, and of the finest table quality; a first-rate garden Potato, and should be grown extensively for main crop.

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A splendid variety, averaging about 12 inches long, with mottled green skin. The flesh is of a creamy colour, very firm, and when cooked of very fine flavour. It is a very valuable variety for table use.

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THE LARGEST RED TOMATO.

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Williams' Dwarf Green Curled Borecole	,,	0	6
Williams' Improved Brussels Sprouts ..	per packet	1	0
Williams' Alexandra Broccoli	,,	1	6
Williams' Early Nonsuch Cabbage ..	,,	1	0
Williams' Matchless Red Celery ..	,,	1	0
Williams' Matchless White Celery ..	,,	1	0
Williams' Gloria Mundi Endive ..	,,	1	0
Williams' Victoria Cos Lettuce ..	,,	1	0
Williams' Semper Fidelis Melon ..	,,	1	6
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Season 1886. CHOICE Season 1886.

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BROCCOLI — Sutton's White Michaelmas
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THE

Gardeners' Chronicle.

SATURDAY, JANUARY 16, 1886.

AN IRISH GARDEN.

NEW YEAR'S DAY came with soft clouds and sweet mild air. Two more such gentle days succeeded, and then followed wild storm and driving showers of sleet and rain—"rough weather" in very truth—and ever since the wind has been piercing. To-day the tops of the far-off hills are white, and letters bring tidings of snow; therefore I look around the old garden in haste, to note whatever there may be of brightness in this first week of January, ere it be wrapped from sight.

The Snow Queen, the Christmas Rose, is there already. Like a great snowdrift the pure white mass of blossoms rise up above the dark green shining leaves that slightly part and lean aside to allow the beauty to be seen. They neither look nor smell like honied flowers, and yet if a warm hour of sunshine come the bees seem to have quite a merry time of it, tossing about among the golden-yellow stamens clustered in the centre of each blossom, and even after one has gathered a handful of the flowers the bees will follow, and, lighting in the pure white cups, be borne away, bees and blossoms together. To me the petals of these stainless flowers, coming, as they do, at the close of the old year, as yet untouched by Time, always appear like the unwrit pages of the new. Fair be the story writ thereon for all who love their garden! To gather the leaves along with the buds and blossoms is a mistake. It is injurious to the plant, and they wither quickly when brought indoors. A more lasting and delicate setting is a wreath of Smilax tamnoides, or S. aspera; even the prickly thorns of the Smilax fencing the unsullied blossoms adds to the conceit. If the Smilax cannot be readily spared, sprays of Ivy have a happy effect. I remember once arranging a flat alabaster vase with glossy Ivy leaves, snowy Christmas Roses, and single crimson Anemones, and thinking it at the time the loveliest outdoor winter bouquet there could well be, and I fancy I am of a like opinion still. Christmas Roses always look best in a rather flat vase, or tazza, with their stems well immersed in water, when, indeed, they remind one of Water Lilies, but miniature as to size.

It is curious how impatient the Hellebores are of the least interference with their growth, quite resenting any root disturbance, and holding a grudge as if for a whole year toward the daring hand which has presumed to remove or divide them. There are only two seasons of the year at which one can venture with success to separate and replant them—one, just as the blooming time is ending, before fresh growth begins; and the other, after the foliage has perfected its growth and acquired firmness and consistence. The plant is then at rest, for the flower-buds have not commenced to form at the base of the leaf-stalks, which they do some months previous to blooming time. Although each season I have carefully watched for fertile seed-vessels, none were ever to be found until last year, when, after artificial fertilisation and

crossing with other varieties, several full ripe pods were the result. Sown at once in a box placed under a north wall and covered with slates, they are now, after being removed to a cold frame, breaking through the soil with their two demonstrative leaves.

Fair and bright as are the Christmas Roses, there is one spot yet brighter still—real sunshine in the garden, no matter how clouded may be the sky overhead. It is the gay and golden Jasminum nudiflorum climbing through the trellis—unfortunately it is alone, for the bit of Cotoneaster I had planted beside it has failed to grow. I had pictured to myself this Jessamine at play among the more sedate but brightly-coloured berried branches of its companion.

Just in front of the Jessamine is a great clump of Schizostylis coccinea, which until the frost came made quite a ruddy firelight glow. This plant enjoys a deeply cultivated friable soil, well enriched with old hotbed stuff and leaf-mould. When left undisturbed any length of time the flower-spikes become poor and few, but when lifted early in spring, broken up into fair-sized pieces, and these replanted some couple of inches apart in large groups, it becomes a glorious mass of bloom late in autumn, the flower-spikes rising up from 2 to 3 feet high, and bearing each twelve or fourteen blossoms.

How dear to me are the old China Rose trees, that look so cheerful still, with their deep green glossy leaves and rosy buds. A little while ago they were one soft blush of pink, but the cruel storms have scattered all their blossoms, and now only the little firm pink buds remain, that look to-day so gay and fearless under the dull grey sky. Very precious to us are those flowers that bear with them a message from the past. These rosebuds ever remind me of my favourite autumn nosegay when a child—a cluster of pink China rosebuds, a bunch of sweet Violets, tied together with some sprigs of blossoming Myrtle—for, in my early home, the Myrtles by the sea had grown into large shrubs or trees with thick brown stems, where, every spring, a thrush or blackbird built its nest and reared its young. Along by the trellis, gaining from its slight shelter, one may yet gather a handful of late Tea Roses, scentless it is true, but of a deep coppery, gold-like hue, with red-brown stems and outside touch of bronze that is pleasant to the eye in the fading winter hours.

The sunniest bit of the garden is given to the Violets. There they have been in blossom since September, with no other shelter than the forest of their own green leaves. The robust habit of the Czar makes it the fittest to contend against ill weather, and even to-day I can gather a goodly bunch with the great long stalks that makes them so easy to arrange in a vase. Except the Narcissus, whose perfume the Greeks of old regarded as intoxicating, there is not any other flower, to my thinking, that has the same breath of magical sweetness. The very essence of spring, of sweet days, of sweet hopes and memories, seems yielded by its breathing.

An old Arbutus tree, at the side away from the storm, is quite lit up by its dangling balls of crimson and orange fruit, above which cluster the waxen bells of blossom. Great missel thrushes and golden-billed blackbirds dash out of it as I approach. There they live and feast as long as there is a ripe berry to be had. Under the shelter of the Box edge peep out dainty little heads of the double white Primrose with sparkle here and there of gold-laced Polyanthus. Doronicum "Harpur Crewe" has several stems with fresh starry blossoms, and Coronilla glauca is veiled in a haze of yellow flowers. This plant deserves special notice for its lively aspect in dull wintry days, both foliage and blossoms bearing the frosts and bitter winds so cheerily. For several years it was grown in a cool house for the sake of its early and sweet blossoms, but there it was so infested with greenfly as to become unsightly. One day, tired of its ill plight, I turned it out-of-doors, where ever since it has flourished without any care, other than pruning it in as the branches spread over-much.

Against the wall, close by a Myrtle tree, thick set with tiny deep red buds, are some tall plants of the Guernsey Nugget Chrysanthemum. This variety appears to flower right merrily out-of-doors, never becoming bare or showing withered foliage at the base, but looking like a brave, green bush, bearing full clusters of bright yellow blossoms, not, of course, as individually large as when grown indoors, but serving admirably as flower branches for decoration.

In a sheltered nook of the rockery, Sisyrinchium grandiflorum is to be found in purple bud. Galanthus Elwesi is quickly pushing up its full, blue-green sheaths. Always later in piercing through its prison-house than G. nivalis, it is ever the first to win, to burst into the freedom of light and air, and side by side with the purple Satin-flower to sway in the last cold winds of January. Daffodils are showing well above-ground, and other sleeping beauties are ready to awake if not forbidden by the frost.

L. A. L.

ROYAL PURVEYORS.—A short time ago we announced that Messrs. Webb & Sons, Wordsley, Stourbridge, had been honoured with a Royal Warrant, appointing them Seedsmen to the Queen, and we now learn that they have also received a similar appointment to the Prince of Wales.

A COMMON EDIBLE FUNGUS.

CRATERELLUS CORNUCOPIOIDES, *L.*

Now that the frosts of winter have set in, fungi have rapidly vanished from our pastures and woodlands. The plant before us, which ends our present series, is one of the last to linger amongst the dead leaves of sheltered woods. It is often extremely common, and generally appears after long-continued and heavy rain. It *grows only in woods*, often almost hidden amongst dead leaves. It is somewhat cæspitose in habit, *i. e.*, companies of the fungus often grow together, the individuals sometimes touching each other. When moist, the colour is jet-black within the trumpet, and dark brownish-grey or purplish-grey ontside. When dry the colours become paler. The interior surface is somewhat smooth the exterior more or less wrinkled. The external appearance of these truly handsome and common fungi is shown in fig. 12, and a section is shown in fig. 11; the latter is very simple, and in marked contrast with Agaricus rubescens, P., and A. procerus, Scop., described in former numbers. There are no gills as in Agaricus, but the spores are simply borne on the outer brownish-grey surface. Spores, enlarged 500 diameters, are shown on the right-hand side of the section.

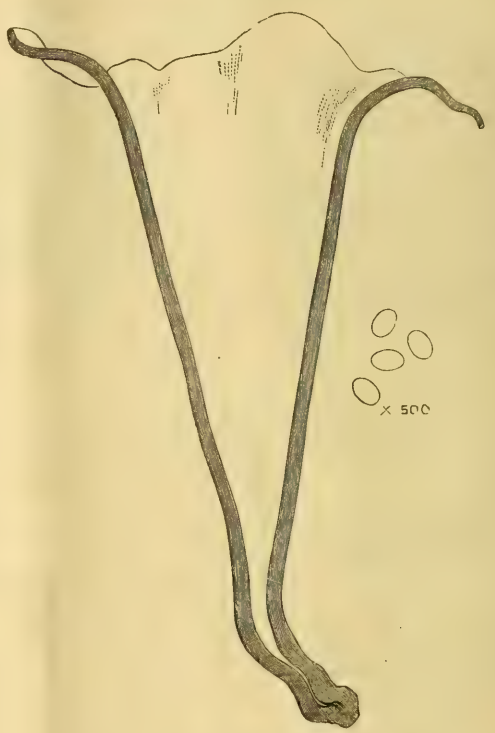


FIG. 11.—CRATERELLUS CORNUCOPIOIDES: SECTION.

The name Craterellus is derived from the Greek "krater"—a cup; the specific name means like a cornucopia—the goat's-horn broken off by Zeus and given to Amalthæa with the promise of eternal abundance. It so happens that there is a second genus of fungi named Cantharellus, the meaning of the word being almost identical with Craterellus, and the plant before us is sometimes found placed in one genus and sometimes the other. The French word Chanterelle is probably a form of the word Cantharellus, and is the popular name (both in France and England) for the highly valued edible fungus named

Cantharellus cibarius, Fr., which we may possibly illustrate and describe on some future occasion.

The species of Cantharellus and Craterellus being so like in form, one would have thought that names less like each other would have been better suited to mark the genera as distinct. As Craterellus and Cantharellus did not cause sufficient confusion, a species was also invented with the lovely name of Craterellus cantharellus! Many similar instances might be given: for instance, there are two Peziæ which grow on resin; one is P. resinæ, the other, to avoid confusion, is dubbed P. resinaria. Two

The specimens selected for cooking should be fresh and clean. Any superabundant moisture should be allowed to evaporate, or be absorbed in a dry cloth.

In cooking, the specimens may be treated like the ordinary Mushroom, or prepared in the style of Agaricus procerus, Scop., described at length on p. 650, vol. xxiv. When cooked the examples become jet-black, and resemble burnt Onions, with abundant juice, and an enticing appearance and odour. The taste is rich, and to any person who likes Mushrooms delicious. *Worthington G. Smith, Dunstable.*



Fig. 12.—Craterellus cornucopioides.

Puccinias grow on Asters, one is P. asteris, and for fear of confusion the other is termed P. asterum. On the Vine, Valsa vitis and V. vitigera. We also have Uromyces and Euromyces, or Eu-uromyces, &c. Many other and worse instances might be quoted.

Craterellus cornucopioides, Linnæus, is one of the fungi commonly exposed for sale in the markets of Continental towns. It is only of late years that it has been esteemed as a fungus of high culinary value in Britain chiefly, perhaps, because its use was advocated before the Woolhope and Essex Field Clubs by Dr. Max Cornu and other visitors from France. It now takes its place here on the fungological *menu* as an edible fungus of the first class, often extremely abundant, and when once seen never to be mistaken for any other plant.

Cornus mas (mascula of Catalogues). — The Cornelian Cherry, named Cornus mas, though not very showy as regards its individual blooms, makes nevertheless a very prominent feature in the landscape, laden as it is during the month of February with innumerable yellow flowers upon entirely bare or leafless stems, and is an object worth growing where variety is desired, and slow growth admissible. The plant rarely fruits in this country as freely as upon the Continent, where the said fruit is more or less flat-sided, and not like the illustrations given in some works within our reach. The leaves change to a very pleasing tint of red in the early autumn months. The Cornel, which is the ordinary English name, is easily propagated by means of suckers or layers, the wood being exceedingly hard and durable.

New Garden Plants.

Oncidium Forbesii, *Hook.*

This is the subject of far more varieties than the good old Oncidium crispum, Lodd., and even than O. prætextum, Rchb. f. There is no doubt that Mr. Borwick's variety deserved a special name, since the lip has no trace of the brown disc, some scattered brown spots existing on the yellow ground. We must admit that amidst the numerous varieties of Oncidium Forbesii none are so good as those with a very broad yellow border. A glorious raceme (not a single flower!) of that kind is now before me, kindly forwarded by Mr. F. Sander, who may have imported it. It came from the grand collection of Mr. R. H. Measures, The Woodlands, Streatham. *H. G. Rchb. f.*

Lælia porphyritis (*hyb. nat.?*).

I received this great curiosity from my excellent correspondent, Mr. J. Day, who brought it from Brazil. Its bulbs may be compared to those of a very thin Cattleya Skinneri. They are cylindrical, with a few furrows. The uppermost joint is the longest, 6—7 inches high, ½ inch in diameter. The leaf is like that of Cattleya Forbesii. The flower may be compared to that of Lælia pumila. Sepals ligulate acute, purplish and greenish; petals a little broader, and of a light purple; lip three-lobed in front, side lobes obtuse-angled, mid-lobe broad, blunt, longer, somewhat wavy, and obscurely emarginate. The disc of the lip is light yellowish-white. The front lobe is of a fine warm purple colour. The tips of the side lobes are of the same colour; the remaining parts are light purple; the base of the lip fine purple. The column is three-lobed at its apex, the side lobes bidentate. Colour white. Margins of column (the three lobes!) fine purple. Margins of stigmatic hollow, fine purple, with a similar blotch in the middle of the front side of the column. The remaining part of the column is white. Pollinia connate in four, which show the limits of the cohering pairs. This leads me to suspect a hybrid between a Lælia and a Cattleya. The Lælia may be pumila, but which is the Cattleya? Mr. Day thinks it may have been Cattleya Dormaniana, which may be a mule itself, and informs me that three of his bulbs have two leaves, while the great majority have but one. *H. G. Rchb. f.*

Cypripedium calurum, *Rchb. f.*

There is very great satisfaction in seeing improvement, especially when the progress is rapid. Mr. Harry Veitch has just sent me an exceedingly highly-coloured flower of this English Orchid, really surpassing the fine original of December, 1880. It comes from Mr. Philbrick, Q.C., who must have a glorious aspect for his glasshouses, probably quite, or nearly, free of fog. I had one day two remarkably well coloured varieties of Barkeria elegans, sent me by Mr. Sander, coming also from the above-named gentleman. I immediately thought, looking to the fine colours and stiff texture of those stiffnecked Orchids, what I say now. *H. G. Rchb. f.*

Schomburgkia chionodora, *n. sp.**

A novelty in the way of Schomburgkia Humboldti, imported from Central America by Mr F. Sander, and promising to be a stately plant provided it be judiciously treated. It has shining, terete or tetragonal bulbs more than a foot in length, with ten to twelve blunt angles. They have a single cavity surrounded by woody matter. Schomburgkia Humboldti has the peculiarity of having a number of smaller tubes around the central cavity, all surrounded by wood cells. Leaves two to three, cuneate-oblong, blunt, very broad (4—5 inches). Flowers most probably in panicles, said to be very numerous, exceeding those of Epidendrum atropurpureum (Macrochilum, Hook.). Sepals ligulate-acute. Petals spatulate, blunt. Lip large, quadrilobed, frontal sinus

* *Schomburgkia chionodora*, n. sp. — Aff. Schomburgkiæ Humboldti: canali medullari in pseudobulbo multicostato unico; foliis oblongis obtusis (paniculæ?): sepalis ligulatis acutis; tepalis spatulatis obtusis; labelli quadrilobi lobis basilaribus obtusis antice rotundatis serratis, crispis sinu, profundo. Flores candidi macula in labelli disco purpurea. *H. G. Rchb. f.*

deep, lateral sinuses very short. Anterior part toothletted, and wavy, like an old-fashioned dandy's frill. There are five keels on the disc, which are entire, not serrate as in Schomburgkia Humboldti. And now the test—the colour. The flower is said to be snow-white, with a purple spot in the centre of the lip. The dried flowers at hand give evidence of a white colour. *H. G. Rchb. f.*

CATASETUM MACROCARPUM (*L. C. Rich*) BELLUM, *nov. var.*

A nice variety, having petals fine brown-purple excepting the light tips, and a great purple-brown blotch on each side of the lip. It was imported from the Brazils by Mr. T. Christy, who kindly sent the flowers, stating that the bulb is 8 inches high.

Cataseta are really out of fashion, and many an Orchidist shrinks when he hears the mere name. And yet what fine gorgeous things they include. I obtained from Mr. Sander a mass of a few good bulbs gathered by his excellent collector, Mr. E. Rimen. The plant was sent on a block and enjoying the immediate proximity of glass, for such appears to be the requirement of these plants. We had just two immense inflorescences with forty-one fine flowers together. I think those admirers and amateurs who are not initiated in the mysteries of orchidic sport might feel far more interested at the sight of such plants than at our regular *habitués* of the glasshouse, the Cattleyas and Odontoglossa. *H. G. Rchb. f.*

THE MYRTLE.

THERE is no apology needed for drawing attention to this popular old plant, or in saying a word of praise in its favour. Myrtus communis, the most northern species of the order, is a native of Persia. It is also found naturalised in the South of Europe, and I believe is found to standour winters out-of-doors in some favoured districts on the coast of Britain.

Myrtle buds and berries were eaten as spices by the ancients, and are still used in Tuscany instead of pepper. The Tuscans also prepare a sort of wine from the Myrtle which they call Myrtidanum. The distilled water of the flowers is of very agreeable perfume, known in France under the name, Eau d'Ange. The leaves of the common Myrtle dried in a stove and powdered are sometimes substituted for the Sumac of Sicily.

The varieties most commonly met with in cultivation are the following:—Myrtus communis, with its bright green and cheerful appearance, is known to all, and a general favourite. Myrtus communis latifolia is very much like the common variety, but has larger, broader, and bolder leaves, and altogether is a more robust grower.

The following three varieties among the small-leaved section are the best, and for all practical purposes are ample to grow. Myrtus lusitanicus, the smallest leaved variety I am acquainted with, is a very pretty one, and most useful in bouquet making. Myrtus Romana is a fine variety, a little larger in the leaf than lusitanicus, of a darker green colour, and a much better grower. M. communis mucronata is very much like Romana, perhaps a trifle lighter in the foliage, and is quicker in making a tree.

The purposes for which the Myrtle may usefully be grown are many. It is grown in pots or tubs as pyramids, standards, and bushes, and I have found small plants in 4-inch pots most useful to mix with flowering plants round the edges of groups or baskets of plants for house decoration.

For growing into large plants in tubs, the variety communis latifolia is the best, and the form I prefer is the standard and pyramid, as they have a fine effect if placed alternately on the terrace or lawn. They are also well adapted for growing either as pillar plants, or to cover a piece of bare wall in a greenhouse. If used in either of the above ways, I should endeavour to plant near the pathway or door, as I have found that many people are fond of drawing their hands along the foliage for the purpose of inhaling its pleasant odour.

For cutting purposes the Myrtle is a most useful and valuable plant. In the winter I have often admired a small glass standing alone on a table or shelf with only a sprig of Myrtle, and perhaps a single bloom of scarlet Pelargonium, or, maybe, some other simple flower; and again, in the summer, what is cooler or more refreshing to look at than a bit of tuberose, or some other white flower, with a small branch of Myrtle? I think I have shown in the above few lines, that the Myrtle is a real gardener's friend in many ways, and perhaps not the least in these hard times—in that it requires little or no labour to keep it clean. *Quercus.*

PROLIFERATION IN FERNS.

(*Concluded from p. 44.*

SPEAKING only of what can be observed in outdoor examination by the aid of a lens, in Ferns the first indication of the appearance of a bud is a minute papiliose protrusion, in some cases as a surface-growth, in others through the slightly ruptured cuticle. Onward from this early stage it is naked or clothed with scales or farina, following in these particulars the character of the parent. In most Ferns the rootstock is more or less scaly, and in these cases, when proliferous, so also are the buds or tubers; or, if the parent be farariferous, so also are the buds. The development, as regards the size attained by the buds while still connected with the parent, varies greatly in the different species, and is not uniformly relative to the size of the species. In some it is relatively large, in others relatively small. In the majority of instances the germ early assumes, and subsequently maintains, the form and character of a normal bud; in others atrophy, or partial arrest of growth, ensues, and instead of the general shuttlecock-like growth, due to equal and uniform development, a single frondlet is produced, which takes the form of a branch-like extension of the parent frond, which in some instances is repeated again and again by the same means, resulting in an indefinite extension of the original fronds. The branch is as large, and does not differ in any particulars from the frond which produced it, but the nature of the origin remains evident. In these cases the reproductive character or function of the feature is frustrated by an unequal development of the parts, and no plant passing through the gradual stages, from strength to strength of growth and development, results, but only a frond-branch, which, from having absorbed the vigour of the suppressed parts, at once assumes the adult state. Probably, however, the reproductive effort is not always lost in these species; their habit of growth is generally spreading, and the fronds eventually rest on the ground, and, where this occurs, the reproductive character is most likely in some cases recovered by a plant offspring from the bud origin of the branch. This branching form of proliferation is very distinct, and so far as I have observed fairly, but not uniformly constant in the species in which it occurs; but it is not true branching, but more correctly, superfoliation; for the bud-origin of the extension remains constantly observable. Strictly normal branching, having its origin in viviparation, is confined to the rootstock, and is only found in certain species, and in these it is only when modified, as it sometimes is, that it presents affinity with normal prolification. The buds by which the fronds of Gleichenia branch and extend are also not of the nature of proliferous buds, but the strictly normal development of the fronds.

There is now but one other aspect of the subject to which I desire to allude, and on which, as it can be seen and its character estimated in cultivated Ferns, extended comment is unnecessary. I refer to proliferation as regarded from the artistic and æsthetic point of view. Taking the family as a whole, from the tiny Filmy that covers rocks and trunks of trees with glistening sheen, to the stately Palm-like Tree Ferns with trunks twenty to fifty feet high, often forming in their majesty and grace important landscape features, no class of plants possesses so great and uniformly graceful variation of form and outline, of colour and shades of colour, as Ferns, or contribute the same elegant and exquisitely charming effect to embowered waysides and forest glades—situations in which their greatest variety of form is displayed, and in which the effect is heightened by many attendant circumstances combined. The charm to any one with an eye to appreciate and delight in what is lovely in Nature is as permanent as such surroundings, and the grace and elegance that produce the charm are infinitely varied. I refer, need I say, to tropical scenes, for, though in general shade loving objects, it is only in lands where the sun ever glows that this wealth in variety and abundance of Fern life is found. Alas for refined taste! the most charming and surpassingly beautiful of such scenes I have ever witnessed are rarely trodden by the foot of civilised man, or seen by any but the eye of the most phlegmatic of wild tribes. Standing amidst such scenes, in this wealth of untold loveliness, subdued in sense by the solitude of human silence and the grandeur of the region around, one's mind travels back to the last civilised visitant—some wandering naturalist, perhaps, who was there a decade or a generation before, and forward to the time ere another will in any probability penetrate thither—over the years that no responsive eye has rested on the scene; and one feels a melancholy sadness that so much of what is lovely on earth should be lost to civilised humanity. But after all one's pain on such a reflection is vain, for though loud in its profession of homage to Nature's charming ideals, civilised humanity is the greatest Vandal this world has seen, and its chief employment is in divesting the earth of all such beauty.

As I have said, to these wild scenes Ferns add the varied measure of their own exquisite attractiveness, and for these qualities, whether as wild or cultivated plants, they are admired, for, as living plants of the present epoch, they are destitute of any important economic worth to the everyday life of man. From this, the artistic and æsthetic point of consideration, proliferation is not a desirable feature, whatever good purpose it may serve in the economy of the wild life. I know of no case in which it does not mar the natural grace, whether this be little or great, pertaining to the species affected, and where it largely prevails it is a conspicuous disfigurement. In such as possess a strong upright habit of growth, in which the young well developed plants stand erect on the tier after tier of outstretched pinnæ, the effect is quite comical and ludicrous, more especially when the plants stand in water, for then the idea suggested is that the young progeny have climbed aloft from the uncongenial element an unkind fate had thrown their parents in, just as chickens often scramble on their mother's backs—or that they are a company of performing vegetable acrobats. The paler foliage frequently exhibited by the plants in these aërial cases, heighten the effect, and makes them more conspicuous, as it contrasts with the darker background of the foliage on which they are borne. The chief, and hence worst, effect is produced in aërial frond proliferation, but looked at from the artistic point of view in no form among cultivated species is it desirable; the radicant species, which in cultivation are best grown suspended, are not improved by the plant which is produced at the end of each frond, and that weighs it down, often developing as well a tuft of roots, so that it looks as if planted by the wrong end, as children sometimes remark. Root proliferation is perhaps one of the least objectionable of the forms from this point of view, but where the individual, with what grace in its individual state it may possess, becomes lost in the community that springs up around it by this reproduction process, and in which its individuality becomes entirely merged. *G. S. Jenman.*

THE LATEST NOVELTIES.

(*Continued from p. 43.*)

BEGONIAS.—The large-flowered tuberous-rooted Begonias, both double and single, have received good support—among others by the new introductions of Messrs. Laing & Co., and Mr. Cannell, both of whom make the tuberous Begonias the subject of their New Year's sheet of illustrations, and in that form they will no doubt present themselves to a large proportion of our gardeners; suffice it to say, that large as the flowers are represented, and bright as the colours are on Messrs. Laing's, and double as they are represented on Mr. Cannell's illustrations, the subjects are by no means overdone; for so gorgeous are they that it would be difficult to depict them more brilliant than they are. Another class of Begonias, too, is now getting well represented among us, viz., the dwarf growing bedding section, obtained by crossing the shrubby species. Of this class it is difficult to conceive anything more compact, pretty or useful either in the greenhouse or the flower garden, than Messrs. Sutton & Sons' two new varieties—B. Prince Henry, with handsome leaves and compact habit, the plants being literally covered with light scarlet flowers, which are very persistent and durable; and B. Princess Beatrice, an equally pretty and compact

plant with white flowers sometimes tinged with pink: these two varieties grow into bushes about 9 inches in height, and so dense as to hide the pots. Among Begonias, too, Messrs. Veitchs' hybrid with B. socotrana—certificated as B. John Heal—gives us a novelty which it is difficult to overate; its habit is compact, flowers showy bright rosy-magenta, and wonderful for lasting properties, either cut or on the plant. This also should make a good bedder.

HARDY FLOWERING SHRUBS.

Of these Messrs. James Veitch & Sons have received Certificates during 1885 for some of the best and most distinct things of recent years, and their new introductions are, perhaps, all the more desirable, as they are nearly all white flowering, and good for cut flowers—a consideration which seems to become of more importance every year. Of these the palm must be awarded to the pure white Chionanthus retusus, with its free sturdy habit, and showers of pretty flowers, somewhat resembling bunches of white Bouvardia. It was illustrated in the *Gardeners' Chronicle* last year, at p. 821, vol. xxiii. Rhododendron Manglesii, a handsome white bell-shape variety, a hybrid of R. Aucklandii, seems destined to make a new break in hardy Rhododendrons, as it flowers well, and shows no sign of being tender at Coombe Wood (see *Gardeners' Chronicle* illustration, July 11, 1885). Styrax japonica is a handsome shrub, with pure white Snowdrop-like blossoms, which it bears in great profusion (see *Gardeners' Chronicle*, xxiv., 1885, fig. 166). Syringa Marie Legrange, a fine white, good either for the garden or for forcing. Olearia Gunni and O. macrodonta, two very pretty shrubs, with large sprays of Aster-like white flowers; and Philadelphus microphyllus, one of the prettiest of small-growing, white-flowered shrubs, with a delightful Quince-like odour. All these hail from Messrs. James Veitch & Sons' treasure stores at Chelsea. The same firm also got certificates for two new foliage shrubs—Euonymus japonica Silver Gem, which is perhaps the handsomest of its class; and Fagus sylvatica tricolor, with pretty rose, green and bronze foliage. And Messrs. Lee & Son received a Botanical Certificate for a very pretty variegated Conifer rejoicing in the elaborate title of Cupressus Lawsoniana erecta viridis albo variegata, a name which certainly expresses what the plant is, but must be very awkward if you want to ask for it in a hurry. Messrs. Paul & Son introduce the perfection of profuse flowering Privets in Ligustrum sinense floribundum.

ROSES.

Among these it need hardly be said that Mrs. John Laing, with its sweet light pink flowers with silvery sheen, still holds the first place as one of Mr. Bennett's best, and a worthy recipient of the National Rose Society's Gold Medal. Mr. Bennett also gave us last year Tea Roses, Princess Beatrice and Ye Primrose Dame, two charming soft yellow varieties; and General Gordon, a fine white of the Niphetos form.

Messrs. William Paul & Son are doing good work with the hybrid climbers, and their stand of several varieties exhibited at South Kensington, September 8, and out of which the variety named Waltham Climber No. 1 was selected for a First-class Certificate, disclose some very useful and handsome things in a class by no means crowded. The Waltham climbers have handsome dark rose flowers of the Tea Rose shape and fragrance. Messrs. Paul & Son's H P. Rose Pride of Reigate is a very curious and showy sport from the Countess of Oxford, with a rich crimson colour, striped and blotched with rose and white; and H.P. Rose Madame Norman Neruda is a beautiful variety, with finely formed rose-pink flowers, very fragrant.

HARDY PERENNIALS, &c.

There is often a difficulty in defining what a new plant is, and the hardy plant garden is one of the worst to deal with in that respect, so many of the plants having been once well known, then lost or become scarce, and afterwards reintroduced. In the gardeners' interest, however, it is not well to be too critical, and if the following, many of which have been noted from Mr. Ware's, of Tottenham, are new to such an authority, they must, at least, be very scarce where not quite new. Aciphylla Lyalli and A. Colensoi are stout bushes, producing a profusion of white flowers, very useful for cutting; Chrysanthemum Puy de Dôme, a dwarf free-flowering hardy Marguerite; Doronicum plantagineum excelsum, a grand yellow Leopard's Bane, finely figured in the *Garden* of November 14. Chionodoxa sardensis, certificated at the Royal Horticultural Society to Barr & Son in March last, is a pretty bulb, with dark blue flowers, distinct from the paler C. Lucilliæ. Brodiæa grandiflora Warei, a new Californian plant, has very large and beautiful pink flowers. Viola pedata alba, a white form of the Bird's-foot Violet; Bloomeria Clevelandii, a pretty golden flowered plant; and Eremurus Bungei—certificated to the New Plant and Bulb Company, of Colchester, as E. aurantiacus—is a brilliantly showy thing, with tall, densely clad spikes of shining yellow flowers.

Of new Tree Pæonies, Mr. W. Gordon, of Twickenham, exhibited a fine basket at the Royal Horticultural Society last summer. They were magnificent in doubleness, size, and colour, the best being Crimson King and Snowball; the latter, a pure white variety, being certificated.

Beyond the good and new things enumerated, if we consider the magnificent novelties in Gladioli, Pyrethrums, Pæonies, &c., of Messrs. Kelway, of Langport, and the innumerable other good florists flowers which the year has produced, it will readily be accorded that 1885 has been one of fully average benefit and interest. *James O'Brien.*

GARDEN PALMS.

(*Continued from p. 713, vol. xxiv.*)

KENTIOPSIS, *Brongn.*—Two very handsome Palms for garden purposes are included in this genus, of which three species have been described. When large they have robust, tall, unarmed stems, large pinnate leaves on stout smooth leaf-stalks, the pinnules rather broad, narrowed at both ends, the apex terminating in an acute or long point. Fruits egg-shaped, 2 inches long, the pericarp thick and fibrous, enclosing an almost round smooth seed. Seedling leaves not seen.

K. olivæformis, Brongn. (Kentia gracilis, Lind.), is, when young, a distinct and noble plant, as may be seen by a specimen at Kew, 3 feet high, bearing six spreading leaves with petioles 18 inches long, almost round, two-thirds of an inch in diameter, and copiously dotted with brown, the pinnules in a dozen pairs arranged regularly, and each of them 15 inches long by 1½ inch wide, the point long and tapering, texture thick and leathery, colour a dark olive-green. When young the leaves are of a deep brown-red colour, which adds to the beauty of the plant. Native of New Caledonia.

K. macrocarpa, Brongn. (Kentia Lindeni, Lind.), also a native of New Caledonia, is now well known in gardens, its bold handsome foliage, which when developing is almost crimson, having won for it a first place among cultivated Palms. A plant at Kew 6 feet high, with large leaves made up of pinnules 18 inches long and 5 inches wide, recently bore a richly coloured young leaf, which was as attractive to visitors as the most beautiful of flowers.

LATANIA, *Comm.*

Of all fan-leaved Palms the three species belonging to this genus are the most beautiful, both when young and grown in pots, and when at their largest. Already we have in gardens fine specimens of all three, those at Kew being exceptionally large and noble, although even these are but pigmies when compared with full-grown specimens, as described in Baker's *Flora of Mauritius and the Seychelles*—stems 40 or 50 feet high, very stout, with swollen bases, and bearing immense crowns of long-stalked, large-bladed foliage, the segments of which hang down most gracefully, their veins and margins permanently coloured deep red or yellow. On young plants the petioles are spiny along the margins, but on old specimens there are no spines. The seeds are drupe-shaped, about 2 inches long, varying somewhat in thickness in each species; seedling leaves palmatifid, variegated. Like all the Palms from these islands, the Latanias require a moist tropical temperature, a rich loamy soil, and plenty of water always. They grow slowly when young, and require close attention, as they are apt to get stunted if neglected. There is some confusion of the three species in gardens, and we therefore describe each separately:—

L. Commersonii, Linn. (L. rubra, Jacq. and Hort.).—Petiole long, slightly arching; blade palmate, the segments long, drooping, dark green above, paler beneath, their margins slightly spiny when young, and banded with dark red; the young leaves bear along their principal nerves small scales, which generally fall off as the leaves mature. Seeds Pear-shaped, almost flattened on one side, dark brown, enclosed in a scaly husk, upon which are raised lines or striæ.

L. Loddigesii, Mart. (L. glaucophylla, Hort.).—Leaf as in the last, except that the blade is glaucous; the veins slightly tomentose beneath, and tinged with red; the scales on the young leaves are almost white. Seed over 2 inches long, flat on one side, rounded on the other, with a raised broad ridge which branches out in a remarkable manner, suggesting a small lizard lying flat on the seed.

L. Verschaffeltii, Linn. (L. aurea, Hort.).—In this the petiole is bright orange, the blade pale green, with segments slightly tinted with yellow, and the margins and veins beneath tomentose or scaly. Seed obovoid, slightly trigonous, 2 inches long, 1½ inch broad, the surface marked as in L. Commersonii.

The plant known in gardens as Latania borbonica is Livistona chinensis. *W. W.*

Florists' Flowers.

CHRYSANTHEMUM BOULE DE NEIGE.

THE exhibition at the Aquarium for late-flowering Chrysanthemums is interesting, in bringing into prominence good late varieties, thereby extending the flowering season of a highly valuable group of plants. The kind above-named is an excellent pure white reflexed variety, a free bloomer, dwarf in habit, and very late, and one which will be much grown in the future. At the present time I have splendid flowers, and some which have been in water for more than a week are as fresh as ever. It surpasses all other late whites of my acquaintance, and I shall grow it largely in the future for Christmas. My preference for it, before such kinds as Princess Teck, Fair Maid of Guernsey, Ethel, and others, is on account of its smaller blooms, which fit them for almost any purpose, and its freedom in flowering—in this respect it eclipses all other kinds. It may be well to state that there is a Boule de Neige in the Japanese section which will bear no comparison to the one under notice. *Visitor.*

THE CARNATION AND PICOTEE.

In a few weeks it will be time to repot the plants, and preparation must be made for this without any unnecessary delay. The potting soil should be prepared if this has not been already done. The main portion of the compost should be good loam, if decayed turf can be obtained so much the better; there is considerable risk in using turfy loam, as it is seldom free from wireworm a troublesome pest. If a single small worm gets into the pot it will destroy all the plants; it is therefore necessary to carefully look over the loam and pick out all wireworms and grubs. Add to the loam a fourth part of leaf-mould, as much decayed manure, and sharp sand. It is an error to use large pots for the Carnations; some years ago the best growers would pot a pair of plants in a 10 or even an 11-inch pot, when 8 and 9-inch pots would have given much more satisfactory results. At present the frames containing our plants are covered with snow, 3 or 4 inches thick; while they are in this state we keep the frames shut close up night and day, as the plants are quite dormant owing to the frost. When the weather is mild the lights should be removed night and day, but be kept on as a protection from heavy rains. *J. Douglas.*

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 12.*)

THE following is the Odontoglossum luteo-purpureum section joining O. mulus (see p. 12):—

O. HALLII may justly be considered as the highest of this section, the original variety with a white lip, noted in Messrs. Backhouse's collection in 1866, being superb and very superior to some of the recent importations (see *Gardeners' Chronicle*, 1873, p. 77). Flowers large, generally on unbranched spikes; sepals and petals yellow, blotched with reddish-brown lip, white spotted with crimson, crest much divided and yellow.—Cordilleras of Peru, Ecuador; elevation, 8000—9000 feet.

O. H. MAGNIFICUM.—This is probably the finest

variety of Hallii ever introduced. Flowers 4½ inches across; sepals almost wholly brownish-crimson, with yellow tips; petals clear yellow, blotched with crimson; lip large, white, marked with dark scarlet. The variety flowered with H. M. Pollet, Esq.

O. H. XANTHOGLOSSUM differs from the original mainly in having a yellow lip, the original white-lipped variety being often called O. H. leucoglossum.

O. CHÆTOSTOMA.—This flowered in the Ferniehurst collection, and since that in other places. In general appearance it is something like O. luteo-purpureum sceptrum. Sepals dark brown, with yellow tips; petals yellow, spotted with brown. A supposed mule between O. Hallii and O. cristatum.

O. VICTOR is another supposed Hallii hybrid, with the form of O. mulus. Sepals and petals dull yellow, blotched with cinnamon-brown; lip white, changing to yellow, and with reddish marks near the yellow crest.

O. LUTEO-PURPUREUM.—This is a very variable kind, scarcely two of the varieties being quite alike. Sepals and petals yellow, more or less blotched with brown; lip yellowish-white.—New Grenada, 8000 feet.

O. L.-P. HYSTRIX, formerly called O. hystrix, is now generally understood to apply to the fine forms with fringed or toothed labellum and highly developed spiny crests.

O. L.-P. RADIATUM (fig. 13), as originally named, was a distinct form, with yellow sepals, and petals blotched with chestnut-brown; lip lighter yellow, blotched brown.

O. VUYLSTEKEANUM.—This is a very interesting form, as it supplies the link by which the O. luteo-purpureums are bound to the O. odoratums and other kinds through O. mulus, O. elegans, &c.; and it also seems to connect the O. crispum, O. luteo-purpureum and O. odoratum indirectly through O. Andersonianum, &c., and by means of its affinity to O. Wilckeanum. O. Vuylstekianum, which has several times appeared with Messrs. Hugh Low & Co. in the same houses, and probably from the same importations as their O. mulus, has much the form of O. mulus, with the texture and outline of O. Wilckeanum. Sepals and petals sulphur-yellow, sparsely blotched with red; lip yellow, heavily blotched with orange.

O. V. MACULATUM.—Disc of the sepals and petals sulphur, the rest yellow with a few crimson spots; lip light yellow. *James O'Brien.*

(To be continued.)

KEW GARDENS IN WINTER.

[PROFESSIONAL journals have, of course, long recognised the unique position of Kew. It is gratifying to find the general public awakening to the fact that Kew is something more than a pleasure ground, or a botanical garden, and flattering to our national vanity to read an American tribute to the same effect. ED.]:—

Few people, comparatively speaking, find their way down here in the winter, and perhaps fewer still have any idea of the nature of the work carried on here all the year round, at a cost of £20,000 a-year, and with a staff numbering altogether some 170 or 180 people, of one grade or another. There are a great many botanical gardens in the different parts of the world, and parks and pleasure-grounds are of course still more numerous; but Kew is more unique, simply because the British Empire is unique. For the fifty or sixty Governments under the British Crown this establishment is the great botanical clearing-house, and in the depth of winter, just as in the height of summer, they are taking in here seeds and plants from all corners of the earth, and either propagating them themselves, or transmitting them for the enrichment of some distant dependency where they have hitherto been unknown. Exchanges are also made with foreign countries, and however stormy the political horizon may be, there is a constant influx of correspondence into the pigeon-holes of the Director's office here, in all the principal languages of Europe, all of it profoundly pacific in its tone, and purely scientific in its interest. "Why can't they settle these squabbles on a botanic basis?" wrote the philosophers of St. Petersburg the other day when England and Russia seemed to be drifting into war over the Affghan difficulty. However high the tide of excitement may rise among nations and their rulers, Kew and its correspondents go on their beneficent way as placidly as though all the world had actually beaten their swords into ploughshares, and their spears into pruning-hooks.



FIG. 13.—ODONTOGLOSSUM LUTEO-PURPUREUM RADIATUM.



FIG. 14.—ODONTOGLOSSUM WILCKEANUM.

very heavily blotched with dark brown; lip expanded in front, the white portion radiating from the brownish blotch at the base of the crest.

L. L.-P. SCEPTRUM.—This is a distinct form, with sepals creamy-yellow, barred and washed with brown, and broader toothed petals of the same colour, densely spotted with brown; lip whitish and serrate.

O. FACETUM may be a hybrid with the last-named, which it much resembles in general form and marking, the spotting and dotting on the flowers being very curious.

O. WILCKEANUM (fig. 14).—This is now a well-known though very variable kind. In appearance the flowers are intermediate between those of O. crispum and O. luteo-purpureum. Sepals and petals pale yellow, marked with brown.

O. W. ALBENS is a very distinct form, certificated to R. H. Measures, Esq. Sepals and petals clear milk-white, profusely blotched with cinnamon-brown; lip much as in a good O. luteo-purpureum.

O. W. GODEFROYÆ.—This is a very showy form, with bright light yellow sepals and petals, blotched with rich chocolate. Mr. Ballantine, gardener to Baron Schroder, received a First-class Certificate for it at the Royal Horticultural Society, March 10, 1885.

O. W. PALLENS.—Sepals and petals white, tinged with yellow and blotched brown; lip white, with brown centre.

O. W. LYROGLOSSUM (fig. 15), is also of the Wilckeanum section, and a very fine variety, with a curiously folded terrate lip; sepals and petals bright yellow,

Perhaps when leisured Londoners have advanced a little further in their artistic education they may find a good deal to attract them down to Kew Gardens, even in the winter time and even apart from the wonderful display of Ferns and foliage and flowers always to be enjoyed under the 10 or 15 acres of glass comprised within the gardens. In the depth of winter the grounds are always more or less beautiful—sometimes exquisitely beautiful—with their majestic timber, their masses of shrubs, and verdant lawns, here and there touches of brilliant colour or long vistas of grey and blue mist. Nothing of the kind could be more enchanting—except perhaps the same thing under bright sunshine—than the scene down here just after the recent heavy snowfall. Of course wooded country is always charming after a fall of snow, but on few spots of the same extent anywhere on the face of the earth does the snow drape so wonderful a variety of plant life as here in Kew Gardens. The Cedars and Cypresses, Deodars, Pines, and Firs were magnificent objects, and here and there were clustered among the delicate tracery of the deciduous trees in the most bewitching combinations. A heavy fall of snow always does much damage here; it crushes down shrubs and wrenches off great limbs of trees; but even the wreckage is muffled up into forms of fantastic beauty, and while the snow remains hardly detracts from the quaint, unfamiliar charms of the scene.

There is, perhaps, no department of the public service more thoroughly cosmopolitan than this office of the Director of Kew Gardens. It is a centre of collection and distribution for the whole earth, and a focus of light converged from all quarters of the world, and reflected upon whomsoever may need it for scientific or commercial purposes. A broker, for instance, in the City gets some vegetable product transmitted to him, say, from some part of India. This correspondent out yonder wants to know if he can find a sale for it. The broker, however, is in profound ignorance as to the nature of the plant or the uses to which it may be put. He will probably find that there is more information available at Kew than he would get at if he were to go out to India and spend six months in investigating the subject. There are probably about 14,000 species of plants in India, and in the herbarium at Kew Gardens they have actual specimens of somewhere about 11,000 of them. The chances are, therefore, that this vegetable product, whatever it may be, is among the treasures of the herbarium, and that ample information may be obtained about it. This herbarium is a department of Kew not accessible to the ordinary visitor to the gardens.

It is located in the old-fashioned red brick house on Kew Green which was formerly occupied by the King of Hanover. A fine lofty and spacious hall with two galleries all round it was added to the back of this house, about ten years ago, and here is gathered a collection which missionaries, travellers, naturalists sent out with military expeditions, and resident botanists all over the world are continually enriching, and which is rapidly becoming completely representative of the flora of all the more familiar regions of the earth, as well as of a great many of the more remote. The specimens here are carefully dried and neatly arranged in sheets of cartridge paper, and stored away in cases on shelves, after the manner of a library. This is not open to the public; but in the way just explained the public have the benefit of this collection, and anybody who can show a reasonable ground for desiring access to it is readily admitted. It is not a school for students of elementary botany, but any one who can make it helpful in their study of the science in its higher branches is freely welcome. It is in one of the rooms of this establishment that Sir Joseph Hooker is now about to settle down to the completion of his task with the Indian flora after some twenty years of service as Director of the Gardens, over which his father, Sir William Hooker, presided for just upon a quarter of a century. Sir William's predecessor, by the way, retired after fifty years' service, so that for very nearly a century past this office of Director of Kew Gardens has been held by only three men. This department of practical science certainly would seem to be very conducive to longevity.

No other nation has such an institution as Kew, and no other nation has so much need of it. Its influence on our Colonial Empire has been simply incalculable, and the annual outlay upon it—even if the public derived no benefit from the institution as a pleasure-ground and a place of education — would certainly be a mere flea-bite, if we could only show in comparison with it the commercial advantage it has conferred. The expense, by-the-way, would be enormously greater but for the system of exchange that has been so widely developed. Almost everything in the way of seeds and plants for cultivation which Kew requires is obtainable by this system, or by the gifts of Englishmen who have settled abroad, and who feel a kindly interest in this great establishment, which so pleasantly links together our Colonial Empire. A resident in Burmah, for instance, lately sent home an offer of a fine collection of Orchids, which were gladly accepted. East India Orchids are easily obtainable, but a few South Americans present an exception to the general rule. We have comparatively little intercourse with the South American continent, and Orchids from that quarter are collected mainly by the travellers of nurserymen, from whom of course they have to be bought. But this rarely happens. Kews has something which the West Indies want, and in exchange for which the West Indies will send something that they have and which Kew wants. Or exchanges are effected between the gardens here and other botanic gardens throughout the country, or with nurserymen or private cultivators and amateurs. Growers all over the world have thus an easy medium for the supply of their wants, and, whether their object is to introduce altogether new things or to improve their stock by substitution of newer kinds, they will find what they want by communicating with Kew. Thus some time ago Jamaica growers of Pine-apples wanted a new stock. The Director of Kew was able to obtain suckers of the very best kinds in cultivation, from the gardens of the Queen, the Duke of Devonshire, Lord Rosebery, and one or two other distinguished growers in England. In other ways also this establishment exerts a great influence on commercial affairs. Many of our colonists are apt to get very much behind their times and to fall very much into the dark as to what is going on in the great world around them. Thus, it recently came to the knowledge of the Government that Oranges were being shipped from Sicily for the New York market, while Jamaica—splendidly adapted for Orange growing—was rapidly being ruined in the attempt to bring their cane sugar into the market in competition with the bounty-supported Beet growers of the Continent. Oranges certainly ought to be taken into New York from Jamaica more cheaply than they can be taken from Sicily, and the attention of the Director of Public Gardens and Plantations of Jamaica has been called to this opening for enterprise. That is an illustration of what is continually being done by this great central depôt. The study of botany is promoted all over the world, the productiveness of our colonies is immensely augmented, every land under the sun is being beautified by the introduction of exotic plants, and here close to the greatest centre of our population we have a garden of the most enchanting beauty, and a collection of foreign plants which are the envy of scientific foreigners all over the world. Some day, perhaps, we may have added to Kew Gardens the forty acres of waste land at the present time given up entirely to solitude and hosts of rabbits, just at that corner of the grounds facing Sion House. At present it is of no use to anybody; there is nothing in it but thickets and trees, and the Queen's cottage, into which no one ever goes, and the whole domain of forty acres is religiously wired round sufficiently to keep out the public, but not sufficiently to keep in the rabbits. *Daily News.*

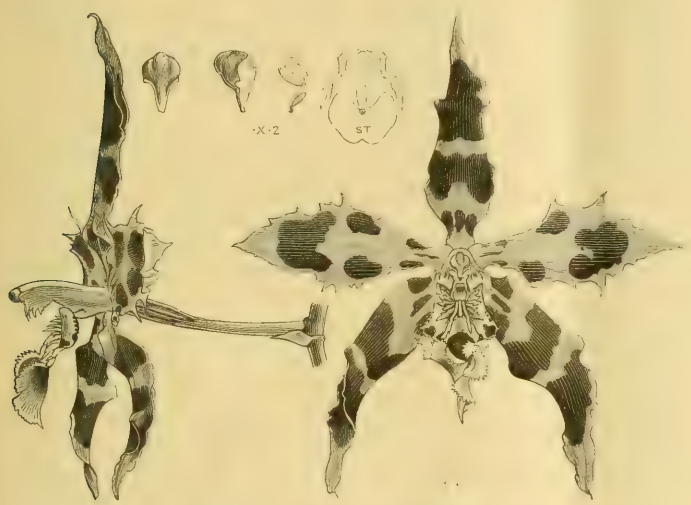


FIG. 15.—ODONTOGLOSSUM LYROGLOSSUM. (SEE P. 76).

We take the following extract from *The Nation*, New York, of December 16, 1885:—

"Besides the men of science, a good many Americans will regretfully note the resignation by Sir Joseph Hooker of the directorship of that noble institution which is inadequately designated by its title, the Royal Gardens, Kew. The King's garden, belonging to the little brick palace and grounds of George III. at Kew, had somehow come to be botanically notable a hundred years ago; and although decayed, it still preserved a certain importance and hopefulness when, in the year 1839, it was turned over by the Crown to the Government for more public and popular, as well as scientific uses, and the late Sir William Hooker was translated from the professorship and gardens at Glasgow, [which he had made illustrious, to the charge of the now national establishment. 'Kew' has ever since meant Kew Gardens, with its museums and herbaria, and galleries, as its pleasure grounds, arboretum, and conservatories. It was developed from small beginnings into the great establishment which is now of unrivalled scientific importance as well as popularity; and all these years it has been under the direction of the Hookers, father and son; who, indeed, have made it what it is, and have so identified themselves with it that, just now, Kew without a Hooker will seem to be out of the course of Nature.

"It is pleasant to know that the promotion of the Assistant-Director, Mr. Dyer, places the establishment in the charge of a man of tried scientific as well as administrative ability—one, moreover, who, although he came without such ties, is connected by marriage with the Hookerian family. Still more pleasant and most important it is to know that this change which the late Director has decided upon, while still vigorous and of undiminished powers, is merely from administrative to more strictly scientific work, that he may prosecute more steadily and hopefully the botanical undertakings which he has in hand, and which are enough to task all the energies of a younger man, but which yet demand—as such work does—all the various knowledge and critical tact and sureness of judgment which come only with long experience. And here let us record our dissent from the doctrine of Huxley's playful suggestion that every scientific worker should commit the happy despatch when he reaches the age of sixty years; that before this he will have done all the original work he ever will do, and thenceforward will be more likely to hinder than to help the progress of original scientific research. It is true enough that the older men will not be likely to strike out new lines or discover new principles, but the advance guard fights only a small part of the battle. If the veteran has ever done good work in his younger days, and has followed it up with the steady devotion that wins, he has not only acquired a deal of judgment, but has laid out more work than he can ever hope to accomplish, yet which no one else is likely to do so well or at least so readily. Therefore, let us hope still for years of excellent fruit-bearing in age by the retired President of the Royal Society, and from his predecessor, the retiring Director of Kew."

FRUIT NOTES.

JERSEY GRATIOLI.

MY remarks on Beurré Clairgeau (p. 622, vol. xxiv.) did not extend to its appearance on the tree. I quite agree with Mr. Ewbank (p. 665, vol. xxiv.) that a Beurré Clairgeau, when its fruit is ripening, is a beautiful object, and in my experience it never fails to bear a heavy crop of fine fruit. For this reason up to the present time I have permitted it to occupy the place of a better Pear—although each succeeding season my forbearance has been regretted, when the fruit was rotting on the shelves, for no one could be induced to eat it, not even young and unsophisticated children, as it was known that any number of delicious varieties were ripe at the same time. This year we found them tolerable when stewed. I will endeavour to redeem the alleged slander by praise of another variety—Gratioli, which has the merit of ripening when good Pears are not too numerous, as it immediately succeeds Williams' Bon Chrétien. I first met with it in

Jersey, and have now grown it for about twenty years on the cold clay of the high tableland of Warwickshire. It forms a handsome pyramid, and always produces a good crop of fine fruit, very juicy, with a most refreshing sweet sub-acid flavour. As it regularly bears excellent fruit on my cold clay and flourishes in Jersey, it will probably succeed anywhere. It is unfortunate, as it may lead to mistakes, that in Hogg's *Fruit Manual* Gratioli is described as a synonym of Summer Bon Chrétien, a worthless fruit. Hogg names the correct variety Jersey Gratioli. *Edmund Tonks.*

Late Pears.

Every baby is a beauty in the eyes of its mother, and so no doubt is every Pear; but a widening circle of admirers is denied to about three-quarters of the late Pears enumerated by Leroy. Late Pears such as Josephine de Malines, Bergamotte d'Esperen, and Easter Beurré, and about two or three others are to be found in every garden of any pretensions. The same popularity is wanting to Olivier des Serres, Doyenné d'Alençon, and Nouvelle Fulvie. These three Pears are weak growers, but of excellent quality and fertile enough on the Quince stock. The fact ought to be known far and wide to all south country growers, who declare that there are only four or five good late Pears, that such is not the case. Experience of these Pears in the North I have none. *Vagabond.*

Orchid Notes and Gleanings.

Masdevallia tovarensis.

When this useful winter flowering species was sold at a guinea a leaf we used to read annually in the gardening papers of the flowering of notable specimens of it, and also of the great value of the plants. I never thought it worth a guinea a leaf, and consequently we did without it until it was imported by the thousand, and good specimens were sold at 5*s.* each. Our plants have now many beautiful spikes of bloom upon them, and hundreds of leaves. Its great value consists in its delicate white flowers, which are always produced just before and after Christmas. The plants flower best in the Cattleya-house, and make their growth during the summer months in the cool-house. It has a characteristic which does not belong to M. Harryana, M. Veitchiana, and others of that type; if the old flower-stems are not cut over they will produce flowers from the top the following season, and very few new stems will be produced next season; but if all the flower-stems are cut off a much larger number will be produced, and the plants will flower very nearly as freely as if they had not been disturbed. We flower at this season in the cool-house M. Veitchiana and M. ignea superba: the last-named is exceedingly beautiful, the colour being very brilliant. Masdevallias ought never to be allowed to become very dry at the roots, but during winter they must not be watered until they really need it.

Cymbidium Mastersii

has just passed out of bloom. It has not such handsome flowers as C. eburneum, but they are more elegant, and a larger number are produced on a spike. It was exhibited at the Liverpool Chrysanthemum show, from the garden of Mr. Holland, Aigburth, with fifteen flowers on one spike; the flowers are Almond scented. It first flowered in England with Messrs. Loddiges, of Hackney, in December, 1844, and was figured in the *Botanical Register* in 1845, plate 50. The spike was five-flowered. It should be potted in turfy loam, and be grown in the intermediate-house.

Cypripedium vexillarium and others.

This very pretty and elegant hybrid, at present in flower in Messrs. Veitch's nursery at Chelsea, is not at all plentiful. It was raised in their nursery many years ago by crossing C. barbatum and the pretty C. Fairieanum. It is actually a winter flower, and received a First-class Certificate from the Royal Horticultural Society, when exhibited before the Floral Committee in January 18, 1871. It combines the characteristics of both its parents. The flowers are larger than those of C. Fairieanum, a choice species which has become so scarce and consequently expensive that few people can afford to purchase it. C. selligerum, also in flower, is a distinct and handsome variety, also raised in Messrs. Veitch's nursery, from C. barbatum and C. lævigatum. It forms a large handsome plant, and has distinct flowers, which are produced on one scape to the number of three; and, what is also very remarkable, the individual flowers of C. lævigatum are small, while C. barbatum has large flowers, but the hybrid has flowers larger than those of C. barbatum, and very distinct in character. The plant I find succeeds well in the Cattleya-house, whereas C. lævigatum requires the highest temperature given to Orchids, else it will rot off in winter. I may also remark that the new C. grande, one of the most magnificent of all the Ladies'-Slippers, succeeds best in the warm-house; it was tried in our collection with C. selligerum and the more hardy C. Harrisianum, but it speedily showed the effects of the low temperature. *J. D.*

Odontoglossum crispum.

I am glad "T. H. A." has answered my letter—our correspondence may draw others into it. I am pleased I misunderstood his clause as to culture of the fine imported forms and their improvement under it. As to his present query, as to the two forms improving in the same ratio after being imported, I have a couple of plants which I have carefully watched as to improvement, they being two of the first O. crispum I bought, which was in February 1881. They were both in bloom on the first made English bulb; one was a very stellate form, and the other was not; they are both finer plants now, but the stellate one is not a whit better, and in my opinion, as the future is usually much like the past, it never will be; the other one has materially improved in every way, it being a pure white one, I cannot speak as to colour improving or disappearing. It has been my regular habit to dry flowers annually, and compare them year by year, and it was only when these plants last bloomed I threw the original flowers away. Now I wish I had kept them. I should have been delighted to show them all to "T. H. A.," but when some of my other plants bloom this year I shall be able to show him similar comparisons, and also in the roseum form. If it was so that the native crowded plants improved under cultivation with plenty of space (as we term it) I think they ought to show their improvement more rapidly than the others, but my opinion is that the trees which sustain O. crispum do not grow them as close together as we do in our houses. (I write this by hearsay, not having been to their native homes.) Therefore, the plants that are growing in scattered positions at home should deteriorate in our houses for want of space, if want of space at home is the reason for the wretched forms. Provided the treatment they get with us over here is right, I think they not only do retain the character that they show first, but they improve it also in the way of spots. I do not know whether "T. H. A." considers my cultivation sufficiently "extensive," but I am pleased to tell him all I can, if he thinks it is worth his hearing, and also help him to shuffle off his "long-clothes," if he does not think himself out of them. Although my present stock of the plant does not run into hundreds of feet of glass, as some others do, but, rightly or wrongly, I am steadily filling my little houses with the scattered growing-at-home plants. I have not been disappointed in these as yet, but I am sorry to say that in the others—well, to put it mildly—I have. Am I the only one? *De BCrawsh ay.*

Hoole Hall, Chester.

The collection of Orchids at this place, the seat of Arthur Potts, Esq., is a remarkable one, not so much for its extent as for its choice character. It comprises an unusually large number of rare species and select varieties, in fact it is composed of only the select and rare, and the cultural condition may be described as very superior, especially as regards the Odontoglossums, which are numerous and in grand health. On the occasion of a visit in December I noted the following in flower:—

Several forms of Odontoglossum Alexandræ, one especially noteworthy, having from ten to twelve flowers to a spike, the flowers large, with pure white ground, and a few bold blotches of chocolate, and flowering regularly in December. O. Insleayi leopardinum splendens, said by Mr. Sander to be the finest form of this variety he has ever seen; the blooms are enormous in size, the substance massive, and the colours remarkably clear and distinct.

Cœlogyne barbata: Batches of this interesting species, in splendid health and flowering very profusely.

Cattleya maxima: A small plant, with rose-white sepals and petals, and pure white lip, shaded with yellow, and conspicuously lined with deep violet-purple.

Lælia autumnalis atrorubens: A grand variety, with bold, deeply coloured flowers.

Oncidium Johnsonianum: A rare and singular species, with, as regards growth, apparently more affinity to a Scuticaria than an Oncid; the flowers are, however, unmistakably those of Oncidium; the sepals and petals are grey-green, with pale brown spots, the lip white, spotted deep violet.

Cypripedium Maulei var. punctata violacea: The most effective of the insigne group of varieties. C. Spicerianum: A batch of five-year-old seedlings, flowering for the first time, as well as several of the parent plants in fine masses—a valuable winter flower.

Angræcum sesquipedale: Several grand plants, throwing up very strong flower-spikes. A. Leonis Humboldti, throwing up its flower-spikes for the first time in this collection. A. citratum, with spikes from 6 to 8 inches long; very interesting and pretty; flowers white, arranged with great symmetry. *J. F.*

The Orchid Houses.

Potting and Surfacing.

Now the year has commenced, there are some kinds of Orchids that will require potting, and the first are the Pleiones. When these have started to grow, and are 1 or 2 inches long, it will be found that there are small white roots starting away from the old bulb; then is the time to pot, and if they are neglected at that period of growth it is at the expense of the coming season's growth. A good mixture of potting material may be made of very fibry peat, a little turf (fibre only), chopped sphagnum, sharp sand, dry cow-dung: the last to be well broken with the hands and rubbed through a quarter-inch sieve; add to these some oak charcoal; I consider charcoal to be one of the very best things to be used in all Orchid potting, especially this kind, and I am sure that if it were used instead of so much broken potsherds or burnt ballast, the results would be more satisfactory. Fill your pots three-quarters full of charcoal, instead of broken potsherds, and pot the Pleiones in the mixture above-named (after well mixing together); keep the bulbs well up above the rim of the pots or pans, give very little water till the roots get well into the new compost, then water liberally while they are making their growth. Pleiones ought to be grown very near the glass, or the bulbs will not be well ripened, and they will fail to flower.

Vanda cœrulea will now be starting into growth. By giving this Vanda the amount of water that it requires, the moss and crocks will be sour after a season's watering. Carefully remove the old material (taking great care not to injure any of the roots in doing it) and replace with pure oak charcoal and fresh sphagnum. To grow and flower this Vanda satisfactorily it ought to be very near the glass, with air always playing on its leaves, and never to be shaded from the sun's rays. If a plant should happen to get shrivelled, a few weeks in the Phalænopsis-house will plump up the leaves, when it should be immediately taken again to the Cattleya or Lælia-house. Now is a good time to top-dress Lælia elegans, using charcoal, sphagnum, and a very little peat; place the pieces of charcoal so that the young roots can lay hold of it, when it will be seen how much they like to run over its surface; and if you can get good healthy roots on Lælias and Cattleyas you need have no fear about the top—that is sure to come: only keep the growths free from the ravages of greenfly, thrips, woodlice, cockroaches, ants, &c.

Cool House.

Great care should be taken with this house at this time of the year, for in a very few days nearly all the young growths may be so disfigured by greenfly as to make them unsightly for the season. Where Odontoglossum vexillarium of both varieties are wanted to

succeed the Odontoglossum crispum in flowering they can be grown at the warm end of the Odontoglossum crispum house all the year round, and in this house they become much less infected with thrips. Where the sphagnum has grown long on any Orchid pots it ought to be taken away, as the air, so essential to Orchids, cannot play about the roots as it ought to, to ensure a free, vigorous growth. If the compost is sour remove it at once, but do not disturb the roots if the plant is growing. This may be done very easily with a peg and careful hands. The best and most simple way to re-dress with sphagnum is to place the chopped moss in a pail of water, and to throw it on to the compost of the Orchid in a wet state. *A. Bradshaw, Waddesdon, January* 6.

PLANTS AND THEIR CULTURE.

PROPAGATION.

THIS may seem to be an unusual season of the year for reference to this work; it is nevertheless a time at which some plants can be propagated with advantage and all the more so if a properly constructed pit with additional heat for the purpose is at hand. More heat will now be necessary in the pipes than a few weeks back, consequently an extra amount of bottom-heat can be secured wherein to plunge the cuttings. The well developed, clean, and highly coloured tops of Crotons may be struck now with comparative ease; they should be taken off the parent plant of a good size, as large, in fact, as if they were already possessed of roots of their own and about to be used as table plants; then when well rooted they will be fit for use without waiting for any extra top growth to be made. These cuttings should be examined for thrips when severed from the plant, and then be allowed to remain immersed in the stove-tank for two or three hours, for them to absorb all the moisture they are capable of, before being inserted singly in small 60's or "Long Toms." If a brisk bottom-heat is available root-action will soon commence, and that without the loss of any, or at least of but few, of the lower leaves. *James Hudson, Gunnersbury House Gardens.*

HARDY FRUIT GARDEN.

STRAWBERRY BEDS.

THE soil between the rows, if not already broken up, should now be done on the first opportunity. Although autumn is the best time to execute this work, it is often delayed by other matters. This operation must not be mistaken for ordinary digging, as the fork should penetrate to the depth only of 2 or 3 inches, the object being simply to break up the hardened surface. After this work is done and the surface soil become a little dry, it should be mulched with half-rotten manure, which will get washed in by rains, leaving a clean strawy surface by the time the fruit appears. Half-decayed stable litter is best for this purpose. Where successional plantations are annually or biennially made in autumn, the removal of a corresponding sized plot of the oldest plants will follow the same season. The rapid increase in the number of crowns of each plant is often the cause of a plantation producing poor fruit (say after three or four years' standing), and not absolutely the poverty of the soil. When this is thought to be the case the crowns may be thinned out, and the remaining ones will certainly produce finer and better coloured fruit.

Small and poorly coloured fruit is not the only evil attributable to plants possessing too many crowns, consequently producing much more foliage and fruit than can fully develope in a given space. Want of sufficient sunlight and air under a dense mass of foliage will prevent many berries from ripening, even during ordinary seasons, and during wet ones it is obvious that a still greater number will not arrive at perfection. When runners were pricked out in the open ground last autumn, for the purpose of forming fresh plantations for this year, the ground, if not already in order, should be prepared to receive them. The runners in question will now have got capital roots, and when transplanted to fruiting quarters should be carefully lifted with a trowel with as much soil adhering to the roots as possible. The sooner they are transplanted now, the better chance of a small crop of fruit and the production of some early runners, if such should be required for pots, &c. There will be no comparison between the size or number of fruits produced from a plantation of runners made at this season as compared with one made last autumn, but it may be convenient to some to plant now who could not do so last autumn. If the necessary number of runners are at hand they may be planted much thicker than usual and a part be removed after fruiting the first or second season. *G. H. Richards, Somerley, Ringwood.*

FORESTRY.

DRAINAGE.

As the first month of the year is not generally considered one of the best for planting operations, other work, such as thinning, felling hedgerow and standard timber, draining, fencing, road-making, and general groundwork improvements may, as time permits, be carried out. The drainage of our woodlands is seldom properly attended to, but when it is remembered that healthy vegetation cannot exist where the surface is kept constantly damp by stagnant water, the need of a thorough system of drainage will be at once apparent. Boggy ground and tenacious clays are the soils in which the removal of stagnant moisture is most essential, and though the doing of such work is usually attended with some expense, yet the ultimate results far more than compensates for any trouble or outlay in that way. Covered drains are of little service in woods, tree roots rendering these ineffective, therefore open ditches of from 3 to 4 feet in depth and of sufficient width at bottom for a spade to be worked conveniently, should be made wherever the presence of stagnant water points out that they are required. Scour and clear thoroughly all existing woodland ditches, remove accumulations of leaves and twigs from the mouths of closed drains and culverts, and see to the gratings alongside roads and paths, as they are very apt to get filled up with leaves and drift-sand during the winter rains.

DRIVES AND RIDES.

Plantation drives and rides should receive their annual inspection at once, and wherever rabbits are found burrowing under them the holes should be followed up and closed, these proving treacherous to hunters and sportsmen. Overhanging branches should also be cut back and cleared from off the drives where such has not been looked to at the fall of the leaf. See that the locks of plantation gates are in good working order, and that styles erected for the convenience of sportsmen are neither frail nor dilapidated. Fences of all kinds will require attention to see that they are serving the purpose for which they were erected; so also tree-guards to prevent the gnawing and browsing of cattle and horses, and rabbit-proof nettings as preservatives against the depredations of hares and rabbits in young plantations.

Grub out and remove dead or objectionable trees from the lawn or park, and where they are not intended to be substituted by others, carefully level the ground and cover with turf, where that can be conveniently procured, otherwise keep in mind to sow down with grass seed in early spring. Even at the risk of repetition I would seriously urge upon all foresters who have the charge of park drives and walks to see that these are maintained in a clean, passable condition during the winter months. There is, perhaps, nothing more objectionable about an estate than dirty roads, full of ruts and inequalities, and ankle-deep in mud, all of which defects might have been readily rectified by a timely application of metalling or gravel. Bye-walks through woods and plantations will also require frequent looking to, and where these are damp under-foot a quarter of an inch covering of finely sifted coal cinders will contribute much towards the comfort of foot-passengers. Lay on metalling that has been previously prepared for that purpose wherever depressions in the general level of the roads occur, but previous to this a slight picking or loosening of the surface will materially assist in binding down the stones. The smoothness of the road is also much enhanced by a half-inch coating of screenings or gravel being placed on top of the metalling, and the whole pressed firmly down by frequent applications of a heavy roller after damp weather.

GAME COVERT.

Game covert extension in such woods as have already been shot through may now be taken in hand — Privet and Laurel plants layered, lanky, overgrown evergreens cut down, and bare places filled up by introducing stout plants of the various undershrubs used for that purpose. Timely thinning of the woodlands is much in favour of a luxuriant undergrowth, indeed in contributing to such, light and air may be considered as the two most important elements. *A. D. Webster, Penrhyn, North Wales.*

The Kitchen Garden.

FORCED VEGETABLES.

WHERE accommodation is provided for producing early supplies of vegetables by means of hot-water heated pits, these will now be found most useful and best adapted for forcing Asparagus, French Beans, Potatos, &c., being in many respects preferable to dung-frames, requiring less trouble and labour in management, and the produce being necessarily better in flavour and quality, on account of their receiving a more regular and constant supply of air and light. The space intended for Asparagus should be prepared by a layer of leaf-mould, on which the clumps should be packed thickly together as soon as lifted, being careful to preserve as many roots as practicable, and filling in firmly with fine light soil, the crowns being covered to the depth of 3 or 4 inches, and well settled down with a soaking of tepid water, repeated frequently as the "grass" appears; a steady bottom-heat of 65° to 70° must be maintained, either by the aid of hot-water pipes or fermenting material, with a top-heat of 55° to 60°, giving air on every favourable opportunity. Plants for forcing must be strong and vigorous, and lifted from beds that are well established.

FRENCH BEANS.

For winter and early spring supply these succeed best when grown in pots or shallow boxes in light structures with plenty of heat near the glass; those in bearing will require careful attention, and be benefited by alternate waterings of liquid manure, with a free use of the syringe on bright days at closing time; some prefer sowing in 7 or 8-inch pots, two-thirds filled with soil, and afterwards earthing-up when the young plants have made their first rough leaves; by this method they are apt to become uneven and drawn. I prefer sowing thinly in shallow boxes in leaf soil, assorting and transplanting into 7-inch pots when well through and bursting into leaf; this gives them a slight check, and induces a more compact and sturdy habit. A compost of light fibrous loam and leaf soil, with a little old Mushroom bed dung added, suits them admirably. Where suitable pits are available at this season, nothing beats growing on beds if a slight bottom-heat can be had, either sowing or transplanting into double drills 2 or 3 inches apart, and 2 feet asunder; grown in this manner, crops may be obtained nearly equal to those out-of-doors in summer. For winter use, Osborn's forcing is one of the best, followed by Cooling's Ne Plus Ultra.

POTATOS.

Recently planted ones, and those pushing through, will require but little water until the tubers are forming, when an occasional moderate watering will greatly assist their swelling, after which little, if any, will be required; give a little air every day, to allow condensed moisture to escape increasing as weather permits. Anticipate future plantings by placing sets on end, in shallow boxes in gentle heat; for soil that which has done service for Cucumbers, Beans, &c., comes in well. *John Austen, Witley Court.*

PUBLICATIONS RECEIVED. — *The Irish Farm and Garden Sheet Almanac.—The Rosarian's Year Book*, 1886. (London: Bemrose & Sons, 23, Old Bailey).

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan. 18	Sale of 5000 Lilium auratum and other Bulbs, at Stevens' Rooms.
WEDNESDAY,	Jan. 20	Meeting of the Royal Meteorological Society. Sale of Roses, Fruit Trees, Hardy Plants, and a Grand Collection of Orchids in Flower, at Stevens' Rooms. Sale of 3000 Lilium auratum, from Japan; Roses, Lilies, from California; Bulbs, Plants, &c., at Protheroe & Morris' Rooms.
THURSDAY,	Jan 21	Meeting of the Linnean Society. Sale of Valuable Imported Orchids, from Sander & Co., at Stevens' Rooms.
FRIDAY,	Jan. 22	Meeting of Société Botanique de France. Sale of Imported Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	Jan. 23	Sale of Roses, Fruit Trees, and Hardy Plants, at Stevens' Rooms.

A FEW years since, when the notion was made public that a lichen, consisting as it does of a mass of colourless cells and threads in which are embedded small green cells, was not a single plant, but a combination of two rolled into one—consisting, in fact, of a green Alga and a colourless fungus—it is no wonder that it was received with incredulity; nor can we feel surprised that several of the most expert students of lichens still refuse to accept so strange a doctrine. The notion is, that the green Alga, by the aid of sunlight, forms enough nutrient matter, not only for itself but for the colourless fungus with which it is inseparably associated. Fungi are helpless and often mischievous creatures; they must feed on dead or decaying animal or vegetable matter, or they must feloniously appropriate the nourishment prepared by other more highly endowed plants, and hence fungi of this description are called parasites, not to say thieves. Parasites of this description necessarily bring about the destruction of the plant or organism on which they live if the supply of food cannot continue to equal the demand of host and parasites. But in the case of lichens the green Alga continues to grow, and replaces constantly the loss occasioned by the voracity of the fungus, and so no harm accrues. Instead of using the ugly word parasitism, in such a case botanists have invented the epithet "symbiosis," meaning intimate companionship. It is not our intention now to discuss the evidence which is accepted as conclusive by most of the modern school of botanists, but which, as we have said, is still doubted by systematic lichenologists. In a short time the matter will be settled to the general satisfaction. In the mean time nothing but good will come from the honest criticism of competent doubters.

Our present object is to call attention to another alleged case of "symbiosis," with which we have been familiar for years, and which every nursery foreman must have often noticed without, however, guessing at its real significance. If those who grow Sweet Chestnuts from seed, as many do in Kent for hop-poles or other uses, will look at the roots, they will find them very frequently invested with the white silky threads of a fungus. Often and often we have seen this for ourselves, and had our attention drawn to it by others; but, beyond pronouncing it to be fungus-spawn, and therefore probably injurious, we have not proceeded, and, in truth, in the cases that have occurred under our own observation, there seemed little practical reason for so doing, as the young plants did not appear to suffer materially and no complaints were made by the planters to whom they were eventually sold. It now appears, if the observations and inferences of certain German and Russian botanists are correct, that the roots of Oaks, Chestnuts (Sweet), Beeches, Hornbeams, and Hazels—all trees belonging to the order Cupuliferæ—are more or less covered by a dense layer of fungus threads, some of which even penetrate the rind of the root. The startling assertion is made, that the young tree is in this case the parasite, feeding on nourishment extracted from the soil by the fungus threads. Dr. FRANK considers this a process of "symbiosis." Tree and fungus grow and live together, and as further supplies are always forthcoming to meet the continuous demand, and each supplies what the other requires, no harm is done. The tree requires "soil food," if we may so call it, and which it obtains through the agency of the fungus; the Algæ requires air food, elaborated by the leaves of the tree under the influence of light; and so, each helping each, the two, accomplish their life career in harmony. It will be said, If this is so—of what use is the root? And in truth, the use of the root as an absorbent organ is in such cases in abeyance. The root hairs, so it is said, are not even formed, their office being filled by the fungus substitute. The holdfast properties of the root, of course remain unaffected. It is not asserted that the phenomenon is general, but that it is invariably present in the roots of Cupuliferæ, occasionally also in Willows and Conifers, but not in other woody plants, nor in herbaceous plants.

The very curious leafless parasite, Monotropa hypopitys, is said to go through life in a similar way. KAMIENSKI failed to find in the Monotropa any evidence of suckers, or of organisation, such as is found in genuine parasites; but he found, instead, a web of fungus spawn around the root of the Monotropa which obtains its food through the agency of this fungus-spawn.

It is to be hoped that Dr. FRANK and Dr. WORONIN will continue their observations. For the present we should counsel an attitude of intelligent expectancy in this matter on the part of those who are not in a position to add either proof or disproof. Most gardeners and foresters, however, have it in their power to observe facts, and to contribute something of importance to the discussion of the question, even if, in default of instruments of precision, and of means and time for their employment, they cannot hope to solve the question by their own unaided labours. Supposing the statements to be correct, we may in certain cases have to qualify our evil opinions as to fungus-spawn, and court as an ally what we have hitherto considered a deadly foe.

THE great importance of the subject discussed in the following letter needs no apology on our part for presenting it to our readers. The growing discontent of nurserymen and market growers at what they allege to be the unjust incidence of taxation as affecting their land and business erections is making itself manifest, and the feeling is now becoming so general that all who sell their produce should be treated in a uniform manner as regards the amount of taxation to be levied on them as dealers finds frequent expression. It is only by persistently keeping the matter prominently before the public, and by giving as much publicity as possible to the various views prevailing, that relief can at length be obtained by those who at present are seriously handicapped by a great amount of unfair competition in the open market. It may fortunately happen that by the time the matter has got completely threshed out some happy scheme of local government may have been arrived at under whose ægis the various local burdens from which so many now suffer may be satisfactorily arranged.

"I observe that this question is again attracting attention, as it well may. At this moment market gardeners and nurserymen have to meet a fierce competition from abroad: this they do not complain of, but what they do complain of is, the competition from the comparatively untaxed gardens of the nobility and gentry at home. It is well known that some of the greatest nobles in the land not only sell their surplus fruit and vegetables, but buy in plants, propagate them, and sell them. Of this, even, we should have no good ground to complain if they and we were placed on an equality in regard to taxation. For instance, my firm is taxed on £430, I have 6 acres of land, with about 70,000 feet super of glass for market purposes on it. I pay over £25 of income-tax at this date. Compare with my case that of a great nobleman whose mansion stands in pleasure grounds of some hundreds of acres, swarming with game; this palatial mansion cost hundreds of thousands of pounds sterling, yet I find it and grounds in the county rate book at £250. There is attached to it a garden of 20 acres, that is said to have cost £20,000 for glass and other erections, assessed at £120; and though the proprietor sells everything that can be sold out of this, and other similar gardens he possesses, I question if he makes any return to the income-tax for what his gardens produce. It goes to pay expenses simply, thus [if my contention be correct] robbing both Imperial and local taxation.

"I know a nobleman in a Midland English county who is in partnership with his gardener, and who gets nearly £1000 a year out of his garden, yet I question if he pays income-tax for it, or is rated for local rates as he ought to be. Verily there is much need for county reform. When that comes, I hope that those who have the power will see to it that every private (so-called) garden that supplies the market will be taxed on its area, and on the superficial extent of its glass at the same rate as the grounds and glass of market gardens, and also that they will be looked after by the Income-tax Commissioners. I some time ago complained of the prices my agent in London was returning, and his reply was, 'If you saw how the market is glutted with stuff from private as well as market growers you would understand how prices are so low.' Private growers, if they knew all the outs and ins they are committed to, had better pull down their surplus glass than carry on a trade which, though it seems to make a return of profit, really does not do so. That, however, is their affair, and if we and they are placed on an equal footing in regard to taxation we have no right to complain. *A Market Gardener.*"

—— HERITIERA MACROPHYLLA. — From three botanical gardens we have lately received specimens of this noble stove tree. Taking them in order of time the specimens came from Oxford, the Jardin des Plantes of Paris, and the Royal Gardens at Kew. The Oxford specimen was in flower, that from Paris had immature fruit, while Kew furnished an example with fully developed fruits, faithfully depicted in our illustration (fig. 16) by Mr. WORTHINGTON SMITH. No illustration, coloured or otherwise, could do justice to the singular silvery appearance of the under-side of the leaves, due to the aggregation of large numbers of closely packed flat scales, and which has procured for the tree the name of the "Looking-glass tree." Owing to its size the tree is unsuited for small stoves, at least its full size cannot be attained to in such structures, but the foliage of young and small plants is quite handsome enough to justify its admission among stove foliage plants even if fruit be not produced. The flowers are in loose clusters, each flower small, whitish, bell-shaped, with recurved edges. The brown wrinkled fruit with their large wing, is shown in the illustration. The tree belongs to the Sterculia family, and it is a question whether there are two species or only one. H. littoralis, a form with smaller leaves, is found near the coast in the tropics of the Old World; H. macrophylla, with, as its name implies, larger leaves is found in some parts of India in inland districts. Its fruit is less coarsely tubercled than that of the least form. In Sir JOSEPH HOOKER'S *Flora of British India*, Dr. MASTERS combined the two forms under the head of littoralis, but KURZ and others consider the two specifically distinct. They certainly are sufficiently so for garden purposes.

—— ROYAL HORTICULTURAL SOCIETY. — We are informed that it is proposed that the Fellows of the Society shall dine together on February 9 at the "Albion" Hotel, Aldersgate Street.

—— THE FLORA OF THE ALPS.—Mr. A. W. BENNETT is preparing a Pocket Hand-book to the Flora of the Alps, for the use of tourists. This will be a boon to many.

—— "ATLAS DES CHAMPIGNONS COMESTIBLES ET VENENEUX."—M. CHARLES RICHON is publishing a series of quarto illustrations (partly coloured) of the edible and noxious fungi of France. M. ERNEST ROZE supplies the text. *Fac simile* representations are also given of the species figured by old authors such as MICHELI, CLUSIUS, VAILLANT, &c. The plates are very faithful, and will be of great service to students of fungi. The work may be had in this country of Messrs. WILLIAMS & NORGATE.

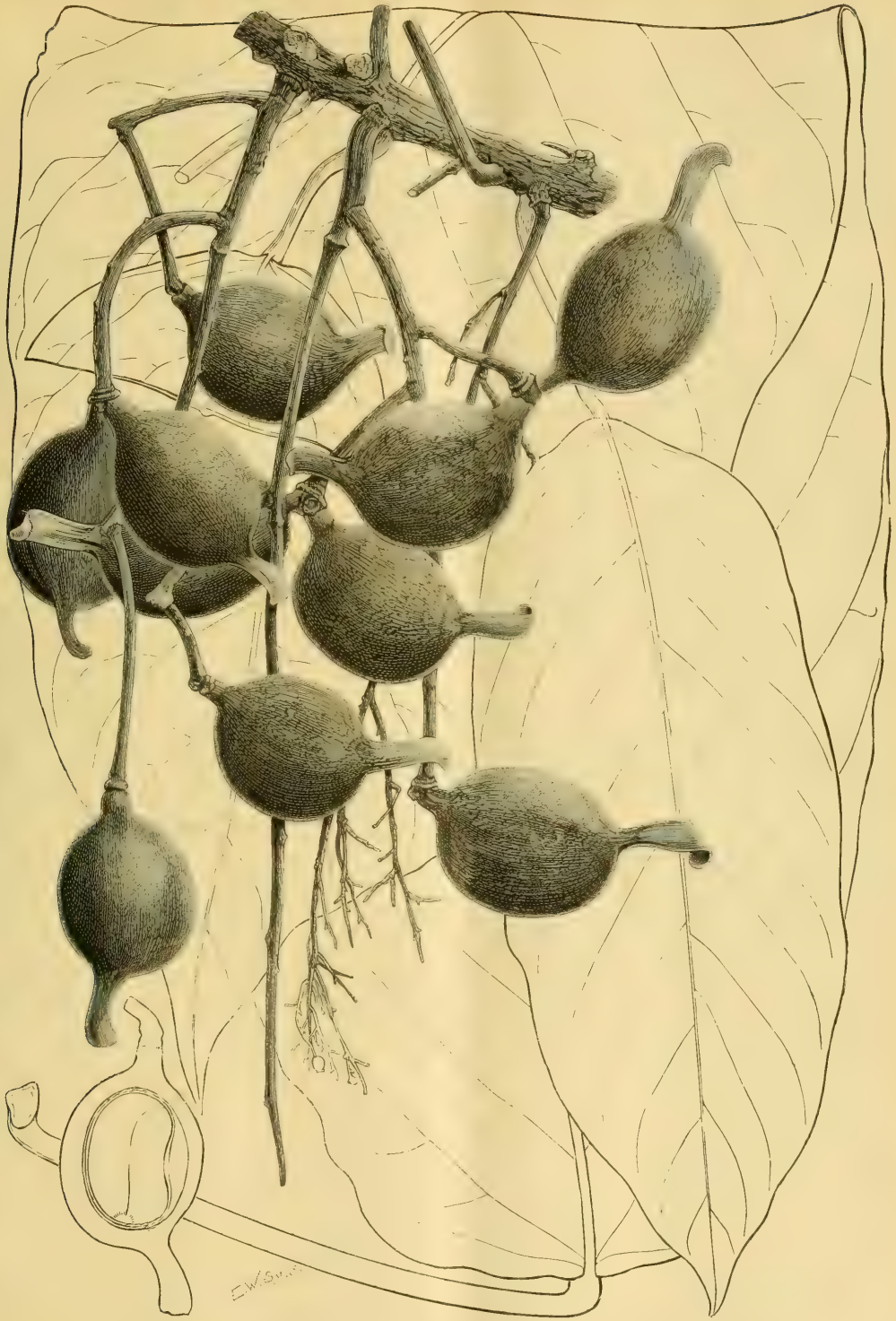


Fig. 16.—Heritiera macrophylla: the looking-glass tree. (see p. 80.)

—— THE BEGINNING.—Tuesday last was a busy day for the London horticulturist. On that day, at the Royal Horticultural Society, the three committees—Scientific, Fruit, and Floral—held their first session for the year. The TURNER Memorial Committee met. The Council had a long sitting. Various minor matters occupied the attention of individuals; later on came a meeting of the National Rose Society at the Horticultural Club—a meeting fully attended, and noteworthy for the earnest business-like manner in which the members buckled to their work. There did not appear to be a listless man present. This was followed by a meeting of the committee of the Horticultural Club. Some members who attended the whole, or at any rate the majority, of the meetings of the day, felt that they had earned their dinner and might look forward to repose. Not so, however, for those who had attended the evening meeting of the Club there was more horticulture in the shape of a suggestive address from Mr. J. G. BAKER on "Cape Bulbs," the natural conditions under which they grow, the best means of growing them in the open air in this country. A spirited discussion was maintained by Mr. GEORGE PAUL, Mr. W. BULL, Mr. WATSON, and others. The Horticultural Club—which, by the way, offers a home and special advantages to visitors to London at a low rate—is taking up a department which we should be glad to see the Royal Horticultural Society undertake, but under present circumstances it is not feasible, and, to say the truth, past experience in this way is not encouraging. The doings of the three committees of the Royal Horticultural Society are recorded in another column. The most remarkable matters brought before the Scientific Committee were a paper by Professor CHURCH on the analysis of the flowers of Bassia, notable for containing a large percentage of sugar in the corollas, which drop off and are collected and used for food in India on a large scale. It had been suggested that these flowers might be used instead of Beet for the manufacture of sugar; but the sugar is "Grape sugar," and useless for table purposes, though well adapted for spirit making. Mr. WORTHINGTON SMITH has taken up the question of Potato grafting on a large scale. It is certain that union takes place, and it is certain that the graft-tubers vary greatly in appearance, but whether from the amalgamation of the two parents is doubtful.

—— AMERICAN EXHIBITION.—We understand that the date of opening this exhibition has been postponed until May 2, 1887. The object in so doing is to avoid clashing with the Colonial and Indian Exhibition, which is to be held this year at South Kensington.

—— ACCIDENTS TO HORTICULTURISTS.—On the same day that Mr. WILLIAM BROWN, the successful Pelargonium grower of Hendon, was found drowned under the circumstances mentioned elsewhere, Mr. WALLACE, Jun., of the New Plant and Bulb Co., Colchester, was one of the victims of the railway accident on the Great Eastern line at Manor Park. Mr. HORSMAN, the foreman of the firm, was also injured at the same time. We understand that the two gentlemen are not very seriously hurt.

—— SHOP ASSISTANTS IN THE SEED TRADE.—The *employés* of the large seed shops and warehouses in the metropolis are the victims of long hours passed at their duties quite as much as some others, and which, if the period of extra work were of very long duration, would tell disastrously on their health. In the winter months the strain is the greatest, and especially after periods of frost and bad weather have passed away. This pressure could well be avoided, by gardeners and others ordering their goods during the bad weather, and not waiting to do so till afterwards. We venture to think their commands would obtain greater carefulness and attention, and the goods would be received at a suitable time for use, which cannot be the case under the system in vogue.

—— ROSE HER MAJESTY.—We hear that Messrs. W. PAUL & SON, of Waltham Cross, as agents of Mr. C. F. EVANS of Philadelphia, U.S.A., who was the purchaser of this Rose from Mr. H. BENNETT, will distribute plants in this country in March or April of this year. Those who admire large Roses will thus have an early opportunity of getting this magnificent flower.

—— THE LINNEAN SOCIETY OF LONDON.—A meeting will be held on Thursday, January 21, at 8 P.M., when papers will be read as follows:—1, "Contributions to the History of certain Species of Conifers," by Dr. MAXWELL T. MASTERS; 2, "Strongylus Axei and its Affinities," by Professor COBBOLD; and 3, "Fossil Plants from Mull," by J. STARKIE GARDNER.

—— PASSIFLORA EDULIS.—An excellent figure and an exhaustive account of this interesting species, which is in some places cultivated for its delicious fruits, is given by SABINE in vol. iii. of the *Transactions of the Horticultural Society*, under the name of the Purple-fruited Passion-flower. A short time ago, in a florist and seedsman's shop, in one of the leading London thoroughfares, we saw fine fruiting branches of the common hardy P. cœrulea, labelled "the true fruiting Passion-flower, Passiflora edulis;" those who were induced to try the fruits of this would hardly be likely to give them a high place for dessert purposes. According to SABINE, the North American, P. incarnata was the first species introduced to this country, "and, for more than a century, the only species cultivated, of one of the most beautiful genera of plants existing."

—— CINNAMON PLANT.—Under this name, with the addition of "Cinnamomum dulce," graceful foliage and very fragrant, in company with the Passion-flower above mentioned, there was a nice batch of healthy seedlings of some Monocotyledonous plant, in all probability a species of Elettaria. On our calling the attention of the shopman to such a palpable blunder he assured us that the plant was correctly named, and, to prove his point, bruised a portion of a young leaf, when sure enough a certain aromatic odour, somewhat resembling that of the Cinnamon, manifested itself. Of course no one with the slightest knowledge of economic botany would be at all likely to mistake a Cardamon for the Cinnamon plant; Still, in the interests of those who are guileless of any botanical knowledge, and who have a love for plants, it is as well to mention the facts already stated.

—— THE COMMITTEES OF THE ROYAL HORTICULTURAL SOCIETY.—The new committees met for the first time on Tuesday last at South Kensington. There was a goodly muster of judges, but not much to adjudicate upon. A few fresh faces were observable but, on the whole, but little change has been made in the constitution of the committees. The appointments seem to have been made, as before, by the Council. It is curious to compare our autocratic system of doing things with the much more democratic plan adopted at the sister society in Paris. There there are seven committees:—1, Scientific, devoted to the consideration of the practical applications of science to horticulture. The other committees comprise the following:—2, Fruit; 3, Vegetables; 4, Floral; 5, Arboricultural; 6, Garden-Planning and Landscape Gardening; and, 7, Horticultural Industries. Each committee elects its own President, Vice-President, Secretary, Assistant-Secretary, Delegate to the Council, and another Delegate to the Publishing Committee. Every Fellow of the Society may become a member of any or all the committees, if he chooses, and attend their meetings; but he has only the right of voting at one, to be chosen by himself.

—— EUCALYPTUS GUNNII.—In a recent number of *Forestry* an account is given of some notable trees at Whittinghame, East Lothian, the property of A. J. BALFOUR, Esq., M.P. Amongst others, particular mention is made of a Eucalyptus—E. viminalis. This plant does not belong to that species at all, but to E. Gunnii. In spite of the error in the name, *Forestry* is correct in looking upon the Whittinghame Eucalypt as perhaps the most remarkable tree of its kind in Britain. The tree in question was brought as a seedling from Australia in 1846; it grew rapidly in its new home until the memorable winter of 1860—61, when it was cut down to the ground by the severe frosts which then prevailed. During the following summer it broke away into four limbs, which have now reached a height of about 60 feet, forming a tree of a novel and striking character. The girth of the stem below where the massive limbs project is nearly 12 feet, and the branches are laden with flowers and last year's seed-vessels.

—— SCOTTISH HORTICULTURAL ASSOCIATION.—This Association held its tenth meeting of the session on the 5th inst., at 5, St. Andrew Square, Edinburgh, Mr. MILNE, of Messrs. DICKSON & SONS, in the chair. A paper on "Vine Borders—Inside *versus* Outside," contributed by Mr. WILLIAM PRIEST, of Eglinton Castle, was read by Mr. MUNRO, the Secretary. Mr. PRIEST gave it as his opinion that, for early forcing, Vine borders should be entirely confined to the inside, whereas for intermediate and late-growing Vines he preferred an outside border. He also gave a practical exposition of Vine culture and the formation of borders generally. The paper was afterwards discussed, and a vote of thanks awarded to Mr. PRIEST. The exhibits on the table included a fine fruit of Stephanotis floribunda, sent by Mr. MACKINNON, Kylemore Gardens, county of Galway, which received a Cultural Certificate; a number of hardy flowers grown in the open air, and forwarded by Messrs. DICKSON & SONS as showing the mildness of the present season; some specimens of dried plants gathered by Mr. REDMOND, banker, Antrim, which were awarded a Certificate of Merit; and a large and well-conditioned spray of Chrysanthemum Elaine, from Mr. SINCLAIR, East Linton. Votes of thanks to the Chairman and the exhibitors closed the proceedings.

—— ROYAL METEOROLOGICAL SOCIETY. — The Annual General Meeting of the Society will be held, by permission of the Council of the Institution of Civil Engineers, at 25, Great George Street, Westminster, on Wednesday, the 20th inst., at 7 P.M.

—— PEAR BLIGHT. — Among the papers read at the American Association lately was one by J. C. ARTHUR, entitled "Proof that Bacteria are the Direct Cause of the Disease in Trees known as Pear Blight." Cultures of the bacterium taken from blighted twigs were made in sterilised corn-meal juice. After a few days some of the bacteria, which had increased rapidly in this medium, were transferred (a drop only) to another sterilised preparation of corn-meal juice. After a few days another transfer was made, and this was continued until the sixth culture had been reached, when there was presumably but an infinitesimal amount of the original diseased juice present. Inoculations made with the bacteria of the last culture resulted in producing the blight as certainly and rapidly as in the first case. The crucial experiment was made by filtering a watery solution containing the bacteria, and then inoculating with the bacteria on the one hand and the filtration on the other, resulting in blight in the former and none at all in the latter case.

—— SEED LIST OF THE PARIS GARDEN.—We have received the *Index Seminum* from the Jardin des Plantes, 27, Rue Cuvier, Paris. It is a remarkably full list, and under the superintendence of Professor MAX CORNU, we have an adequate guarantee for correctness of nomenclature.

—— DEVON AND EXETER BOTANICAL AND HORTICULTURAL SOCIETY. — Messrs. LUCOMBE, PINCE & CO. will, we are informed, offer three prizes at the show of this Society to be held in Exeter on August 20, for a collection of twelve distinct vegetables. The prizes will vary from 15*s.* to £3. Also on March 5, at an exhibition of Hyacinths to be held in their nurseries, three other prizes, varying from 10*s.* 6*d.* to £2 2*s.*, for a dozen distinct named Hyacinths.

—— DINNER TO MESSRS. HOOPER & CO.'S EMPLOYÉS.—The annual dinner to the heads of departments and managers in the establishment of Messrs. HOOPER & CO., of Covent Garden, was given on Thursday evening, the 7th inst., at Simpson's Divan in the Strand. Mr. C. A. HOOPER presided, and the loyal toasts and that of "The Employés" were given from the chair, to the latter of which Mr. FULLER replied. Mr. HARTUNG then gave "The Firm."

—— GARDENING APPOINTMENTS. — Mr. A. HIGGINS, late Foreman at Tring Park, has been appointed Gardener to A. F. LUCAS, Esq., Ashlyas Hall, Berkhamstead.—Mr. JOHN STRINGER has been appointed Gardener to W. B. PAGET, Esq., Southfield, Loughborough, Leicestershire.

TREES AND SHRUBS.

ARBUTUS UNEDO.

PROBABLY a brighter-leaved evergreen tree than the Killarney Arbutus, or Strawberry tree, does not exist. Flowering freely during the months of November and December, enhanced as are these flowers by the abundant crop of fruit of a cherry-red colour, the result of the former year's flowers, which ripen about the same month of the year, it claims, all merits taken together, a high place in our list of winter-blooming shrubs. This species, though a comparatively tall, round-headed grower is, however, dwarfer than some other species, including hybrid seedling varieties, which have originated from it. It is deserving a prominent position in all shrubberies, or sites enjoying warm sunshine, and a somewhat free and well-drained soil, a deep sandy loam being especially suited to it; nor is this plant of such slow growth in such suitable soils and situations as many have been led to imagine, owing to the fact that it is so often planted in places where it cannot succeed well. Upon favourable sites, and in such soils as above, young plants make annual growths of about 1 foot in height, and quickly grow into large bushy heads. *W. Earley.*

CRATÆGUS SPATULATA.

This and C. cordata, the Washington Thorn, are two nearly allied but thoroughly distinct North American species. C. spatulata has thickish, glossy, spatulate leaves, with a long tapering base. One character which renders it conspicuous in a shrubbery is the length of time the leaves are retained; a specimen in the arboretum at Kew is now fairly thickly clothed with its dark green foliage, whilst nearly every other Thorn has shed its leaves a considerable time ago. The tiny scarlet fruits—about the size of small Peas—ripen in October. Lindley described and figured C. spatulata, under the name of C. microcarpa, in the *Botanical Register*, t. 1846, and the plant he figured as C. spatulata in the same work, t. 1890, is C. flava var. pubescens—a widely different tree.

MYRICA CALIFORNICA.

During the winter months at any rate this species is the most attractive member of the Sweet Gale family. It is an evergreen shrub or small tree with thick leathery dark green long narrow serrated leaves. It is of close, compact habit, makes a pretty bush, and will thrive in almost any soil. According to the *Botany of California* it sometimes attains, in the neighbourhood of San Francisco, a height of 30 or 40 feet, with a diameter at the base of 2 feet or more. The small fruits are purple, thinly coated with a greyish-white wax.

THE LARCH.

In his extremely interesting work, *La Flore de la Suisse et ses Origines*, Dr. H. Christ gives a good deal of useful and interesting information about the Larch, which is the characteristic tree of the central Alps. Thanks to its foliage of fine delicate needles, which fall at the approach of winter, it supports better than any other tree the excessive dryness and the severity of winter frosts. Its rough thick furrowed bark bears some resemblance to that of the Oak, but it is a brighter colour, a more decided red. The Evernia vulpina, a beautiful citron-yellow lichen, clothes it with a more brilliant covering than any furnished to other Swiss trees by any other lichen or moss. When young, the Swiss Larch has a perfectly straight stem, and it is only at an advanced age that some of its branches thicken—after the fashion of those of the Oak—spread outwards and recurve, thus giving to the tree more character and individuality. It often attains colossal dimensions, and it is by no means rare to meet with trees 80 feet in height, with a trunk 6 feet in diameter. The report to the Federal Council on the mountain forests mentions one in the Alps of Vaud, which, at a height of 9 feet, measured 8 feet in diameter, and was only 270 years old. The wood of the Larch is very valuable, for it withstands the influences of air and water equally well. In the canton of Valais there are many châlets, constructed of Larch, dating from the fourteenth century; the wood is entirely blackened by the sun, but it is as firm and sound as recent timber. *G. N.*

HOLLIES.

These are the subject of a note by "A. D." at p. 53. I can give him definite assurance that the Hedgehog in all its forms is of the masculine gender. In the course of some thirty years' observation I have not seen a berry on any form of ferox, but some male Hollies show an occasional berry. It cost me fully twenty years of watching to determine the sex of the beautiful Waterer's Holly, for in the record made of observations on my own collection it is entered as sometimes a male and sometimes a female, but as, generally speaking, being indisposed to flower. But I had the good fortune to settle the matter in the spring of the year 1879, when reviewing the flowers of the Hollies in Messrs. Veitch & Sons' nurseries at Kingston. There I found on a Waterer an unmistakable male flower, and I booked him as a male. In a few minutes, as the result of further search I found an unmistakable berry, ripe and sound, containing hard nuts, and therefore, in all probability, fertile. Finally, before leaving these Waterers, which numbered about thirty trees, 4 to 5 feet high, I found another male flower and another perfect berry. My companion in this exploration was Mr. Dartnall, then manager of the nurseries at Kingston, and I asked him to keep in mind what he had seen. "A. D." asks how the female Hollies are fertiiised? Now I can say without hesitation that trees producing both male and female flowers, or hermaphrodite flowers, are scarce. The Holly, like some nobler organisms, is either male or female; very rarely does the individual tree represent both sexes. It may be assumed, therefore, that the pollen is for the most part carried by the wind, and as there is plenty of it the fertilisation appears not to present any serious problem. I pointed out some years ago that when young Holly trees begin to flower they often produce many male and very few female flowers, but they alter as time goes on, and a large proportion that begun life as males become wholly female when more mature. Thus it happens that in an old plantation of common Aquifolium, a large proportion prove fruitful, but here and there we find a male that of course shows no berries. *Shirley Hibberd.*

THE FERNERY.

NEPHROLEPIS.

THIS genus, though not extensive, is a very useful one; most of the species are particularly adapted for growing in suspended baskets, their long, drooping pinnate fronds being very effective. Some of the species also make very useful pot plants, especially for standing in elevated positions; they are generally of very free growth, and may be readily increased by division, or where the slender rhizomes are allowed to run where they find suitable soil to root in, they will produce a number of young plants, which may be taken off and potted after they are well started. In growing on plants it is a good plan to plunge the pots in cocoa-nut fibre refuse; in this way young plants may be obtained without disturbing the older ones. When any of the plants are required for use, the rhizomes that have rooted into the plunging material should be cut off close to the pots, and left to grow until the young plants are large enough for potting. The compost for potting should be light and porous, and a little well rooted manure, that has been thoroughly dried and cleaned from worms or other insects will be beneficial; and after the plants are well rooted a little liquid manure may be used occasionally.

Nephrolepis acuta (ensifolia).—This is a noble species; the fronds, when well developed, attain to 4 or 5 feet in length. For large baskets it is one of the most majestic Ferns that can be grown. It somewhat resembles N. davallioides, but it is of more robust habit, and the fronds are more elongated.

N. davallioides.—A very beautiful Fern either for pot or basket. The beautifully tasselled variety, N. d. furcans, is also one of the most desirable of all the stove Ferns. Young plants grown on freely produce much finer fronds than older plants, which in time become too dense, and produce only imperfectly developed fronds.

N. exaltata.—A free-growing, useful species, either for pots or baskets. As a pot plant it is perhaps the most useful of all the genus, being of rapid growth, and hardier than most of the sorts.

N. pluma is a very pretty species, but being deciduous it is not so serviceable for many purposes. The tasselled variety, N. p. Bausei, is also a very beautiful Fern for summer use.

N. Duffii.—This is a very distinct and pretty little Fern. It is of a dense compact habit of growth, the fronds are erect except at the extremities, which are slightly tasselled, and droop over. It makes a very useful pot plant, or for small baskets it is very serviceable. It is rather a delicate species, and requires a good stove temperature for growing young plants on through the winter.

N. pectinata.—This is a very pretty form, with long slender fronds. It is sometimes given as a variety of N. tuberosa, but is very distinct from that species, the fronds being more elongated, the pinnæ narrower, and it does not produce tubers. *H.*

ORCHID PRUNING.

I AGAIN return to this subject, partly at the request of some young Orchid growers, who read my former communication in the *Gardeners' Chronicle*, and who are waiting to see what more I have to say on this interesting branch of cultivation. Moreover, another season's growth of the plants which had been operated on and written about give evidence of a substantial kind in favour of the system; therefore, without further apology, I will endeavour to enter more fully into the question in its various bearings, as briefly as possible. Some exception has been taken to the word "pruning" as applied to Orchids, the objectors implying that whatever may be done with the knife comes under the general term of "ordinary cultivation." But if such a theory can be justified in the case of Orchid cultivation, then why not extend it to general plant and fruit cultivation? In these cases it is a recognised fact, that the grower has not learned his trade until the art of pruning has been mastered; and if Orchid cultivators have been content to leave the question of pruning out of the volumes of instruction which they have written for the guidance of others, that is surely no reason why it should go utterly unnoticed. But I think the time has fully come when some clear and definite rules should be laid down to guide cultivators, so that these rare plants should not be mutilated through ignorance, or the necessary pruning omitted, owing to prejudice. The same reasons which govern the action of the gardener when pruning off the exhausted shoots of a Peach tree should also be the rule wherewith to guide the pruner of Orchids. Can it be said that one Orchid grower out of twenty at the present time can give a correct or satisfactory reason for either cutting out or leaving in old leafless bulbs of Cattleyas, Lælias, many species of Dendrobiums, and other genera? And is this a satisfactory state of things for the boastful intelligence of the present day? I think we must all admit that there is yet much to be learned on this important question; but I am fully conscious of the many difficulties which confront the individual who would attempt to draw up a code of rules which could be accepted by cultivators generally. The magnitude of the work appears all the more vivid when we remember that our Orchid growers, who are, and have been, men of the first rank in horticulture, have shrank from even entertaining an idea on the subject of pruning Orchids. I am also painfully conscious of my own inability to do justice to the subject, both from want of knowledge and by reason of the narrowness of my sphere of operation, for I am neither a trained Orchid grower, nor is my lot cast where the most approved arrangements are made for Orchid culture; but perhaps the latter circumstances have been the means of urging me to a closer observation of their nature and requirements, and their habits. However, I venture to lay down a few simple rules which I believe to be safe ground on which to build up the art of Orchid pruning; and if scientists and the growers may not agree with me and accept my humble opinion, perhaps they will give me credit for being honest in my endeavours to bring about a more perfect knowledge of Orchid life; and if they will improve upon my rules, or start on other grounds some rules, so that Orchid growers may really know what they ought to do with the old bulbs before mentioned, then my humble efforts will not have been in vain. The rules that I lay down are these:—1, the age of the bulb, and the time and manner of throwing out roots to sustain itself; 2, the duration of the roots,

and also of the foliage; 3, the time and manner of producing bloom, and the duration of its power to do so; 4, the time and manner of breaking new growth, and the age when its forces are exhausted. Thus I lay down for consideration—age, roots, foliage, bloom, and new growth, as the ground upon which to build the art of Orchid pruning. But it must be apparent to all that the art, as applied to Orchids, is permissive. I will next put it into practice. *N. Blandford.*

THE CINCHONA IN JAVA.

(*Concluded from p. 57.*)

HARVESTING THE BARK.—The old method of harvesting the bark is by stripping the trees, to which end they are either cut down or pulled up by the roots when ten or twelve years old. A Ledgeriana tree of ten years should yield from 10 to 15 kilos. (24 lb. to 35 lb.) of bark. Mr. McIvor's process, which consisted of removing long vertical strips of the bark, and covering the exposed surface with moss, has been largely employed. I noticed a number of trees that had been so treated, the trunks of which had a very singular appearance, somewhat resembling fluted columns. This mode of collecting answers very well, provided sufficient care be exercised not to injure the cambium layer, a matter apt to be neglected by the native work-people; but it has a serious drawback in the shelter that the moss affords to all manner of noxious insects, and it has been relinquished in favour of scraping. It is well known that the exterior portions of the bark are richest in quinine, and the plan now preferred is to scrape off the outer layer with a long flat knife—a process that does not appear to interfere in the least with the normal growth of the tree. The stem and larger branches are scraped half round at one operation, the other half at the end of six months, and this may be repeated at the same intervals year by year. I observed some trees of C. Ledgeriana which had been scraped eight months before, with renewed bark fully a quarter of an inch in thickness.

INSECTS.

Like all other cultivated plants Cinchona has its enemies. By far the most serious pest is a hemipterous insect, Helopeltis Antonii, the so-called Assam Tea-bug. [The illustration in *Gardeners' Chronicle*, 1874, p. 475, is here repeated—fig. 17.] The insect punctures the leaf-buds and very young leaves, and feeds upon the juices of the plant. The leaves shrivel and die, the growth of the shoots is stopped, and the tree, if not killed outright, becomes unhealthy and dwindles away. The plantations of C. calisaya, C. Ledgeriana, and C. officinalis have suffered most from the ravages of this pest, whilst those of C. succirubra have hitherto passed comparatively unscathed. Mr. Forbes states that the eggs of the insect "are laid and hatched on a species of Datura, which is one of the plants most widely distributed over the district, thereby rendering all attempts to eradicate the evil rather hopeless." On some of the plantations the insects are collected daily in vast numbers and burned. I noticed also one or two clumps of trees, the leaves of which were completely riddled by a caterpillar, species unknown, but the damage in such cases is usually local, and is not regarded in any serious light.

The permanent staff of the Nagrak plantation consists of about sixty natives, in addition to a variable number of coolies. The women and children of course do much of the lighter work. The pay of the natives depends more or less on the price of food; at the time of my visit, Rice being cheap, it was 20 cents, or about 4*d.* per day. The Nagrak establishment placed on the market last year about 165,000 lb. of bark, of one sort or other, fetching an average of 80 to 90 cents (say 1*s.* 4*d.* to 1*s.* 6*d.*) per pound. This year it was expected that the yield would be about 200,000 lb., of which the value was estimated at a guilder (1*s.* 8*d.*) per pound.

The establishment at Lembang is altogether on a smaller scale than that which we had previously seen, the total area under cultivation being only 70 acres; but it exhibits just the same completeness, and the same evidence of careful management in every detail. Near the house is a fine large tree of Cinchona cordifolia, spared, like that at Nagrak, not for its value, but for its beauty. Here, also, is a magnificent example of C. succirubra, about thirty years old, said to be the finest Cinchona in the East Indies. As nearly as I could judge it was about 60 feet high, and the trunk 18 inches in diameter at 3 feet from the ground. The bark had an aged appearance, being a good deal covered with the so-called "moss"—a sort of Grey-beard Lichen.

Amongst the points of interest on this estate is a plantation of Cinchona pitayensis—fine young trees about 10 feet high, the leaves bright green, with red midrib—a variety yielding a tolerably rich bark. There is also a considerable plot of the worthless C. micrantha, exhibiting the characteristic large panicles of small fragrant pure white flowers, and the smooth longish oval, strongly ribbed leaves. For the rest there was little but what we had seen before. In the sheds they were drying and packing "quill succirubra" of very rich colour.

Near the centre of the plantation, at the point where the main avenues meet, stands an obelisk, erected to the memory of the Dutch explorer, Junghuhn. It has, however, no inscription beyond some cabalistic numbers, apparently left by the officials of the triangulation survey — scant homage to the memory of a great traveller!

It is only about thirty years since the first introduction of the Cinchona into Java, and several years were lost by the want of practical success which attended the earlier experiments. It is less than twenty years since Mr. Ledger's seed was received in



FIG. 17.—HELOPELTIS ANTONII.

the East Indies; nevertheless, according to the latest report, there are now upwards of 700,000 trees derived from it in the Government plantations of Java alone, and nearly 1,000,000 more young plants of the same in the nurseries. Not only has the effort been successful as an experiment in acclimatisation, but even more gratifying has been the result of selection and cultivation on the chemical constituents of the bark produced; and it has now become an indubitable fact that trees can be raised on the plantations of Java, Ceylon, and the continent of India, furnishing bark richer beyond all comparison in alkaloids than any ever brought to us from their original home in South America. *Pharmaceutical Journal.*

FORESTRY AT THE CITY OF LONDON COLLEGE.—During Lent Term, 1886, Professor Boulger, F.L.S., F.G.S., will deliver a course of ten lectures on forestry, with special reference to the examinations of the Surveyors' Institution, on Wednesday evenings from 6 to 7 P.M. The course commenced on Jan. 13. It is intended to give practical demonstraions in the country during the spring. The syllabus embraces the consideration of climate and trees, land suitable for arboriculture, the drainage and other preparation of the land, nurseries and their management, planting operations, thinning and maintenance, felling and barking, timber measurement, exploitation and management of coppice, the distinctive characters of the various British timber trees, &c.

HOME CORRESPONDENCE.

Flowering Solitary Plants.—The propagating season being at hand, it will not be amiss to remind gardeners that bedding-out is not the sole system of decorating a pleasure garden, and that it is not usual in this country to see the flowering plants which are employed to form groups and beds in the flower garden made to do ornamental service in other ways, and yet there are some which by their appearance, their wealth of foliage and flower, are well adapted to be placed alone on the turf as decorative objects. We will take the sometime maligned show Dahlias, of all sections, which some would-be revolutionisers would largely supplant by the weedy, inferior, single variety. When these plants are given ample room to grow, and are kept carefully tied out to three stakes, they will form a handsome symmetrical bush of from 4 to 6 feet in height, according to variety; and by reason of the sunlight and air getting to the plant on all sides, it will develope more blooms than plants standing close together with others in a group. To accommodate such plants on the turf, circular holes must be made to the depth of 2 feet, and of the same diameter, which must be filled with suitable compost. Of other plants adapted for the purpose may be named Ivy-leaf and zonal Pelargoniums, Heliotropes, Plumbago capensis, Abutilons, Lilies, Myrtles, ornamental Gourds, creeping Nasturtiums, Maurandias, Lophospermum in variety, tuberous-rooted Begonias, and in warm shady spots the varieties with fine foliage, Fuchsias, and many others, which develope into plants above the height to which ordinarily kept bedding plants grow will suggest themselves to gardeners. The idea should be to endeavour by good soil, careful watering, and some little necessary training of an inconspicuous character, to produce a handsome object from any given plant. The standard form of some things will have charms for some, and, indeed, when used in moderate numbers and with the stems partially clothed with Maurandya, Ivy-leaf Pelargonium, or some other slender trailer, the effect is pleasing; it is, moreover, a wide departure from the common dumpy bed or cushion, and may well be used as a foil to those. To avoid "spottiness" where many plants are so employed, from six to a dozen plants may be associated together, so as to give more effect—a method well suited for large gardens, always preserving enough space between the individual specimens to show off their characteristic form of leaf and flower. The usual foliage plants can be equally well employed in the same manner. Amongst Ricinus the coppery Gibsoni lends itself capitally to this method of growing. *M. W.*

Daffodil Sir Watkin.—After reading the remarks on the above in the *Gardeners' Chronicle* of December 26, I think it only due to Mr. Pickstone that I should endeavour to defend him against making doubtful statements on the subject, as he called upon me in Liverpool about the time it was first brought before the notice of the public, and told me all he knew about his Narcissus, the substance of which I communicated to the *Gardeners' Chronicle* at the time, but not having my copy by me I cannot refer to it. Mr. Pickstone distinctly stated that he was not the raiser of Sir Watkin, nor had he any knowledge of its origin; that he found it in his garden in Merionethshire, and finding it a good and useful plant for market purposes he transplanted it to his garden at Maesmynan, and until his attention was called to it by myself and others he was not aware that it was a novelty of any particular merit. I had previously visited Maesmynan in the absence of Mr. Pickstone, when his sons kindly showed me round the gardens, and pointed out the Narcissus that had been brought from Merionethshire, and told me that their father had that day returned there to secure all he could of those he had left behind him. It had been freely given amongst the neighbours at Cærwys, and at the time of my visit several of the cottage gardens were quite gay with it. Mixed with Sir Watkin were several clumps of Narcissus telamonius, and from this and its general appearance, I drew my conclusions of the probable parentage of the variety. I think it quite impossible to form any opinion of the time it has taken to produce the stock; as there are many varieties it is evident that there are several generations of seedlings from the original hybrid. Varieties of a similar strain, though inferior in point

of size, are far from uncommon in cultivation. Twenty years ago they formed the major portion of Mr. Leeds' seedlings, and previous to that I had seen some good varieties in a nursery at Upholland, which at that time was famous for its collection of rare and interesting plants. Last spring some good varieties were sent to me to be named from around Seaforth and Crosby, near Liverpool, which may possibly have originated at Upholland, or with Mr. Leeds. The late Mr. Williams, of Ormskirk, and Mr Kefford, gardener to the Earl of Skelmersdale, both enthusiastic and intelligent plant cultivators, dealt and exchanged freely with the Upholland gardeners, and through them those varieties may have been distributed around that neighbourhood. *J. Tyerman, Tregony, Cornwall.*

Taxed and Untaxed Trading.—Mr. Anderson is probably quite right in calling attention to this subject, but whether such trading be taxed or untaxed I do not think is of much consequence to the nursery trade. I think, unfortunately, the custom has grown lately for ladies and gentlemen to sell what previously was more largely distributed amongst the poor and the hospitals. It might cause annoyance, and hence discontinuance of the practice if gentlemen had to account for such sales; but if this supply were discontinued to-morrow, the gap would be filled immediately, and with not a whit more profit to the professional market grower. Such competition I look upon as a check to "over production" on the part of market growers which, to the latter, is of vastly more import. For protection against such folly, for some time now, I have kept adding to my quantity, and hence to my labour, that at the reduced value I might continue to make ends meet; but the utter regardlessness as to how others may live is not promising but disheartening, if not even dismal. Why do not growers also learn the lesson, that a thing is only of value so long as it will sell? Why not choose to aim more at growing sufficient than too much? Competition is good, it is even necessary to secure to the consumer justice; but, nevertheless, reckless production is madness, and there are too many guilty by far. The world seems to prefer the excitement that tracks periods of great profits and great losses; but how much better it would be if all would determine to go in for just sufficient everywhere, and for all. England being so rich, it can command unlimited production; hence it is, that if a profit be observable anywhere it is at once pounced upon and devoured. Unfortunately the profits of nurserymen, too, are now everywhere being lowered, but, most certainly, not nearly so much by private growers as by their own utter disregard as to how their own brother competitors may fare, so long as their own rapidly erected gigantic establishments get emptied of their millions, and that their one solitary proprietor may sumptuously fare. The present state of the trade, in which your readers are more especially interested, might probably be discussed to mutual advantage; but my motto is, grow just sufficient to live, neither be beat in quality nor under-sold, and take all else as indifferently as circumstances will allow. *Joseph Witherspoon.*

Timing the Blooming of Eucharis amazonica.—In the last issue of the *Gardeners' Chronicle*, p. 55, Mr. Gilbert, of Burghley, tells us how wonderfully successful he has been in blooming his Eucharis. If Mr. Gilbert would be so good as to describe his treatment, and to tell us how he times his plants to flower with such exactness, I am sure he will be conferring a very great favour not only on me, but on all growers of this deservedly popular plant. Although our plants are in perfect health, we find them rather capricious as to their times of blooming. *E. Bayman, Holmbury, Dorking.*

Peach Yellows.—In the *Gardeners' Chronicle*, vol. xxiv., n.s., pp. 594 and 759, are paragraphs giving the result of Mr. Penhallow's treatment of Peach trees (affected with the yellows) with muriate of potash. It is not stated what quantity or in what form it was applied. Will Mr. Penhallow kindly inform the readers of the *Gardeners' Chronicle* of his method of giving it? The yellows in Peach trees has been a source of anxiety to me for many years; I have no doubt but that it is caused by localisation of starch in the bark, &c., and I have used every means to recover the trees by renewing the soil, &c. If the muriate of potash has the desired effect, I should feel grateful to Mr. Penhallow for making known his treatment, and I have no doubt but others having their trees similarly affected will feel the same. *J. C.*

An Orchid Society.—Last time Mr. Burbidge and I were corresponding we were at variance over our late friend's *protégé*. Over the above subject I am delighted to back him up, "claw, tooth, and nail." There are plenty of Orchid growers now who should be delighted to join this Society, and in sufficient numbers to give it at once a revenue, which would enable it to hold exhibitions, *conversaziones*, and fortnightly committee meetings throughout the year for certifying plants and enabling the growers to meet, and the public to see more of the "royal family" of plants. I am ready to further the creation of this Society, and I hope there are scores of others ready to join the movement. My idea is that if it can be arranged, a preliminary meeting of us would find out who would join the promoting committee; this done, the committee could formulate the objects of the Society, a certain amount of money could be guaranteed for advertising the scheme by circular, addressed to all the known Orchid growers. The facilities that this Society would create in enabling the public to see these lovely plants would be one of its greatest *raisons d'être*. At present the exhibition of Orchids is carried on by a ridiculously small minority as compared with the number of growers, simply because those societies who offer prizes for Orchids have not enough money to make up a good schedule for them alone, and induce growers of all sizes to compete. As at present arranged there is no encouragement for scores of collecting amateurs to send plants to the exhibitions, at which they know they will be beaten out of the field by men with double their collections. I can now speak personally, for had all the great collectors shown against my plants last year, they could hardly have been as successful as they were. Again, I know many who could exhibit where a schedule was made to protect them and suit their capacity, as it is a well known thing that there are some collections equally as well known as the largest. To help this movement on I shall be very pleased to act with those growers who are in favour of it, with the view of forwarding the formation of such a society. I hope Mr. Burbidge will not think I am trying to take it out of the hands of himself and those with whom he has been in communication about it, as I only wish to do all in my power to further the object, so anxious am I to see the scheme promulgated. If there is any formative agency in progress or any one pending, may I ask to be admitted into the secret? Hoping those are working who are ready to join the society when formed, I will now conclude by asking them to come forward boldly. We Orchid lovers have material enough to form a society as good as any horticultural society in existence. Perhaps in a future issue I shall have something to say on this subject, after gladly awaiting and seeing the ideas of other Orchidomaniacs, as we are often called. *De B. Crawshay, Rosefield, Sevenoaks.*

—— While amateurs and gardeners are thinking of the establishment of an Orchid Society, permit me—an amateur—to suggest that there be an association, of a co-operative kind, for the purchase and distribution of imported Orchids, without the intervention of trade importers, who, to protect themselves from loss, while securing a quick return of their outlay, must make it a practice to sell by public auction a large portion of each importation, and retain the remainder for private sale. By this arrangement the buyers by auction have the choice only of inferior plants or pieces, for the importers, being nurserymen, naturally keep for sale those that they believe they can readily make "established" plants, and make the most money by when established, and the gardening world are under great obligations to these importers for doing as much as this; but, as a buyer of untried pieces, by commission, I have been sadly disappointed to find that it requires an "expert" to obtain any pieces which will be certain to grow, and that, even with the help of an expert, an amateur has still to suffer the disadvantage of having a choice from the inferior portion of an importation only. What I want, therefore, to see is an association formed to obtain at first hand the best Orchids, to be divided on a regulated system, and at a fair price, amongst the members of the association, who would subscribe, say, a pound or two (for management and expenses) to obtain the privilege of participation. In this way an International Wine Association was formed after the Exhibition of 1851, which exists at the present time with great advantage to every one, for subscribers get the genuine article they want without themselves tasting the wine, or even being a judge of wine. They have a genuine article of the kind they want, and pay no more than cost price plus a small regulated percentage to prevent loss to the Association. If any of your readers are disposed to encourage something of the same kind for the acquisition by amateurs and gardeners alike of the best Orchids at prices which people of moderate means can, I shall be glad to consider with them the *modus operandi*, and I hope they will address me as "A. B." Those who think well of the proposal must not assume that it will be necessary to send out "explorers." The collection of Orchids in nearly every country producing them may now be effected by agencies of tried character abroad and at home. *A. B.*

Saxifraga crassifolia.—Those having a large amount of decorative work to do are often driven hard for variety; to them it may be useful to know that the above useful old plant may be forced to advantage, and form a most useful addition as a massive plant for large vase work or foot plants in grouping, &c.—the bold foliage, contrasting well with others of a finer growth, and the pleasing colour of the flower-spikes, do much to recommend it. Any one having good clumps in the borders may easily transfer them to 32 or 24-sized pots, and bring forward in any moderate forcing house. Smaller plants with a spike or two would be useful in smaller arrangements. *W. R. R.*

Henderson's White Plume Celery.—I got this American novelty for the first time through Messrs. Carter last year, and cannot agree that it should not be grown for winter or spring use. I have a fine line of it now for future use, and this is how I treated it. Granted that it is tender—much more so than Sandringham White, and far more so than Crimson Incomparable; but I consider this is one of its chief merits. Believing that it was so, I earthed it up as usual during summer and autumn, and as a protection against severe frost threw a few armfuls of clean straw over it in the end of November. I examined it to-day, and find it safe and sound. This Celery should not be rejected in a hurry: remember, the foliage can be utilised as well as the stem. *W. J. Murphy.*

Fine Poinsettias at Tranby Croft.—A splendid batch of Poinsettias may be seen at Tranby Croft, near Hull, the beautiful residence of A. Wilson, Esq. The plants range from 1 to 2½ feet high, being finely furnished down to the pots with strong healthy leaves. The bracts are large, measuring 13 to 18 inches in diameter. This is good, considering the many failures we have seen and heard of this season. Their colour is also of the greatest possible brilliancy. These I understand were struck rather late, and grown perfectly cool and without manure-water until they began to show, when they were moved to a slightly warmer house, and given more heat as they began to expand. Arranged amongst these is a finely grown lot of Calanthes, Veitchii particularly, with very fine spikes about 3 feet long, densely studded with grandly developed flowers, and certainly the deepest coloured ones of the ordinary form I ever saw. This combination is nicely interspersed with graceful foliage plants, the whole presenting a very pleasing effect. Much credit is due to Mr. Leadbetter's skill as a grower and to his tasteful arrangement. *A. I.*

A Scottish Orchid Exhibition.—The suggestion in the *Gardeners' Chronicle* of January 2, so opportunely given by Walter J. Ogilvy, that Orchid growers should endeavour to hold an exhibition and conference north of the Tweed, has my warmest approval. As one long interested in Orchid culture, and knowing the growers well, I am satisfied that there is material enough to make a very good exhibition, provided there iss the necessary combination and enthusiasm to carry the matter to a successful issue. The International Exhibition in Edinburgh from May until October offers a rare opportunity, that is not likely to occur again, to make a start with such an exhibition. I have brought the matter before a number of the Coun-

cil and the Manager, who are inclined to offer every encouragement to further the project. Should a representative number of the growers take the matter in hand at once, I have no fear but an arrangement could be made with the builders of hot-houses in the grounds to adapt to and place them at their service, even for the season if necessary; failing that, room could be placed at their disposal in the centre dome of the art galleries. What a treat to the public and stimulus to Orchid culture if the matter were carried out with spirit. *Robert Todd.*

Forcing French Beans.—On reading the paragraph by your correspondent, "R. D.," p. 55, on forcing the above vegetable, I was astonished to learn that "R. D.'s" brother gardener should use such enormously large pots as stated (12-inch), and only for two plants of a fleeting nature. Calculating the room 1000 such pots would take up, and every plant a foot apart one way and 18 inches the other, it seems to me a waste of space, when growers can grow four—or the usual five—in a 24 or 9-inch pot, with a heavy crop, and the usual successions to follow. Does "R. D.'s" friend keep them going for six months in his monstrous pots?—or, may be, the original old Fulmer's is a perpetual. My opinion is that to do French Beans in quantity we need not have recourse to the paddling or second-shifting system—a needless waste of time—a consideration in most gardens in these fast times. My rough-and ready system is a handful of short stable manure (litter, droppings, &c.—my crocks) in the bottom of each pot, a heap of soil at hand and shovel; a layer of soil, and then the seed, with a finish of more soil—about half filling the pot, leaving the other space to fill as the plants advance. Any good soil grows Beans. Another good paying system is to draw drills, and sow in front of Cucumbers and Tomatos; the crop usually comes off before the overhead occupants shut out the sun's rays, so needful to the early forcer. *W. R. R.*

Tillandsia Lindeni.—We have several plants of this stove Bromeliad now blooming. The plants are all three years' old, grown in cork blocks made up in the shape of pots, and filled with crocks, charcoal, and rough peat. One of the above plants has thrown up, findependently of the centre scape, which is 24 inches high, seven smaller scapes 12 inches high and seven strong offshoots—all very healthy. Is not this an unusual occurrence for this plant to throw up so many bloom scapes? Can any of your numerous readers say if the same thing has occurred with them in the cultivation of this plant? We have had stronger plants but they never exhibited this style of blooming before. *W. G.*

Winter-Flowering Carnations.—For many years past—and the last was no exception—I have cut large numbers of Carnation blossoms during Christmas week, my favourite varieties being Alegatière (bright scarlet) and Cavalier (deep red, spotted with a lighter shade of red). The cuttings are inserted in January, and placed in heat to strike, and as soon as well rooted they are potted into 60-sized pots, and kept in warmth till established, after which they are gradually inured to cold frame temperature. As soon as the pots are filled with roots they have their final shift into 32-sized pots, and during the summer are grown in the open air, the pots being plunged in cinder-ashes. About the middle of September the plants are housed, and, as a rule, by the end of October we can cut flowers daily, and often in large numbers; so that, with all due deference to "W. J. R.," winter-flowering Carnations are not an "absurdity," by which I suppose he means that their production is an impossibility. *W. H.*

Bonâ fide Chrysanthemum Exhibits.—It is well that attention has been directed to the manner in which certificates are awarded, or rather, and more correctly perhaps, how these certificates are obtained. If, as stated by "One of the Committee" in your last issue, it is not compulsory that the flowers for which certificates are offered and awarded should be the property of the exhibitor, and grown by him, this is a very loose system indeed, as it allows all who would to make a circuit and collect flowers from various sources, and secure the honours for themselves. The schedule, however, is quite opposed to such action, and I have no doubt the majority of the committee would not countenance such a step themselves, neither is the secretary expected to challenge every exhibit as to whether it be the *bonâ fide* property of the exhibitor. It is, however, getting noised abroad, and the talk is not confined to London's limits, that certificates are obtained in an underhand manner. And, again, is it fair that at some meetings of the National Chrysanthemum Society three blooms are demanded of large-flowered kinds before a certificate be awarded, while at others they are given freely for single blooms? *S. O. M.*

Reports of Societies.

ROYAL HORTICULTURAL:

January 12.

At this meeting, held as usual in the conservatory at the Society's Garden, South Kensington, a few subjects of interest were brought together, some of them being inmates of the warm houses, such as could ill withstand the inclement weather. Of these, probably the most interest was shown in a collection of cut blooms of many showy varieties of Lælia anceps, brought by Mr. Ballantine from Baron Schroder's garden, The Dell, Egham. Unfortunately Mr. Veitch removed them early in the day, so that a bare mention of their names must suffice. Other Orchids came from Mr. H. James, Mr. De B. Crawshay, and Mr. Blandford.

Scientific Committee.

Dr. M. T. Masters in the chair.

ODONTOGLOSSUM RICTONIENSE WITH FOLIACEOUS BRACTS.

Mr. O'Brien showed a peduncle about 5 feet in length, with the upper bracts leafy. He attributed the development of leafy bracts to a check upon the reproductive energy which the plant had received, in consequence of which the vegetative system had been encouraged, as seen in the lengthened stem and leafy bracts.

O. ANDERSONIANUM, SYNANTHY OF.

He also showed flowers of this species in a synanthic condition, with two lips, two columns, &c.

NERINE HYBRID.

The same exhibitor also exhibited pink flowers of a so-called N. cinnabarina raised by himself.

N. FLEXUOSA HYBRID.

He showed a leaf about 16 inches long and 2 inches broad, of a hybrid between N. flexuosa and N. Fothergilli, both of which have much narrower leaves, showing the effect of crossing.

MAHWAH FLOWERS, SUGAR IN.

Professor Church gave an interesting account of his researches into the chemical constitution of the sugary corollas of Bassia latifolia. It had been suggested that these flowers, which are largely used as food in India, might supersede the use of Beetroot and the Sugar-cane; but, he remarked, this would depend upon the character of the sugar. He had analysed some samples of the sun-dried flowers, and found they yielded 56 per cent. of sugar and 15 per cent. of water; but a further analysis showed that sucrose (Cane-sugar) was only present in the proportion of 3.2 per cent., while glucose (lævulose and dextrose) yielded 52.6 per cent. Hence it cannot possibly be a substitute for Cane or Beet sugars. Of nitrogenous matters the flowers contained 2.2 per cent. The usual proportions of useful nitrogenous food should have one part of flesh-formers to five saccharine; but in the case of Bassia it was only two to fifty-five. He further remarked that in the nectaries of nearly all British flowers the sugar was Cane-sugar; but in young grasses the sugar was glucose, and it was not until the lower leaves had begun to turn yellow that the glucose was converted into sucrose or Cane-sugar. In the case of the Mahwah the sugar resides solely in the corolla; a fair size tree will yield about half a ton of fresh flowers; the seeds contain an edible oil.

A discussion ensued as to the probable use of this accumulation of sugar in the deciduous corollas of this tree, and a vote of thanks was unanimously given to Professor Church for his interesting communication.

MACROZAMIA DENISONI.

A fine male cone of this Australian plant (about 2 feet high and 8 inches in diameter at the base) was sent by Mr. James of Norwood, as the first instance of its flowering in this country.

BEGONIA SPECIES.

A small-flowered species with white blossoms and much-divided leaves was sent by Sir Trevor Lawrence, which had come up with an Orchid. It was referred to Kew for identification.

GRISELINIA LITTORALIS.

Dr. M. T. Masters showed shoots in which the axillary buds had become "uplifted" so as to be "extra axillary." On examining the buds microscopically, he observed that the bases of the leaves were at first horizontal, but that they subsequently became uplifted as well as the buds, while the stem assumed a flattened character.

GRAFT-HYBRID POTATOS.

Mr. W. G. Smith forwarded specimens of "hybrid" Potatos obtained by the method of introducing "plugs" with eyes of one sort into other sorts, as described by him in the *Gardeners' Chronicle*, on "Potato Grafting" (January 9, p. 54). He also forwarded drawings of various sorts, illustrative of the results obtained. Dr. Masters observed that both botanists and gardeners had questioned the possibility of this union, but that his own experiments, as well as Mr. Smith's, had disproved the assertion. Mr. Henslow remarked that a gentleman in Warwickshire twenty-five years ago had tried it by binding together two halves of a red and white Potato, and that the resulting produce was intermediate in colour. Mr. O'Brien said that the attempts to unite bulbs of Lilies had as yet completely failed.

THE CLIMATE OF CORNWALL.

The Rev. George Henslow drew attention to a communication from the Hon. and Rev. J. T. Boscawen in the *Gardeners' Chronicle* for January 9 (p. 55), in which the author alluded to the great variations of temperature and the corresponding differences in the effect upon vegetation in his garden at Lamorran. Mr. Henslow observed that the peculiarities could be at least partly explained by a study of the distribution of cold in England. Mr. Boscawen compared that of Lamorran with the temperatures of Kent, Sussex, and Liverpool. It will be found that isotherms of 30° or 20°, as the case may be, often ran closely parallel with the coast line; or else, running parallel from Cornwall to nearly the meridian of 0°, it then turns abruptly northwards, cutting the east coast at Newcastle. Hence it not unfrequently happens that Kent and Sussex are just without the isotherm which includes Cornwall. Similarly, following the isotherm round the west coast, an indentation occurs around Liverpool in consequence of its being on the great western plain (continuous with the Severn Valley). The next point to be observed is that the internal distribution of areas of low temperatures correspond with the more elevated tracts, showing that the lowering of the temperature is due to radiation. One of these "local centres" always occurs over the elevated region of Cornwall and Devonshire. As the Cornish tableland extends far down towards the Land's End, the effects of this cold area are doubtless felt at Lamorran. On the other hand, the south-west coast reaps the benefit of the Gulf Stream, so that in ordinary winters Fuchsias, Escallonias, Hydrangeas, &c., are not cut at all. Lastly, individual causes of influence, such as depressed spots, where temperatures will be lower than on adjacent heights, exposure to the west or east, as the case may be, &c., as well as differences of soil, in addition to the character of the subjacent rock, which may be a good or bad conductor of heat. Taking all the above facts into consideration, Mr. Henslow suggested they were amply sufficient to account for the anomalous features of Lamorran.

PLANTS INJURED BY FROST IN CORNWALL.

The Hon. and Rev. Mr. Boscawen forwarded leaves and shoots of various shrubs, Camellias, Hydrangea, &c., more or less blackened by the late frost at Lammorran, as described by him in the *Gardeners' Chronicle*.

Floral Committee.

Present: G. F. Wilson, Esq., in the chair; and Messrs. J. Douglas, J. Walker, H. Bennett, W. Bealby, W. Herbst, T. Baines, G. Duffield, W. Holmes, R. Dean, H. Ballantine, A. Lendy, J. Dominy, H. Cannell, J. O'Brien, E. Hill, G. Paul, and H. Turner.

Messrs. Paul & Son, Cheshunt, exhibited the Tea Rose Sunset, showing by its abundant bloom the ease with which it can be had in bloom in mid-winter. The colour may be called buff or dull apricot, the buds just of the kind to recommend it for a button-hole flower, and the odour is strong; bronzy wood and foliage set off the flower well.

From Messrs. J. Veitch & Sons, Chelsea, there was a small collection of Chinese Primulas of the old varieties, red and white, for comparison with the Chiswick Red, a by no means new kind if but little known and grown, and which is undoubtedly the best red kind; the other kinds being the so-called blue or puce kind, found under

various names ; and a white hybrid, from Primula sinensis The Queen, a white, suffused with faint pink. The new varieties were marked improvements on older ones. Primula s. cristata, with partially double blooms and crested foliage, was also shown ; it is a pretty and distinct flower, and has the merit of coming true from seed. A Bronze Medal was awarded.

Mr. H. James, Castle Nurseries, Lower Norwood, showed a pretty, highly coloured bloom of Cattleya Trianæ, and a fine male spike of Macrozamia Dennisonia, measuring nearly 2 feet in height. Mr. Cook, gr. to Mr. De B. Crawshay, Rosefield, Sevenoaks, showed a plant of Sophronites grandiflora splendens, an improvement as regards size on S. grandiflora ; Lælia anceps blanda, with lip a deep rich purple, the ground colour of the throat pale primrose with purple stripes, sepals and petals being of a pale rose tint ; L. a. Crawshayana, a pale form of L. anceps, useful, perhaps, for variety ; L. a. Williamsi, a white form bearing flowers having a yellow stain on the lip. Several cut blooms of Odontoglossum, as O. aureum and Stella, a fine, firm flower, white, with a yellow crest, came from the same garden. A Vote of Thanks was accorded the exhibitor.

Some few Orchids in pots came from Mr. Dorman's garden, The Firs, Laurie Park, S.E. (gr., Mr. White), including the dwarf-growing Promenæa stapelioides, Odontoglossum tripudians superbum, a small spike of O. Insleayi, and a Cypripedium insigne Dormanianum.

Mr. Ballantine, gr., The Dell, Egham, sent a good representative collection of Lælia anceps varieties in cut spikes of bloom, consisting of L. a. Dawsoni, L. a. Barkeri, L. a. alba, L. a. Hilli, L. a. rosea, L. a. Williamsi, L. a. Sanderiana, and L. anceps itself.

Mr. Blandford, gr., Moor Hill, West End, Southampton, showed a large healthy plant of Lælia anceps, carrying ten spikes of bloom, to illustrate the practice of pruning off the exhausted old pseudobulbs. The committee failed to see that the practice was productive of any advantage, equally good plants having been grown, and the old reservoirs of food supply retained, yet on the score of better appearance it might be advocated, no ill effects accruing from it. The most which may be said for it is that it is an experiment that needs still further elucidation, and which it will doubtless receive from our younger Orchid growers and amateurs. A Cultural Commendation was given for it.

Mr. J. Walker, The Nurseries, Thame, Oxfordshire, exhibited late-flowering Chrysanthemums in incurved, Japanese, and pompon Anemone-flowered varieties, white and yellow predominating.

Fruit Committee.

Present : Dr. Robert Hogg, in the chair ; and Messrs. H. G. Veitch, G. Norman, W. Warren, J. Woodbridge, C. Ross, G. T. Miles, W. Denning, T. J. Saltmarsh, A. Sutton, Sydney Ford, W. Paul, R. D. Blackmore, C. Silverlock, P. Crowley, and J. Burnet.

Mr. Barron sent a collection of culinary kinds of Pears of English growth, including amongst several well known kinds many others less commonly cultivated, some of these latter being often found under the heading of dessert varieties, but which being of inferior quality, and in some cases seldom ripening here, are quite properly classed as culinary sorts.

Of large-sized fruits were remarked Directeur Alphaud, Bellisime d'Hiver, Catillac, Prince Napoleon, Achan, Gracieuse, Chaumontelle, finely coloured, but still unripe, and Lieutenant Poitevin. Mr. Allan, gr. to Lord Suffield, Gunton Park, Norwich, showed a seedling Apple of nice appearance, and said to be a great bearer, but not sufficiently good for the dessert, and for the kitchen inferior in size and flavour to many others. A fine Smooth Cayenne Pine was sent by Mr. H. Mitchell, gr. to Sir G. Elliot, Bart., Abraman Park, Aberdare ; it was well formed, with broad pips, but quite unripe. Mr. J. Walker sent a fine lot of his selected Exhibition Onion, the produce of seed carefully selected during the past twelve years.

NATIONAL CHRYSANTHEMUM : LATE FLOWERING EXHIBITION: Jan. 13.

THE extent and quality of the exhibits on this occasion afforded a surprise to many. Scarcely anybody could have imagined that at this late period of the winter so many and such good flowers could have been brought together, and they came from various parts of the country too—from Peeblesshire and Hull, to Fareham, in Hampshire. One thing is quite certain, it is to the Japanese varieties that exhibitors will have to look for late blooms, as they played an important part in the show of Wednesday last.

In the class for twelve incurved varieties there was but one exhibitor—Mr. Bettesworth, gr. to R. Evering, Cheshunt, who was awarded a 2d prize, having eight blooms of Miss Marchaux, a white variety with the outer petals tinged with rose ; and four of Princess Teck. In the class for six varieties, Mr. John Walker, nurseryman, Thame, was the only exhibitor ; he was awarded a 2d prize for two blooms each of Princess Teck, White Venus, and Jardin des Plantes.

It was in the class for twelve Japanese blooms that the quality of the flowers was brought to view. The best came from Mr. R. F. Jameson, Hessle, Hull, who had among others, Triomphe de la Rue des Châlets, Bend d'Or, and Boule d'Or, a very good representative stand ; 2d, Mr. H. Lecton, gr. to Lord Brooke, Easton Lodge, Dunmow, Essex, with lighter sorts, a little less bulky, but fresh and bright : the sorts included Triomphe de la Rue des Châlets and Grandiflora ; 3d, Mr. Bettesworth, who had some capital blooms of Ceres, one of the best late white varieties ; an extra prize was awarded to Mr. Sullivan, gr. to D. B. Chapman, Esq., Downshire House, Roehampton. Mr. Sullivan had the best six varieties also, staging good blooms of Ceres, a pale yellow sport from The Khedive, and Mdlle. L. de Peydellet ; 2d, Mr. John Walker, Thame, whose best flowers were Elaine, and Ethel.

The class for twelve blooms of Chrysanthemums, any varieties, was well filled ; some capital flowers were included. Mr. Jameson had the best, staging Golden Christine, Jeanne d'Arc, Madame B. Pigmy, a pretty Anemone-flowered variety ; Pink Christine, and Mdlle. Cabrolle. 2d, Mr. G. Bolas, gr. to R. C. Pole Gell, Esq., Hopton Hall, Wirksworth, with Elaine, Madame C. Audiguier, Bronze Jardin des Plantes, and Golden Empress ; 3d, Mr. Bettesworth, whose stand contained four fine blooms of an Anemone-flowered variety named Sunflower, of a pale yellow colour. An extra prize was awarded to Mr. J. Walker.

Several collections were shown in the class for a collection of cut blooms. The best came from Mr. J. Lowe, nurseryman, Uxbridge, who had twenty-four blooms of Lowe's Late Bronze, a bronzy-red and yellow Japanese variety, said to be new ; forty-eight blooms of Princess Teck, the same of grandiflora, and a stand of twenty-four varieties incurved and Japanese. 2d, Mr. R. Owen, nurseryman, Maidenhead, with a stand of several bunches of blooms ; the leading varieties were Boule de Neige, L'Incomparable, Fanny Boucharlot, Mons. Delaux, Sirnia, Fair Maid of Guernsey, Ethel, &c. ; 3d, Mr. G. Bolas, with Japanese, incurved, and pompon varieties ; and an extra prize was awarded to Mr. J. Walter.

Certificates of Merit were awarded to Mr. F. Taylor, The Gardens, High Elms, Kent, who had a good lot of flowers of various types ; and to Mr. E. Beckett, The Gardens, Alderney Park, Elstree, Herts, who had a very fine lot of Japanese, including Ceres, Fanny Boucharlot, Dolores, and some pompons. Neither collection was for competition. Also to Messrs. H. Cannell & Sons, Swanley Nursery, for a collection of several varieties of Primula sinensis and small fruiting Orange trees in pots ; and to Mr. J. Walker, for a fine lot of his exhibition Onion.

Mr. Horrocks, Ellerville, Withington, Manchester, had three fine blooms of Boule d'Or, which were highly commended ; and Messrs. Drover, nurserymen, Fareham, had a bloom of a pretty delicate Japanese variety, Syringa, which the committee wished to see again in the autumn. Mr. G. Sinclair, East Linton, Peeblesshire, N.B., sent some bunches of good flowers of Elaine, which were highly commended. Mr. Bettesworth had some plants of a small white Japanese Chrysanthemum, unnamed, and which appear to be naturally very late in flowering.



Law Notes.

HIGH COURT OF JUSTICE, QUEEN'S BENCH DIVISION.—(Before Mr. Justice Mathew, without a Jury.)—*Ward* v. *Henegan*.—In this case Mr. John Nash Ward, a commission salesman, of Covent Garden, sued Mr. John Henegan, vegetable and fruit merchant, of Camden Town, to recover £45 odd, the value of baskets and bags supplied and not returned ; £106 odd for the hire of pads and baskets, and for damages for the detention of the baskets and bags not returned.

The defence was that the defendant did not buy the baskets, nor did he hire them, nor detain them ; that the plaintiff agreed to sell fruit and garden produce for the defendant on commission ; that in accordance with arrangement between them, as well as in accordance with the custom of the trade, the plaintiff sent baskets to various places for the reception of fruit and garden produce on behalf of the defendant, that the baskets hired had all been returned, and if they had not been all returned the plaintiff had not demanded them before the commencement of the action, as he ought to have done. Further, the defendant alleged that the plaintiff had not rendered an account in respect to various transactions carried out by him for the defendant ; and the defendant counterclaimed in respect to the sales effected on his behalf, and the monies received and demanded an account.

Mr. Ashton Cross appeared for the plaintiff. Mr. Finlay, Q.C., and Mr. Cranston, for the defendant.

The plaintiff's son, who had a good deal to do with the management of his business, was called, and gave evidence to the effect that the baskets had been supplied on the defendant's account as mentioned in the statement of claim, and that all baskets, &c., returned, had been credited.

Mr. Finlay was proceeding to cross-examine the witness upon matters of detail, when the learned Judge suggested that it was a fit case for settlement.

Mr. Finlay said the counterclaim had already been referred to a Master for examination.

Mr. Justice Mathew said that course would involve a great deal of expense to both parties, and he thought it a pity that costs should be run up in a matter of this sort. From what he could ascertain, the defendant was in an unfortunate position, somebody having got possession of a number of baskets, and threatened to burn them, &c.

After some further conversation, on the pressure of the learned Judge counsel consented that the case should come before his Lordship in his private room on Thursday morning, to see if the matter could not be settled.

Accordingly the case went before his Lordship in Chambers, and with the view of saving expense both parties agreed to leave the matter in dispute to him.

The result was, judgment for the plaintiff for £30 on the claim ; also judgment for the plaintiff on the counterclaim. Costs for the plaintiff on the County Court scale.

Obituary.

WE regret to announce the death of Miss M. D. MUTRIE, which occurred on the 30th ult. Miss Mutrie (and her younger sister, who survives her) was born in Manchester, but took up her residence in London in 1854. She exhibited "Fruit" in 1851 at the exhibition of the Royal Academy, and has since almost annually contributed pictures at Trafalgar Square, Burlington House, and the British Institution.

—— The death, under very distressing circumstances, of Mr. WILLIAM BROWN, florist, of Hendon, in his fifty-third is announced. It appears that the deceased was found drowned in a well on his brother's premises adjoining. The lid of the well had to be removed in order to extricate the body. Mr. Brown had been in fair general health, his affairs were prospering, but there was some evidence of mental restlessness tendered at the inquest. An open verdict was returned.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON, FOR THE WEEK ENDING WEDNESDAY, JANUARY 13, 1885.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.					Hygrometrical Deductions from Glaisher's Tables 7th Edition		WIND.		RAINFALL.
	Mean Reading at 9 A.M. 32° Fahr.	Departure from Average of 10 Years.	Highest.	Lowest.	Range.	Mean for Day	Departure of Mean from Average of 10 years	Dew Point.	Degree of Humidity Sat = 100	Average Direction		
Jan	In.	In.	°	°	°	°	°					In.
7	29 91	+0.17	29.5	21 0	8 5	25 0	—11 3	23 0	91	N.E. : N.NW.		0.00
8	29.42	—0.32	36 5	15.0	21.5	28.1	— 8 1	25 4	89	N W		0.18
9	29.66	—0.07	35 0	24.0	11.0	30 3	— 5 9	26 0	82	N W. : N.NW.		0.00
10	29 86	+0.14	34 0	31.1	2.9	31.9	— 4 4	29 9	92	S. : N.NW.		0 00
11	29 63	—0.09	38.5	29 8	8.7	35.0	— 1.3	34.8	90	S.W.		0 25
12	29 92	+0.20	35.0	28 0	7.0	31 8	— 4.6	25.8	78	N.W.		0.00
13	29 10	—0.63	44.2	32.0	12.2	38 8	+ 2 4	37.0	94	S.W. : N.W.		0 30
Mean	29 64	—0.01	36.1	35 8	10 3	31.6	— 4 7	28.8	89	Variable.		0.73

Jan. 7.—Very cold day and night.
— 8.—Sleet falling at 9 A.M. ; sun shining nearly all morning.
— 9.—Dull in early morning ; fine and bright at times fine night.
— 10.—Dull day ; slight fall of snow between 8 P.M. and 9 P.M.
— 11.—Snow melting rapidly ; slight rain falling nearly all day.
— 12.—Fine, cold day ; few flakes of snow falling in afternoon.
— 13.—Rain in early morning ; dull day ; fine, clear night.

LONDON : *Atmospheric Pressure.* — During the week ending January 9, the reading of the barometer at the level of the sea increased from 29.98 inches at the beginning of the week to 30.07 inches by 9 A.M. on the 3d, decreased to 29.64 inches by 5 P.M. on the 4th, increased to 29.69 inches by 9 A.M. on

the 5th, decreased to 29.54 inches by 9 A.M. on the 6th, increased to 30.11 inches by 1 P.M. on the 7th, decreased to 29.56 inches by 9 A.M. on the 8th, and was 29.92 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.78 inches, being 0.29 inch lower than last week, and 0.15 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 49°.5, on the 4th; on the 7th the highest temperature was 29°.5. The mean of the seven high day temperatures was 39°.

The lowest temperature was 15°, on the 8th, on the 4th the lowest was 37°. The mean of the seven low night temperatures was 27°.5.

The greatest range of temperature in one day was 21°.5 on the 8th; the smallest, on the 6th, was 3°.4. The mean of the seven daily ranges was 11°.5.

The mean temperatures were, on the 3d, 42°; on the 4th, 44°.7; on the 5th, 36°.6; on the 6th, 32°; on the 7th, 25°; on the 8th, 28°.1; and on the 9th, 30°.3; of these the first three were above their averages by 5°.3, 8°.1, and 0°.1, respectively; the rest were below by 4°.4, 11°.3, 8°.1, and 5°.9 respectively.

The mean temperature of the week was 34°.1, being 5°.7 lower than last week, and 2°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 62°, on the 5th. The mean of the seven readings was 46°.6.

The lowest reading of a minimum thermometer placed on grass was 16°.5, on the 7th. The mean of the seven readings was 26°.2.

Rain.—Rain fell on four days, to the amount of 1.13 inch.

ENGLAND: *Temperature.*—During the week ending January 9, the highest temperatures were 54°, at Truro, 53°.2 at Bristol, 53° at Plymouth and Leeds; the highest at Newcastle was 42°, at Brighton 48°.5, at Blackheath 49°.5. The general mean was 50°.9.

The lowest temperatures were 15° at Blackheath, 20° at Wolverhampton, 21°.4 at Cambridge; the lowest at Liverpool 27°.7, at Plymouth and Nottingham 26°.1. The general mean was 23°.2.

The greatest ranges were 34°.5, at Blackheath, 31° at Truro, 30°.7 at Bristol; the least ranges were 19° at Newcastle, 23°.5 at Brighton, 24°.6 at Nottingham. The general mean was 27°.7.

The mean of the seven high temperatures was highest at Plymouth, 47°.5, at Truro 47°, at Leeds 42°.7; and was lowest at Newcastle, 36°.5, at Blackheath 39°, at Cambridge 40°.1. The general mean was 41°.4.

The mean of the seven low night temperatures was highest at Truro, 38°, at Plymouth 36°.4, at Liverpool 32°.8; and was lowest at Wolverhampton, 26°.8; at Blackheath 27°.5, at Sunderland 28°.9. The general mean was 31°.1.

The mean daily range was greatest at Wolverhampton, 13°.6, at Hull 11°.8, at Blackheath and Sunderland 11°.5; and was least at Newcastle, 6°.8, at Liverpool 8°.2, at Truro 9°. The general mean was 10°.3.

The mean temperature was highest at Truro, 42°.4, at Plymouth 41°.9, at Leeds 37°.1; and was lowest at Newcastle, 31°.5, at Wolverhampton 33°.5, at Blackheath 34°.1. The general mean was 36°.1.

Rain.—The largest falls were 1.79 inch at Brighton, 1.31 inch at Bradford, 1.24 inch at Preston. The smallest falls were 0.12 inch at Hull, 0.30 inch at Sunderland, 0.37 inch at Cambridge. The general mean was 0.82 inch.

SCOTLAND: *Temperature.*—During the week ending January 9, the highest temperature was 52°, at Greenock and Leith; at Dundee the highest temperature was 49°. The general mean was 50°.9.

The lowest temperature in the week was 15°, at Glasgow; at Greenock and Leith the lowest temperature was 23°. The general mean was 19°.8.

The mean temperature was highest at Greenock and Leith, 35°.4; and lowest at Aberdeen, 32°.6. The general mean was 34°.3.

Rain.—The largest fall was 1.58 inch, at Greenock; the smallest fall was 0.05 inch, at Dundee. The general mean was 0.71 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, January 11, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been in an exceedingly unsettled, changeable condition. Heavy falls of snow and severe frosts have alternated with showers of sleet, rain, and brief periods of thaw.

The *temperature* has been much below the mean, the deficit ranging from 3° in the "Channel Islands" and 4° over Ireland to 5° or 6° in all other parts of the kingdom. The maxima, which were recorded on different days in the various districts, ranged from 41° in the east and north-east of England to 51° in "Ireland, S." The minima, which were generally registered during the evening of the 7th, or on the morning of the 8th, were very low; in "England, E." (at Rothamsted), the thermometer fell to 6°, in the "Midland Counties" to 10°, and in "England, S.," to 11°, while elsewhere the readings ranged from 13° in "England, S.W. (at Llandovery), to 20° in "Scotland, N.," and to 32° in the "Channel Islands."

The *rainfall* has been rather more than the mean in most of the Wheat-producing districts, but a little less in the majority of the grazing districts.

Bright sunshine shows an increase on that reported last week, the percentages of the possible duration varied between 15 in "Scotland, N.," 33 in the "Channel Islands," and 37 in "Scotland."

Depressions observed.—Several depressions appeared in our area during this period, and the distribution of pressure varied considerably. The disturbances which most affected the winds and weather over our islands were (1) a small but well-defined system, which at 8 A.M. on the 6th lay over the British Channel, and subsequently moved southwards and south-eastwards, and (2) a much larger and deeper depression which advanced from the westward to the north of Scotland, and afterwards (during the 8th and 9th) moved south-south-eastwards down the North Sea. The former occasioned fresh easterly or north-easterly winds on nearly all our coasts, and a heavy fall of snow at our more southerly and south-easterly stations. The latter brought very violent north-westerly gales with snow to the Scotch coasts, and strong north-westerly breezes, with snow or sleet-showers, to all other parts of the kingdom.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

AMERICAN BLIGHT.—Could Mr. Gilbert, or any other, give me information as to the best way to clear badly infested Apple trees of the above? We have parrafin; at what strength should it be used, and what with? *L. W.* [A wine-glassful to a gallon of water, thickened with soft-soap, kept constantly stirred. Refer to the numerous articles on Insecticides in the *Gardeners' Chronicle.* ED.]

BOUGAINVILLEAS.—Can any grower of this plant inform me of the best compost to grow it in? Would it do in warm greenhouse without any shading put on the glass? Would the sun, coming direct on the pot in which it is contained, injure the roots? *X. Z.*

CHRYSANTHEMUM.—Could any grower kindly give me practical information on the growth of the above? *N. T.*

LILIUM AURATUM.—Could any reader of the *Gardeners' Chronicle* give me practical information on the growth of the above? What is the best compost? also, when should the bulbs be repotted after blooming? Will it grow bloom successfully for two or more years? Are they better grown in light or shade? *B. W.*

NURSERY LAND AND THE AGRICULTURAL HOLDINGS' ACT.—Does nursery land come under the Agricultural Holdings Act, so that the tenant is entitled to twelve months notice? The Act says that land to be benefited by the Act must be agricultural, pastoral, or market garden. Does nursery land legally come under either of these descriptions? *An Enquirer.* [Perhaps some of our subscribers can speak definitely about this. ED.].

Answers to Correspondents.

ANTI-CORROSIVE PAINT: *A Subscriber.* Walter Carson & Sons are manufacturers of such paints for outdoor work. The address was La Belle Sauvage Yard, Ludgate Hill, London, E.C., and 21, Bachelors' Walk, Dublin.

BEECH TREE DISEASED: *J. H.* This is the work of an insect allied to the mealy-bug. If the tree is large we fear you can do nothing effectual; otherwise syringing with parrafin emulsion would be beneficial—a wineglassful of oil to a gallon of soapsuds. Keep the mixture thoroughly stirred.

CHRISTMAS ROSES: *W. B. H.* The flowers are certainly fine in size and pure in colour, but we fail to see anything remarkable about them, except the great length of stalk—the result, possibly, of "drawing."

CUPRESSUS MACROCARPA AND C. LAMBERTIANA: *S. C.* The first named is of an upright and the latter has a spreading habit, but they are in other respects identical.

DOUBLE-FLOWERED RICHARDIA ÆTHIOPICA: *A. W.* It is one of the best we have seen; if you can fix the habit it would find admirers. Threefold combined blooms are much rarer. We have never heard of any one succeeding in making these monstrosities constant.

DRYING PLANTS: *W. E.* Put the specimens between several sheets of paper, old newspapers will do very well, and place a heavy weight on them. Change the papers frequently, and when the specimens are dry they may be fastened on to sheets of cartridge paper by means of small strips of gummed paper, or if you are not likely to want to move them, they may be stitched on to the paper. There are various other methods of drying plants, but this is the simplest and best adapted for work. If you want them for ornamental purposes you must adopt more elaborate means.

ERRATUM: CATTLEYA GASKELLIANA ALBA.—Mr. De B. Crawshay writes calling our attention to the fact that he received a Royal Horticultural Society's Certificate for this plant on July 8, 1884, so that it can scarcely be called new at this date.

IXORAS AND CLERODENDRONS TO BLOOM IN THE MIDDLE OF AUGUST: *H. S. O.* The first may be started towards the beginning of February on a very gentle bottom-heat. Before starting them ascertain that they are perfectly clean. The Clerodendrons need not be started earlier than the first week in April, pushing on the plants gently at first, and looking to the first crop of bloom, as allowing the plant to bloom and then cutting it back is a waste of its energy, and can be productive of only inferior heads of bloom.

LATERALS OF GRAPE VINES: *R. J.* Your language is so obscure, that we do not gather if you wish to know if the shoot should be left attached to the bunch when the Grapes are bottled; or whether you wish to know if all laterals should be left on the Vine till a later period, after the fruit is cut off and bottled. The best plan is to prune early, and thus avoid bleeding and other ills.

NAMES OF PLANTS: *T. Norris.* 1, Dracæna roseo-alba; 4, D. ferreæ; 6, D. terminalis; 5, Begonia nitida; 7, B. fuchsioides; 8, B. ascotensis; 9, B. subpeltata var.; 11, B. Saundersi; 12, B. Argyrostegina; 13, B. metallica; 14, B. foliosa. The Fern and moss next week.—*C. H. W.* Gesnera elongata.—*J. W.* Lælia anceps; Ferns next week.

ORCHID CO-OPERATIVE ASSOCIATION: *A. B., Orchid.* Any correspondent desirous of addressing letters to "A. B., Orchid," on the above subject can do so, the letters to be left at our office. There are so many A. B.'s, that it is better to use the form suggested.

OUTDOOR FRUIT GROWING, INCLUDING BUDDING AND GRAFTING: *T. G. Rose. Fruit Trees*, from the French of M. Du Breuil, published by Lockwood & Co., 7, Stationers' Hall Court, Ludgate Hill, E.C.; *The Art of Grafting and Budding*, from the French of M. C. Baltet, published at the *Garden* office, 37, Southampton Street, Covent Garden, W.C.

PARRAFIN STOVE FOR HEATING PEACH HOUSE: *W. L. P.* If the lamp is of the proper kind the fumes will cause no injury to the plants, nor will there be found any smell, as in the best makes the products of combustion are partly burnt and the rest is passed through a quantity of water.

PHOTOGRAPHS OF ORCHIDS, &C.: *W. Thompson.* These are too small for an artist to make a suitable engraving of for our pages. Many thanks.

PRACTICAL AND SCIENTIFIC HORTICULTURE: *Clarendon.* Obtain a situation, if you can, in some good botanic garden, or in such a place as Mr. Veitch's nursery. In no one place could you acquire all that you wish to know.

RABBITS AND FRUIT TREES: *G. R.* Mix a paint composed of adhesive clay, lime, and cowdung, in about equal proportions, and add sufficient spirits of tar to make its smell offensive to the animals. This paint will not injure the trees, as gas-tar is liable to do, and it will prove effectual for a year. Hares and rabbits will not touch the stems of trees rubbed with the raw fat of bacon.

VINES NEWLY PLANTED: *Garrick.* After planting at this season of the year let the Vines come on without artificial heat. You may apply it during the spring and summer, so as to intensify the action of solar heat. The forcing of young canes unless for fruiting and then to be removed is to be deprecated.

YELLOW CHRYSANTHEMUM: *Mercer Bros.* The bloom is a fairly good one, and, being a late flowerer, it may be worthy of perpetuation. It was not stated of which variety it was a "sport."

CATALOGUES RECEIVED.

W. H. ROGERS, 132, High Street, Southampton—Vegetable and Flower Seeds.

CHARLES TURNER, Royal Nursery, Slough—Seed Catalogue.

RICHARD CLEAVER, Bore Street, Lichfield—Seed Catalogue.

KELWAY & SON, Langport, Somerset—Manual for 1886.

W. DRUMMOND & SONS, Stirling—Vegetable and Flower Seeds.

WILLIAM STRIKE, Stockton-on-Tees—Descriptive List of Flower and Vegetable Seeds.
BARR & SON, King Street, Covent Garden—Descriptive List of Bulbs and Plants.
HOOPER & Co., Covent Garden—Spring List.
W. FELL & Co, Hexham—Trade Seed Guide.
T. WARE, Tottenham—Flower Seeds of Hardy Perennials and Hardy Florists' Flowers, Greenhouse Plants, Novelties, &c.
KENT & BRYDON, Darlington—Seeds.
J. D. BUTTS, Barnstaple—Garden Seeds.
LUCOMBE, PINCE & Co., Exeter—Garden Seeds.
HAAGE & SCHMIDT, Erfurt—Plants and Seeds.
V. DOPPLEB, Erfurt—Seeds and Plants.
W. DRUMMOND & SONS, 58, Dawson Street, Dublin—Vegetable and Flower Seeds.
DICKSONS & Co, 1, Waterloo Place, Edinburgh—Vegetable and Flower Seeds.
A. B. CLEVELAND & Co, Cape Vincent, N.Y., U.S.A.—Novelties in Peas and Beans.
W. B. SMALE, 30 and 31, Fleet Street, Torquay—Seed Catalogue.
DOBIE & MASON, 66, Deansgate, and 22, Oak Street, Manchester—Seeds.
BRUANT, Poitiers, Vienne, France—New Plants.
W. P. LAIRD & SINCLAIR, 73, Nethergate, Dundee—Vegetable and Flower Seeds.
HOGG & WOOD, Coldstream, N.B.—Garden Seeds.
E. P. DIXON, Hull—Garden and Farm Seeds.
WILLIAM SHAND, New Street, Lancaster—Vegetable and Flower Seeds.
RICHARD SMITH & CO., Worcester—Garden and Flower Seeds.
W. M. CROWE, Upton, Essex—New and Choice Plants.
REUBEN FOWLER, Bedale—Garden Seeds.

COMMUNICATIONS RECEIVED:—G. N.—A. H. K. (many thanks).—F. Sander & Co.—F. W. B.—H. H.—J. C. M.—W. H. (many thanks).—W. W.—J. B. D.—A. Bate (next week).—H. J. Ross (next week).—T. W.—G. S.—W. Thompson.—J. J. W.—J. G. Baker.—A. F.—T. B.—W. P.—A. D.—W. E. D.—W. C.—D. S.—F. W. B.

DIED.—WILLIAM BROWN, of Brent Nurseries, Hendon, on January 7, aged fifty-two.

Markets.

COVENT GARDEN, January 14.

BUSINESS remains at a standstill, owing to the frost, with little or nothing reaching us. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0	Ficus elastica, each	1 6	7 0
Arbo. vitæ (golden), per dozen	..	6 0–18 0	Ferns, in variety, per dozen	..	4 0–18 0
— (common) dozen	6 0	12 0	Foliage Plants, various, each	..	2 0–10 0
Arum Lilies, dozen	12 0	18 0	Hyacinths, per doz.	6 0	9 0
Azaleas, per doz.	24 0	42 0	Marguerite Daisy, per dozen	..	8 0–12 0
Begonias, per dozen	6 0	12 0	Myrtles, per dozen	6 0	12 0
Bouvardia, doz	12 0	18 0	Palms in var., each	2 6	21 0
Cineraria, per doz.	10 0	12 0	Pelargoniums, scarlet, per dozen	..	6 0– 9 0
Cyclamen, 12 pots	12 0	24 0	Poinsettia, per dozen	..	12 0–18 0
Cyperus, per dozen	4 0	12 0	Primulas, single, 12 pots	..	4 0– 6 0
Dracæna terminalis, per dozen	..	30 0–60 0	Tulips, 12 pots	..	6 0– 9 0
— viridis, per doz.	12 0	24 0			
Erica, various, doz.	12 0	24 0			
Euonymus, in var., per dozen	..	6 0–18 0			
Evergreens, in var., per dozen	..	6 0–24 0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Abutilon, 12 bunches	2 0	4 0	Lilium longiflorum, 12 blooms	..	9 0–12 0
Acacia (Mimosa), Fr., per bunch	..	0 6– 1 0	Marguerites, 12 bun.	4 0	8 0
Arum Lilies, 12 blms.	4 0	9 0	Pelargoniums, per 12 trusses	..	1 6– 2 0
Azalea, 12 sprays	..	1 0– 1 6	— scarlet, 12 trusses	0 9	1 0
Bouvardias, per bun.	0 6	1 0	Poinsettia, 12 blms.	4 0	8 0
Camellias, 12 blms.	3 0	8 0	Primula, double, bun.	1 0	1 6
Carnations, 12 blms.	1 0	3 0	— single, per bunch	0 6	..
Chrysanth., 12 blms.	2 0	4 0	Roses (indoor), per dozen	..	1 0– 3 0
— 12 bunches	..	9 0–18 0	— Tea, French, doz.	0 9	1 6
Cyclamen, doz. blms.	0 4	0 6	— red, French, doz.	2 0	4 0
Epiphyllum, dozen blooms	..	0 6– 1 0	Tropæolum, 12 bun.	2 0	3 0
Eucharis, per dozen	4 0	6 0	Tuberoses, 12 blms.	2 0	3 0
Gardenias, 12 blooms	12 0	24 0	Tulips, doz. blooms	1 0	1 6
Hyacinths, Rom., 12 sprays	..	0 9– 1 6	Violets, per bunch	0 3	0 6
Lapageria, white, 12 blooms	..	2 0– 3 0	— Czar, Fr., bunch	1 0	2 0
— red, 12 blooms	..	1 0– 2 0	— Parme, French, per bunch	..	4 0– 6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	6 0	..	Mushrooms, punnet	1 0	1 6
Beans, Kidney, lb.	2 0	..	Mustard and Cress, do.	0 4	..
Beet, red, per dozen	1 0	2 0	Onions, per bushel	4 0	..
Broccoli, bundle	0 9	1 0	Parsley, dozen bunch	2 0	3 0
Cabbages, per dozen	1 6	..	Parsnips, per dozen	1 0	..
Capsicums, per doz.	0 6	..	Potatos, per cwt	4 0	5 0
Carrots, per bunch	0 6	..	,, kidney, per cwt	4 0	5 0
Cauliflowers, per doz.	2 0	3 0	Salsafy, per bundle	0 9	..
Celeriac, per root	0 3	..	Scorzonera, p. bundle	1 0	..
Celery, per bundle	1 6	2 0	Seakale, punnet	1 6	..
Coleworts, doz. bunch	4 0	6 0	Shallots, per pound	0 3	0 9
Cucumbers, each	1 0	1 6	Spinach, per bushel	4 0	6 0
Endive, per dozen	1 0	2 0	Sprouts, per pound	0 3	..
Herbs, per bunch	0 2	..	Sprue, bundle	1 0	..
Leeks, per bunch	0 3	0 4	Tomatos, per lb.	1 0	1 6
Lettuce, per dozen	1 0	1 6	Turnips, bunch	0 6	..

POTATOS.—Magnum Bonums, bad trade, 50s. to 80s.; Regents, 60s. to 80s. per ton; German Reds, 2s. to 2s. 6d. per bag.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0	3 0	Pine-apples, Eng., lb.	1 0	..
— Canadian, barrl.	10 0	14 0	— St. Michael, each	2 6	7 0
Grapes, per lb.	..	1 6	4 0	Pears, per dozen	..	1 0	2 6
Kent Cobs, 100 lb.	30 0	..	— per ½-sieve	..	1 6	3 0
Lemons, per case	..	8 0	10 0				

SEEDS.

LONDON: *Jan.* 13.—There was scarcely anything doing on the seed market to-day, the attendance being very scanty. More inquiry generally has, however, sprung up for field seeds, and values of all descriptions show considerable firmness. There are a few parcels of English red Clover seed now offering. There is no alteration in Trefoil, Alsike, or white Clover. Hemp and Canary seed have a dragging sale at late figures. Feeding Linseed continues to tend against holders. There is no change in Haricot Beans or blue boiling Peas. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

MARK LANE: *Jan.* 11.—No change was made in quotations of either English or foreign Wheat, but business was upon a very small scale in either. Flour remained dull, and also without quotable alteration. Grinding Barley was barely up to last Monday's value. Oats on the week show 3*d.* to 6*d.* advance, with a steady trade. Beans were firm, and Peas 6*d.* higher than on this day week.

Jan. 13.—The business in every department to-day was of very limited extent. Wheat and flour were written nominally unaltered from lack of business. Barley was quiet. No change occurred in the value of Beans or Peas, and for Oats the market was firm, but with a quiet trade.

Average prices of corn for the week ending Jan. 9:—Wheat, 29*s.* 10*d.*; Barley, 28*s.* 10*d.*; Oats, 18*s.* 1*d.* For the corresponding period last year:—Wheat, 32*s.* 7*d.*; Barley, 31*s.* 7*d.*; Oats, 19*s.* 11*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Jan.* 13.—Green vegetables and fruits are increasing in supply; prices slightly lower. Quotations:—Carrots, in sacks, 30*s.* to 45*s.* per ton; Mangels, 20*s.* to 22*s.* 6*d.* do.; Swede Turnips, 25*s.* to 30*s.* do.; white do., 30*s.* to 55*s.* do.; Apples, 2*s.* to 4*s.* per sieve; Pears, 2*s.* to 4*s.* 6*d.* do.; Brussels Sprouts, 2*s.* to 2*s.* 6*d.* per half-sieve; do., 4*s.* to 4*s.* 6*d.* per sieve; Beetroots, 2*s.* 6*d.* to 4*s.* per tally; Cabbages, 2*s.* 6*d.* to 5*s.* 6*d.* do.; Savoys, 4*s.* to 7*s.* 6*d.* do.; Cauliflowers, 4*s.* to 7*s.* 6*d.* do.; Spinach, 3*s.* to 4*s.* per sieve; bunch Turnips, 3*s.* 6*d.* to 4*s.* 6*d.* per dozen bunches; do. Carrots, 2*s.* to 2*s.* 6*d.* do.; do. greens, 2*s.* 6*d.* to 3*s.* 6*d.* do.; do. Celery, 4*s.* to 8*s.* do.; do. Parsley, 2*s.* to 2*s.* 6*d.* do.; Onions, 4*s.* 6*d.* to 6*s.* per cwt.

STRATFORD: *Jan.* 12.—Supplies have been good during the past week, as also the attendance of buyers, consequently a fair trade has been done at the following prices:—Cabbages, 4*s.* 6*d.* to 5*s.* per tally; Savoys, 4*s.* 6*d.* to 7*s.* do.; greens, bunch, 3*s.* per dozen; Sprouts, 3*s.* 6*d.* to 4*s.* per sieve; Mangels, 20*s.* to 22*s.* per ton; Turnips, 50*s.* to 70*s.* do.; Carrots, cattle feeding, 28*s.* to 35*s.* do.; do. household, 40*s.* to 60*s.* do.; Swedes, 22*s.* to 25*s.* do.; Apples, 3*s.* 6*d.* to 5*s.* 6*d.* per bushel; Onions, 60*s.* to 75*s.* per ton; Rhubarb, 3*s.* to 3*s.* 9*d.* per dozen; Celery, 9*s.* to 12*s.* do.

POTATOS.

BOROUGH AND SPITALFIELDS: *Jan.* 12.—Supplies were not to say heavy, but fully adequate to the demand, which was decidedly light, and prices were as follows:—Regents, 60*s.* to 120*s.*; Magnum Bonums, 50*s.* to 100*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Jan.* 13.—There was a good trade for the superior kinds, no sale for inferior sorts: fair supplies. Quotations:—Magnums, 50*s.* to 70*s.*; Regents, 55*s.* to 65*s.*; Victorias, 55*s.* to 60*s.*; and Champions, 50*s.* to 55*s.* per ton.

STRATFORD: *Jan.* 12.—Quotations:—Magnums, 50*s.* to 75*s.*; Regents, 55*s.* to 70*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 41 bags from Rotterdam, 930 bags from Hamburg, and 200 sacks from St. Nazaire.

HAY.

WHITECHAPEL: *Jan.* 12.—Supplies were rather larger than last reported, but trade very bad, and although slow prices continued high, from extra cost of cartage. Quotations:—Clover, prime, 95*s.* to 112*s.*; inferior, 70*s.* to 90*s.*; hay, prime, 72*s.* to 102*s.* 6*d.*; inferior, 50*s.* to 65*s.*; and straw, 30*s.* to 40*s.* per load.

Jan. 14.—There was a larger supply on sale. The trade was very dull, as follows:—Prime Clover, 95*s.* to 105*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 60*s.* to 90*s.*; inferior, 40*s.* to 60*s.*; and straw, 29*s.* to 40*s.* per load.

CUMBERLAND (Regent's Park): *Jan.* 12.—There was a larger supply than on last market day, and quite equal to the demand. Buyers were waiting for prices to recede upon change of weather. Quotations:—Clover, best, 90*s.* to 105*s.*; seconds, 70*s.* to 90*s.*; hay, best, 75*s.* to 90*s.*; seconds, 60*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Jan.* 12.—Quotations:—Hay, 70*s.* to 85*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 36*s.* per load.

CHARLES SHARPE & CO.'S
SPECIALTIES, 1885-6.

SHARPE'S PEA. 2*s.* per packet. — **SIR F. A. MILBANK.** A magnificent, large, Blue Wrinkled Marrow. Peas extra large—deep green. Very hardy. The finest of all.

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SHARPE'S PEA. 2*s.* per pint. — **PARAGON.** Hardiest and earliest large Wrinkled Marrow. Successive crops can be had for four months. **First-class Certificate R.H.S., 1884.**

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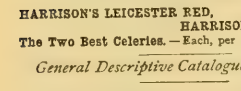
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The Two Best Celeries.—Each, per packet, 1s, post-free.

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SILVER, **£5 5s.** GOLD, **£12 12s.**



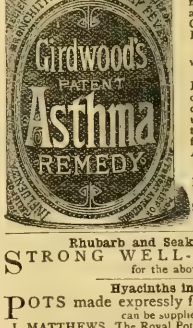
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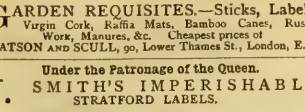
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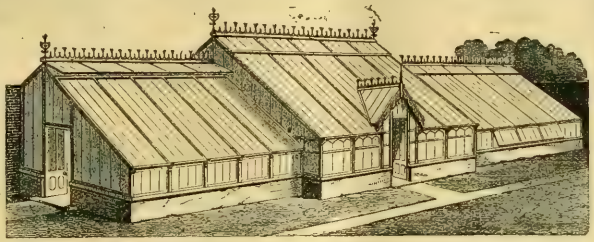
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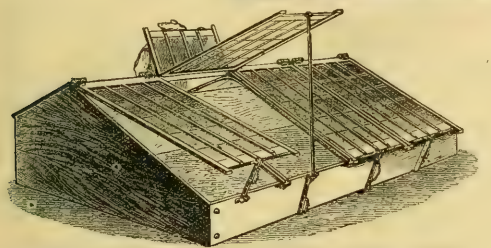
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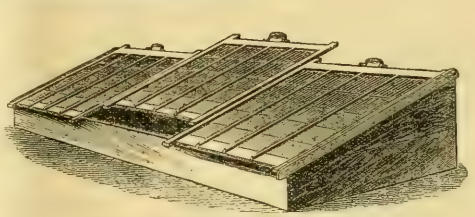


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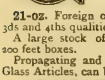
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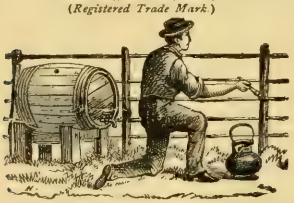


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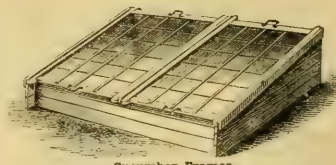
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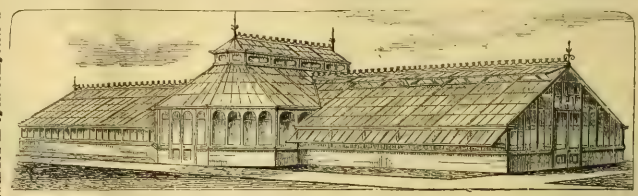
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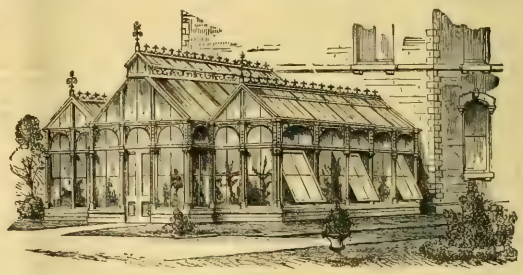
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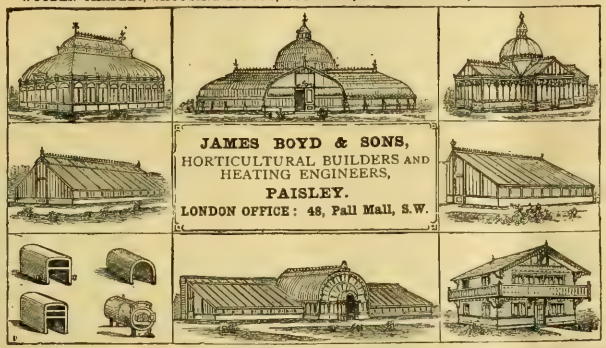


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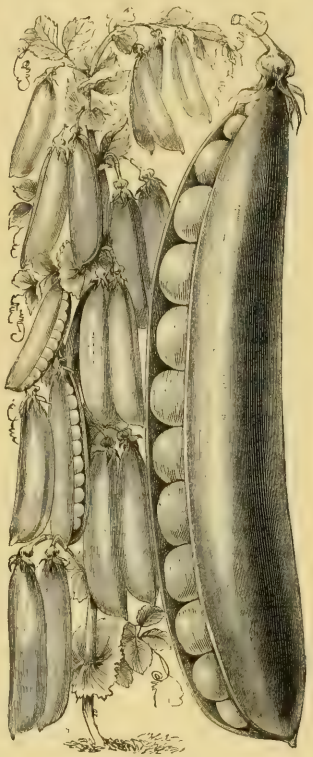
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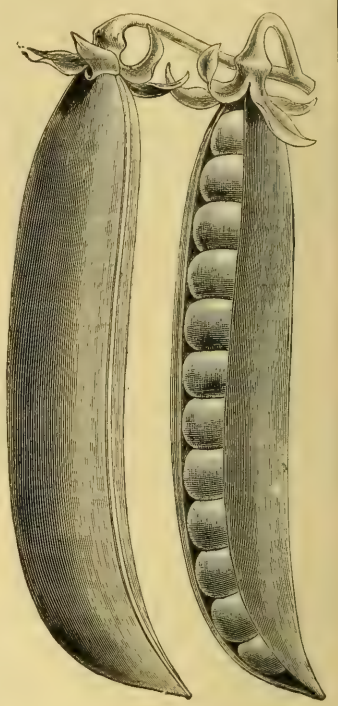
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THE

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GARDENERS' CHRONICLE OFFICE

TELEGRAMS.

NOTICE to Correspondents, Advertisers, Subscribers, and Others. The Registered Address for Foreign and Inland Telegrams is "GARDCHRON, LONDON."

ROYAL HORTICULTURAL SOCIETY.

The President, Council, and Fellows of the Royal Horticultural Society will hold their first ANNUAL DINNER on TUESDAY, February 9, the day of the Annual General Meeting. The President, Sir Trevor Lawrence, Bart., M.P., in the Chair. The Dinner will be held at the "Criterion," at 6.30 P.M. precisely.

Tickets, 30s. each (including wine), must be applied for on or before SATURDAY, February 6. Further information, and Tickets, can be obtained from WILLIAM LEE, Esq., Downside, Leatherhead ; or at the Offices of the Royal Horticultural Society, South Kensington.

N.B.—Each Fellow can purchase one Extra Ticket for a Friend.

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HARDY HERBACEOUS PLANTS. One Hundred good clumps, one of a sort, for 10s. Must sell to clear ground. Cash.

EDWARD MORSE, Nurseryman, Epsom.

PRIVET.—A Large Stock of exceedingly fine bushy oval-leaved Privet, 4 to 6 feet high. Price on application to

T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

LAXTON'S NEW APPLE, SEPTEMBER BEAUTY, DARTMOUTH CRAB, and other New FRUITS. Particulars from

T. LAXTON, Bedford.

Mushrooms for the Million.

MORLE'S celebrated MILLTRACK SPAWN, 4s. 6d. per bushel (16 cakes), 6d. per bushel, extra for package ; 2 cakes as samples, post-free 1s. 3d. Trade price on application.

MORLE AND CO., Child's Hill Farm, N.W., and 1 and 2, Fenchurch Street, E.C.

To the Trade.

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.

Seed Growing Establishmen, Wisbech.

WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers' and Trade references.

Floral Commission Agency.

A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of choice CUT FLOWERS in any quantity. A. Hill having had a large personal experience as Salesman in Covent Garden Flower Market for many years, is thus enabled to obtain the Highest Market Prices. Account Sales sent daily. Bankers' and good Trade references. All Consignments to be addressed as above. Boxes, Baskets, and Labels supplied.

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH AND BARNHAM. ACCOUNT SALES sent daily, and CHEQUES forwarded weekly. BANKERS and TRADE REFERENCES. BASKETS and LABELS supplied.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.

The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Strset, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

LARCH, 1-yr. 1-yr., 5s. 6d. ; 1 to 1½ foot, 10s. 6d. ; 1½ to 2 feet, 16s. ; 2 to 3 feet, 20s. ; 3 to 4 feet, 25s. ; 4 to 5 feet, 32s. 6d. per 1000. Nett cash. Ground wanted. Trade prices on application. Apply at once,

The Nurseries, Flanybythen.

Cheap Offer.

DWARF ROSES on Seedling Briers, first-class Plants, best sorts, Tea and H.P., 20s. per 100 ; second-class Plants, 10s. per 100.

STANDARD ROSES, first-class Plants, best sorts, 60s. per 100.

SEEDLING BRIERS, 2s. and 5s. per 1000.

Apply, B., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

ROSES—ROSES—ROSES.—50 Choice Perpetuals for 21s. ; purchaser's selection from 400 best varieties. List of names on application. 24 Choice Standards or Half-standards, 21s. ; purchaser's selection.

Cash with order.

JAMES WALTERS, Rose Grower, Mount Radford, Exeter.

CHOICE FLOWER SEEDS for 1886. ONE FARTHING A PACKET!

AGENTS WANTED EVERYWHERE. Specimen Parcel of Eighty-four different Packets post-free, 1s. 9d.

LLOYD BOOTH, Flower Seed Merchant, Loudwater, High Wycombe.

Platanus occidentalis (London Plane).

WRUMSEY has still a fine lot of well-grown Trees to offer :—10 to 11 feet, 30s. per dozen ; 12 to 14 feet, 42s. and 48s. per dozen. A few thousand very fine Dwarf H.P. ROSES ; prices (low) on application.

Joyning's Nurseries, Waltham Cross.

Double Tuberoses.

MORLE AND CO. offer :—AMERICAN PEARL, very fine, 10s. per 100 ; DOUBLE AFRICAN, extra fine, 10s. per 100 ; ditto, largest ever offered, 15s. per 100—much cheaper by the 1000.

1 and 2 and 162, Fenchurch Street, E.C.

CHRYSANTHEMUMS.—Five Hundred varieties, including the best of the Exhibition, Decorative, Early Flowering, and Single Varieties. Strong Cuttings now ready, buyer's selection, 1s. 6d. per dozen, 10s. per 100 ; Plants, 2s. 6d. per dozen, 16s. per 100 ; now ready. Many of the best growers in the country are supplied from this collection. For the grand new sorts, see CATALOGUE, one stamp.

WM. ETHERINGTON, Manor House, Swanscombe, Kent.

CALADIUM ARGYRITES. Large sound Bulbs, 6s. per dozen, or will EXCHANGE for EUCHARIS AMAZONICA Bulbs warranted free from Eucharis Mite, or CARNATION MISS JOLLIFFE.

TURNER BROS., Florists, Green Hill Nursery, Allerton, Liverpool.

1886—Trade Price-Current—1886

PETER LAWSON AND SON (Limited), Edinburgh, have to intimate that their Annual CATALOGUE of GARDEN SEEDS, &c., has now been distributed, but should any of their Correspondents not have received one, a Copy will be posted upon application.

Vines—Vines—Vines.

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.

The Vineyard and Nurseries, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

GRAPES THIS YEAR.—Grand Fruiting Canes, 7s. 6d., 10s. 6d., and 12s. 6d. ; also Planting Canes, 3s. 6d. and 5s. Perfectly ripened without bottom-heat. JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots. F. R. KINGHORN, Nurseryman, Richmond, Surrey.

The Best, the Cheapest.

TRAINED PEACHES and NECTARINES ; extra fine, clean grown trees, well-rooted and thoroughly ripened ; FRUITING TREES in Pots, GRAPE VINES, ROSES, and SEAKALE. Large stock at reduced prices. Cash Price List on application to

WILL TAYLER, Osborn Nursery, Hampton, Middlesex.

STRAWBERRIES (Sir Joseph Paxton). —100,000 strong, well-rooted Runners for sale. Apply

JAMES GUYTON, Strawberry Grower, Belton, Great Yarmouth.

Seed Potatos.

H. AND F. SHARPE will be pleased to make Special Offers of their choice selected stocks of SEED POTATOS, comprising all the best kinds in cultivation. Purchasers of a quantity treated liberally.

Seed Growing Establishment, Wisbech.

LAXTON'S "WHITE HEBRON" and "UTILITY." New Early and Late Keeping POTATOS. Particulars from

T. LAXTON, Seed Grower, Bedford.

SALES BY AUCTION.

Monday Next.—(Sale No. 7072.)

6000 splendid Bulbs of LILIUM AURATUM, from Japan; 5000 double dwarf PEARL TUBEROSES, from America; 40,000 KENTIA SEEDS, from New South Wales; quantity of very fine Bulbs of LILIUM WASHINGTONIANUM, Japanese IRIS, EUCHARIS AMAZONICA, TIGRIDIAS, GLADIOLI, home-grown LILIES, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT January 25, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next—(Sale, No. 7075.)

FRUIT TREES, ROSES, SHRUBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Room, 38 King Street, Covent Garden, W.C., on WEDNESDAY NEXT, January 27, at half-past 12 o'Clock precisely (weather permitting), several hundred first-class Standard and Dwarf ROSES, FRUIT TREES of sorts, CUPRESSUS, THUIAS, YEWS, LAURELS, and other SHRUBS, Hardy BORDER PLANTS in quantity, LILIUMS, GLADIOLI, and other BULBS, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7076.)

VALUABLE IMPORTED and SEMI-ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on THURSDAY NEXT, January 28, a consignment of IMPORTED and SEMI-ESTABLISHED ORCHIDS, from Germany, including Cattleya velutina, C. amethystina, C. Loddigesii, Lælia superbiens, Zygopetalum crinitum grandiflorum, Z. species (very fine), Epidendrums, Oncidiums, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7076.)

The first portion of the valuable COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will (weather permitting) include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, January 28, at half-past 12 o'Clock precisely, by order of the Executors, about 120 lots of ESTABLISHED ORCHIDS, in flower or bud, from the above Collection, comprising well-grown Cattleyas, Lælias, Odontoglossums, Cypripediums, Dendrobes, &c.

On view morning of Sale, and Catalogues had.

The Extensive Collection of Orchids

Formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS has received instructions from the Executors to SELL by AUCTION, without the least reserve, at his Great Rooms, 38, King Street, Covent Garden, W.C., the valuable collection of ORCHIDS, formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands, consisting of hundreds of fine plants of Cattleya Mendelii, C. Mossiæ, C. Trianæ, C. amethystoglossa, C. Dowiana, C. aurea, and C. gigas; splendid plants of Cœlogyne cristata, including Chatsworth var.; Cypripediums of sorts; Lælia elegans in variety, &c.; also a magnificent lot of Odontoglossum crispum, O. Pescatorei, O. Halli, O. Rossi majus, and others—all in splendid health.

Dates of Sale will be announced in future Advertisements.

Wood Green, N.

Within a few minutes' walk of Wood Green and Bowes' Park Stations on the Great Northern Railway, and Palace Gates on the Great Eastern Railway.

PRELIMINARY NOTICE.—IMPORTANT.

To Fruit Growers, Florists, and Others.

MESSRS. E. JACKSON AND SON are instructed by the Executrix of the late R. J. Kinstry, Esq., to SELL by AUCTION (with possession), at The Mart, in the month of JANUARY NEXT, the VALUABLE FREEHOLD PROPERTY, known as The Vineries, with extensive frontages to Nightingale and Truro Roads, containing about 1 Acre of Nursery Ground, upon which are erected Five Spacious Glasshouses, and about 300 choice Vines and Fruit Trees in full maturity; Propagating-houses, Pits, and Outbuildings, and a Cottage Residence in the Centre of the Grounds, the whole of the estimated value of £150 per annum. A portion of the Purchase-money can remain on Mortgage.

May be viewed by applying on the premises (Sundays excepted) between the hours of 11 and 4. Particulars of Messrs. HOLLINGSWORTH AND CO., Solicitors, 4, East India Avenue, Leadenhall Street, E.C.; and of Messrs. E. JACKSON AND SON, Land Agents and Auctioneers, 8, Park Avenue, Wood Green, N., and 15, King Street, Cheapside, E.C.

Tuesday Next.

ORCHIDS in FLOWER.—SPECIAL SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, January 26, at half-past 12 o'Clock precisely, 200 lots of ORCHIDS in FLOWER and in BUD, from various well known Collections, including the following:—

Odontoglossum Alexandræ, several very fine varieties	Angræcum sesquipedale, two spikes
,, Rossii majus	Dendrobium Ainsworthii
Cœlogyne cristata (Chatsworth variety) several plants	Phalænopsis speciosa, the finest plant in the country
	,, amabilis

and many others.

On view morning of Sale, and Catalogues had.

Tooting, S.W.

(Ten minutes' walk from the Station)

MESSRS. PROTHEROE AND MORRIS are instructed by the Proprietor, Mr. Rees, to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on WEDNESDAY, January 27, at 12 o'Clock precisely, a portion of the capital NURSERY STOCK, including 3000 Aucubas, 6 inches to 1 foot; 6000 Laurels of sorts, 1000 English Yews, several thousands of Ornamental Shrubs and Trees in border, 3000 Limes, 8 to 10 feet; 2000 Currants, Herbaceous Plants in great variety, and large quantities of Standard Trees, Rhododendrons, Conifers, Hollies, and other general NURSERY Stock.

May be viewed two days prior to the Sale. Catalogues may be had on the Premises, or of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.

Wednesday Next.

1500 magnificent Bulbs of LILIUM AURATUM, and numerous distinct and beautiful varieties of IRIS, from Japan; a very fine lot of LILIUMS and CALOCHORTI, from California, including splendid Bulbs of L. Washingtonianum, Parryi, and others; 400 Standard and other ROSES, from an English Nursery; CAMELLIAS, AZALEAS, PALMS, FRUIT TREES, Hardy AZALEAS, 300 CARNATIONS and PICOTEES, LILY of the VALLEY, SPIRÆAS, and a general assortment of Hardy English-grown LILIES and BULBS, Rare INDIAN LILIES, 1000 FREESIA REFRACTA ALBA, CYPRIPEDIUM SPECTABILE, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on WEDNESDAY NEXT, January 27, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, January 29, at half-past 12 o'Clock precisely, GALEANDRA BANEI, LYCASTE BARRINGTONIÆ, L. SKINNERI, CATTLEYA MOSSIÆ, C. CITRINA, ODONTOGLOSSUM PULCHELLUM MAJUS, and many other valuable ORCHIDS

On view morning of Sale, and Catalogues had.

BY ORDER OF THE EXECUTORS.

Leytonstone and Wanstead, Essex.

IMPORTANT UNRESERVED SALE of valuable NURSERY STOCK, extending over several acres of ground, the whole having been carefully prepared for removal.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the American Nurseries (adjoining Leytonstone Railway Station), and the Wanstead Nursery, Wanstead Flats (about a mile from Leytonstone and Forest Gate Stations), on WEDNESDAY, February 10, and two following days, at 12 o'Clock precisely each day, without reserve, a large portion of the remarkably well-grown NURSERY STOCK, consisting of a splendid variety of Conifer æ and Evergreen Shrubs adapted for immediate effective planting, ranging in height from 2 to 10 feet; 20,000 Ornamental and Forest Trees in variety, 5300 very fine Limes, 8 to 15 feet; Deciduous Shrubs, selected Fruit Trees, beautiful Standard and Dwarf fine fruiting heads, and in all the leading kinds of Apples, Pears, Plums, Cherries, Peaches, &c.; hardy American Plants, including a large selection of Rhododendrons from the noted collection of named and hybrid varieties; 1000 Standard, Dwarf, and Climbing Roses of all the finest sorts; Dense Stock, comprising CAMELLIAS, AZALEAS, and other GREENHOUSE PLANTS.

The stock may now be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C., and Leytonstone, E.

Valuable Collection of Orchids for Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN) Limited, wish to announce that the CATALOGUE of the large and valuable COLLECTION of ORCHIDS formed by the late R. P. Percival, Esq., of Burkdale, Southport, is now ready, and will be sent post-free on application. The collection is now ready for inspection, and orders will be booked; but no Plants will be sent out until TUESDAY, February 2. See Catalogues for full particulars.

The Collection includes magnificent specimens of all the leading varieties of ORCHIDS, and many new and rare varieties.

The Nurseries are one mile from Clapham Junction, and a quarter of a mile from Wandsworth Common Station.

The Collection may be viewed by appointment.

TELEGRAPHIC ADDRESS—"COWAN LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD STOCK, some 100 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested should write to call for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

Seed Business.

The Cranston Nursery and Seed Company (Limited), in Liquidation.

TO BE SOLD, as a going concern, the old-established SEED BUSINESS now carried on in Broad Street, Ludgate Hill.

Apply to the LIQUIDATOR, King's Acre, Hereford; or to Messrs. Protheroe & Morris, 67 and 68, Cheapside, London, E.C.

FOR SALE, a SEED, FRUIT, and ALE and PORTER BUSINESS, situate in a good Market Town in the Midlands. The Premises consist of a first-class Dwelling-house, &c., and two good front Shops in main street, and are well adapted for carrying on the above Trades.

For further particulars, apply to JAMES BAND, Chapel Fields, Coventry.

Splendid Chance for an Industrious Man.

DWELLING-HOUSE (double-fronted), six large Glass Houses (some heated), and Garden Ground at Tottenham. Rent only £30; may be purchased at £40 per year, without interest.

Apply, Mr. READ, 6, Worship Street, E.C.

TO LET, VINERIES, fitted with Hot-water Apparatus. A Dwelling-house can also be had if desired. Apply to J. R. JOSCELYNE, Panfield, near Braintree, Essex.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

WHOLESALE SEED CATALOGUE.—Our Catalogue of Garden and Flower Seeds, Novelties, and Bulbs for Spring Planting, is now ready, and may be had on application. All our Customers should have already received one by post, and they will oblige by advising us if not to hand.

The above also includes List of a few choice Lilies just to hand from Japan—L. auratum, L. longiflorum, L. Krameri, &c.

WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

Sharpe's Seeds.

CHARLES SHARPE AND CO.'S Illustrated and Descriptive RETAIL SEED LIST for 1886, with Illustrations of all their Novelties, will be forwarded post-free on application. Copy of above has been posted to all Customers.

SHARPE'S COLLECTION of SEEDS are the best and cheapest. Boxes, 10s. 6d., 15s., 21s., 30s., 42s., and 63s each.

CHARLES SHARPE AND CO., Seed Merchants, Sleaford.

HENRY ROCK has to offer MANETTI STOCKS, well-eyed, dwarf, GLOIRE DE DIJON. Cheap and good for cash.

Kemberton, Shifnal, Salop.

SURPLUS STOCK.

Special Offer to the Trade.	s.	d.	
PEAS—Harrison's Glory	9	6	per bu hel.
,, Kentish Invicta	10	0	,,
,, Paradise Marrow	8	6	,,
,, Prizetaker	10	6	,,
,, Pride of the Market	10	0	,,
,, Princess Royal	12	0	,,
,, McLean's Advancer	14	0	,,
,, ,, Little Gem	17	0	,,
,, ,, Prince of Wales	20	0	,,
,, ,, Premier	22	6	,,
BEANS—Green Longpod	8	6	,,
,, Dwarf Kidney, leading varieties ..	11	0	,,
CARROT—Early Scarlet Horn	70	0	per cwt.
,, Long Red Surrey	55	0	,,
RADISH—Wood's Early Frame	23	0	per bushel.
,, Long Scarlet	22	0	,,
TURNIP—Green-top Yellow Scotch ..	17	0	,,
,, Purple	18	0	,,
,, Hartley's Short-top Swede	18	6	,,

All are nice samples. Packed and Beans well Hhad-picked.

ALFRED LEGERTON,
Seed Merchant, 5, Aldgate, London, E.

PALMS.—A few hundreds of splendidly grown healthy Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, Areca lutescens, and Euterpe edulis, 12 inches high, 4s. per dozen, 25s. per 100; same sorts, 20 inches high, 12s. per dozen, less quantity 24. 3d. each.

FERNS. Strong, healthy, and handsome Lomaria gibba, Adiantum cuneatum (Maidenhair), Pteris tremula, Pteris serrulata, Pteris serrulata cristata, Pteris cretica albo lineata, Pteris argyrea, out of small pots, 20s. per 100, 3s. per dozen.

GARDENIA INTERMEDIA (true), 6s. per dozen.

Packages and parcels post-free.

GARDENER, Holly Lodge, Stamford Hill, London, N.

MORLE AND CO. offer, at special low prices:—

LILIUM AURATUM, large, heavy, firm bulbs.
,, LONGIFLORUM and HARRISII.
,, KRAMERI, very beautiful Rose.
,, SPECIOSUM in variety.
,, THUNBERGIANUM ATROSANGUINEUM.
,, TIGRINUM FORTUNEI.
,, GIGANTEUM, and others.

1 and 2 and 162, Fenchurch Street, London, E.C.

The Nurseries, Trinity Road, Wandsworth Common, S.W.

ROBERT NEAL & SON (R. & G. Neal) begs to offer to Gentlemen, Nurserymen, Builders, and others, the large and varied stock of well-grown FRUIT, FOREST, and other TREES and SHRUBS, too numerous to mention, grown at these Nurseries. The whole of the Stock is remarkably clean and well rooted, and especially adapted for Town planting.

LAING AND CO.'S BEGONIA SEED.—Gold Medal Strain from Prize Plants. All warranted, New Crop. Sealed packets. Choice mixed, from single varieties, 1s. and 2s. 6d. per packet; 5s. and 10s. extra large packets; from double varieties, 2s. 6d. and 5s. per packet. Collections—12 named varieties, separate, 7s. 6d.; 6 named varieties, separate, 4s.

Seedsmen and Florists, Forest Hill, S.E.

ANDRE LEROY'S Nurseries, at Angers, France, the largest and richest in Europe in Collections of FRUIT and ORNAMENTAL TREES, SHRUBS, CAMELLIAS, ROSES, SEEDLINGS, STOCK FRUIT TREES, &c. CATALOGUES sent on application. Freight from Angers to London is very moderate. Medal of Honour at the Universal Exhibition at Paris in 1878.

Orders must be addressed to Messrs. WATSON AND SCULL, 90, Lower Thames Street, London, E.C.

OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c.) on application.

RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

HAMPTON COURT BLACK HAMBURGH VINES.—Extra strong Fruiting Canes of the above and all other leading varieties at greatly reduced prices.

T. JACKSON AND SON, Nurseries, Kingston-on-Thames, and Royal Kitchen Gardens, Hampton Court.

Late White Chrysanthemum.

R. OWEN is now Booking Orders for the above—the best late white known. Splendid habit and free flowering. A grand Market Plant. Awarded 2 First-class Certificates December, 1885. 7s. 6d. per dozen, 50s. per 100. Plants ready in March. Cuttings, 4os. per 100, 6s. per dozen. Specimen bloom, 6 stamps. Orders executed in rotation.

Floral Nurseries, Maidenhead.

LENAULT-HUET, NURSERYMAN, Ussy, Calvados, France, begs to offer the following FOREST TREES, FRUIT TREES, and EVERGREENS, in large quantities:—

Maple, Hornbeam, Quicks, Privet, Hazel, Beech, Ash, Holly, Oak, Lime, Spanish Chestnut, Quince, Cherry, Mahaleb and Avium; Common Apple, St. Julien, Myrobolan; Spruce, Fir, Larch, Pine, Arbor-vitæ. Can be obtained as seedlings and transplanted from one to four years at the cheapest prices.

Samples and CATALOGUES free on application.



HIGH-CLASS
VEGETABLE
AND
FLOWER SEEDS,
INCLUDING
NOVELTIES,
at most moderate prices.

Send for large CATALOGUE (Gratis and Post-Free) and compare.

E. J. JARMAN, The People's Seedsman,
CHARD, SOMERSETSHIRE.

SPECIAL CULTURE OF
FRUIT TREES and ROSES.
A large and select stock is now offered for Sale.
The Illustrated and Descriptive CATALOGUE of FRUITS post-free.
The Descriptive CATALOGUE of ROSES post-free.

THOMAS RIVERS & SON,
The Nurseries, Sawbridgeworth, Herts.

ROSES, LILACS, ORCHIDS, &c.

ONLY FRESH CUT FLOWERS SENT.

CUT FLOWERS.

Paris to London in ten hours. Sample Box, 20s.

ANDERSON, LANGBEHN & CO.,
22, Rue de Dunkerque, Paris.
TELEGRAMS: "ANLERBEHN, PARIS."



CUTBUSH'S MILL-TRACK MUSHROOM SPAWN.—Too well known to require description. Price 6*s.* per bushel (1*s.* extra per bushel for package), or 6*d.* per cake; free by parcel post, 1*s.*
None genuine unless in sealed packages and printed cultural directions enclosed, with our signature attached.
WM. CUTBUSH AND SON (Limited), Nurserymen and Seed Merchants, Highgate Nurseries, N.



PINE-APPLE NURSERY,
MAIDA VALE,
LONDON, N.W.
New Autumn LIST of Cheap Offers in Ornamental Plants, sent on application, for the Stove, Greenhouse, and Garden. Choice quality.
HENDERSON & SON.

100 HARDY GARDEN FLOWERS, hardy herbaceous plants, in 100 varieties, 16*s.*, 21*s.*
100 STOVE or GREENHOUSE PLANTS, the most beautiful flowering and ornamental foliage, in 100 varieties, for 63*s.* and 105*s.*; or in 50 varieties, 42*s.* the 100.
12 AZALEA INDICA, splendid varieties for 18*s.*; 12 hardy Ghent varieties, 18*s.*; 12 A. Mollis, all the above covered with flower-buds, 12*s.* and 18*s.*
12 CAMELLIAS, covered with buds, 21*s.* and 30*s.*
12 DRACÆNAS, 12 sorts, very ornamental, 6*s.*, 9*s.*
12 CROTONS, beautiful sorts, 6*s.*, 12*s.*
12 GARDENIAS, large, set well for flower.
12 MAIDENHAIR FERNS, 12 sorts, 6*s.*, 9*s.*
12 PALMS, Ornamental varieties, 6*s.*, 9*s.*, 12*s.*
12 EUCHARIS AMAZONICA (Amazon Lily), 6*s.*, 9*s.*, 12*s.*
12 TREE CARNATIONS, choice sorts, 6*s.*
12 AFRICAN ASPARAGUS, a lovely plant, 18*s.*, 21*s.*
12 BOUVARDIAS, in 12 fine varieties, 6*s.*, 9*s.*
In less quantities at the same rate.

VEGETABLE & FLOWER
SEEDS
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CARTERS' TELEPHONE.
CARTERS' PRIDE of the MARKET.

HAVING PROVED at our Experimental Grounds that SPURIOUS VARIETIES of these splendid Peas have been in some instances sold last year under the above names, and being determined that the character of these magnificent Peas shall be protected, we take this opportunity to Caution the Public against purchasing from irresponsible sources.

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SEASON 1886.

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THE

Gardeners' Chronicle.

SATURDAY, JANUARY 23, 1886.

CAPE BULBS.*

I HAVE not, like some of my predecessors, had any experience worth taking into account in practical gardening. But I hold strongly to the opinion, that botanists and gardeners should work together hand in hand, and continually consult one another, and that if they do not do this the work of both will be so much the worse for it. For instance, in these plants we are now considering a description drawn from dried specimens alone is always more or less incomplete and unsatisfactory, and in the Aloineæ to draw up any reasonably satisfactory description from dried specimens is altogether out of the question.

Of all the members of the rich Cape flora, which includes the garden Heaths, Pelargoniums, and Mesembryanthemums, these bulbs are the plants which possess the greatest horticultural interest, and are at the present time exciting the greatest share of attention. One of the most interesting facts in botanical geography is the way in which the three bulb-bearing natural orders, Iridaceæ, Amaryllidaceæ, and Liliaceæ, are concentrated at the southern extremity of the African continent. All that I can attempt to do in the time we have at command is to lay before you the broad general facts of the case.

In Iridaceæ there are in the whole world 57 genera and 700 species; of these, 32 genera and 374 species belong to the Cape, or more than half the total number. Of the genera, 20 are endemic, 9 found also in Tropical Africa, and only three widely dispersed. The large genera, taking them in order of size, are Gladiolus, Moræa, Geissorhiza, Tritonia, Babiana, Hesperantha, Ixia, Romulea, and Lapeyrousia.

In Amaryllidaceæ there are in the whole world 64 genera and 650 species; and of these, 21 genera and 154 species belong to the Cape—one-third of the genera, and a quarter of the species. Of the genera, 13 are endemic, 3 also found in Tropical Africa, and 5 widely dispersed. The large Cape genera are Hypoxis, Hæmanthus, and Cyrtanthus.

In Liliaceæ there are in the world 187 genera and 2100 species. Of these there are at the Cape 49 genera and 620 species. Of the 49 genera 18 are endemic, 15 found also in Tropical Africa, and 16 widely dispersed. The large Cape genera are Haworthia, Aloe, Gasteria, Asparagus, Ornithogalum, Scilla, Anthericum, Lachenalia, Eriospermum, Bulbine, and Kniphofia.

The area of Africa south of the tropic is about a million square miles. The total area of Cape Colony proper is about a quarter of a million square miles, or about one two-hundredth part of the whole land-area of the world. In the whole world there are in these three orders 308 genera and 3450 species, and

* Read by J. G. Baker, F.R.S., at a meeting of the Horticultural Club, January 12, 1886.

of these 102 genera and 1148 species, or about one-third of the whole number of genera and species, belong to the Cape. Nearly all the Cape species are endemic, and of the 102 genera, 51, or just one-half, are endemic, 27 represented also in Tropical Africa, and 24 are widely dispersed.

Physical Geography and Climate.

In climate one correlates the idea of bulbs with variability in heat or moisture, or usually in both, a high degree of heat in summer, and the need of protection from long periods of drought. Of these 1100 Cape types, about 200 (Bulbine and the four genera of Aloineæ) are succulents; the Asparagaceæ, Anthericeæ, and non-bulbous Iridaceæ (such as Aristea, Witsenia, and Bobartia), are about 150 species, leaving a balance of 800 species in which the rootstock is either a bulb, corm, or tuber. Turning to the Cyclopædia nearest at hand, I find the physical geography summed up as follows: — "The general character of the scenery is rocky and arid mountains, naked and uncultivated stony valleys without a tree, a prevailing monotony, absence of shade, and verdure, and water."

For the whole region, the coldest months are June and July, the warmest December and January. For Cape Town, the annual mean temperature is 62° Fahr., the minimum in the shade being 34°, and the maximum about 100°. All along the south coast there is very little variation in temperature. On Table Mountain, which is nearly 4000 feet above the sea level, snow lies sometimes for two or three days; at Cape Town the annual rainfall is 24 inches. In the province of Worcester, which lies in the interior north-east of Cape Town, the annual rainfall sinks to 12 inches. Along the south coast it increases as we travel east, and reaches 33 inches at Graham's Town. Parallel with the south coast the land rises in three successive terraces the highest of these, the great Karoo, has an elevation of 3000 feet, a length from east to west of 300 miles, and of 80 miles from north to south. For nine months of the year the soil is quite bare, and, even in the rainy season, the vegetation is very scanty. The highest peak of the Graaf Reinet Mountains, the Sneeuberg, is above 10,000 feet above the sea level, and here the snow lies for three or four months. The highest peak of the eastern range of hills, the Winterberg, is 7000 feet above the sea level.

Relation of the Cape Flora to that of Tropical Africa.

I should like to say a word about the relationship of the Cape flora to that of Tropical Africa. It would seem that just as in Europe there was a glacial epoch and when a warmer climate set in, the cold-loving plants were pushed out to the north and the mountain-tops, so in Africa there has been since the present vegetable genera were differentiated an era of universal cold, and the plants that then flourished over the whole continent have been pushed out to the Cape and up to the mountain summits of the intertropical zone. As I previously pointed out, fifty-one genera out of 102 are confined to the Cape, but of characteristically Cape genera in these three orders alone, outlying representatives of twenty-seven are found high up amongst the intertropical mountains.

Flowering Season of South Temperate Types.

In conclusion, as a subject for discussion this evening, what I want to ask you, as an assembly of experienced practical horticulturists, is this, How far is it possible by cultivation to change the natural flowering time of these south temperate plants? In the three great floras of the south temperate there are altogether probably not less than 25,000 plants, say 25 per cent. of the whole of the vegetable kingdom. Which are the plants, or if that be too comprehensive a question, which are types of the natural orders about which we are speaking, for which we can alter the natural flowering season, so as to grow them in the open air in the English climate and which are types for which we cannot do this? Upon what does the difference depend, and in the case for which it is possible to effect a material change what are the means by which it can be accomplished most successfully?

Summary of Statistics.

Fifty-one genera endemic, 27 also Tropical African, 24 only widely dispersed. Total, 102.

	World.		Cape.	
	Genera.	Species.	Genera.	Species.
Iridaceæ	57	700	32	374
Amaryllidaceæ	64	650	21	154
Liliaceæ	187	2100	49	620
	308	3450	102	1148

Or just one-third of both genera and species are concentrated at the Cape.

The names of the endemic genera are printed in *italics;* those of the genera found also in Tropical Africa marked with a star.

Amaryllidaceæ.—*Pauridia*, 1; Curculigo, 1; Hypoxis, 34; *Hessea*, 8; *Carpolyza*, 1; *Anoiganthus*, 1; *Gethyllis*, 9; *Apodolirion*, 5; Crinum. 8; *Amaryllis*, 1; *Ammocharis*, 1; *Brunsvigia*, 9; *Nerine*, 9; *Strumaria*, 5; *Vallota*, 1; *Cyrtanthus, 19; Clivia, 3; *Hæmanthus, 28; *Buphane, 1; Pancratium, 1; Vellosia, 8.

Thirteen genera endemic, 3 also Tropical African, 5 widely dispersed. Total, 21 genera, 154 species.

Iridaceæ.—Moræa, 42; *Homeria*, 6; *Ferraria*, 6; *Hexaglottis*, 2; *Galaxia*, 2; *Syringodea*, 7; Romulea, 20; *Bobartia*, 8; *Witsenia*, 1; *Cleanthe*, 1; *Aristea, 17; *Klattia*, 1; *Keitia*, 1; *Schizostylis*, 2; *Hesperantha*, 21; *Geissorhiza*, 27; *Ixia*, 22; *Streptanthera*, 2; *Dierama, 2; *Lapeyrousia, 20; *Micranthus*, 2; *Freesia*, 1; Watsonia, 15; *Babiana, 24; *Melasphærula*, 1; *Sparaxis*, 3; *Tritonia*, 26; *Crocosma, 1; *Acidanthera, 10; *Synottia*, 2; Gladiolus, 66; *Antholyza, 13. Total, 32 genera, 374 species.

Twenty genera endemic 9 also in Tropical Africa, 3 widely dispersed. Total, 32.

Liliaceæ.—Smilax, 1; Asparagus, 42; *Behnia*, 1; Dracæna, 1; *Kniphofia, 18; Notosceptrum, 1; *Gasteria*, 44; *Aloe, 59; *Apicra*, 8; *Haworthia, 61; Bulbinella, 8; *Bulbine, 25; *Bowiea*, 1; *Schizobases, 4; *Eriospermum, 25; Anthericum, 42; Chlorophytum, 6; Cæsia, 3; *Nanolirion*, 1; *Agapanthus*, 1; *Tulbaghia, 7; Allium, 1; *Massonia*, 24; *Daubenya*, 3; *Whiteheadea*, 1; *Polyxena*, 9; *Rhadamanthus*, 1; *Lilanthus*, 1; Dipcadi, 12; *Galtonia*, 3; *Veltheimia*, 3; Hyacinthus, 2; *Drimiopsis, 5; *Eucomis, 7; *Drimia, 12; *Lachenalia*, 35; Urginea, 15; *Albuca, 20; Scilla, 35; Ornithogalum, 50; *Androcymbium, 11; Wurmbea, 2; *Bæometra, 1; *Dipidax*, 2; *Ornithoglossum, 1; Gloriosa, 2; *Sandersonia*, 1; *Littonia, 1; *Walleria, 1. Eighteen genera endemic, 15 also Tropical African 16 widely dispersed. Total, 49 genera, 620 species; of which five genera (Gasteria, Aloe, Apicra, Haworthia, and Bulbine) and 197 species are succulent.

FAGUS BETULOIDES.

The Beeches of the Northern hemisphere—there are three species—form a very distinct section from those, numbering about a dozen, which occur in the Southern. Some of these latter are evergreens, with slender twiggy branches and small somewhat leathery leaves. F. betuloides, a native of Terra del Fuego, &c., is a rather scarce tree in cultivation; the finest specimen with which we are acquainted is in the rock garden in the famous nursery of Messrs. Lucombe & Pince, at Exeter; this is a fine branched tree about 25 feet in height, with a trunk about 32 inches in girth at 3 feet from the ground; F. antarctica, an evergreen species with small doubly serrated leaves, not simply toothed, as in F. betuloides, is also in cultivation; but probably both species will only be found to succeed in the more favoured humid climate of the south and west of Britain. It would be of interest to many readers if persons possessing one or other of these Beeches were to forward particulars respecting them to the *Gardeners' Chronicle*.

[Our illustration (fig. 18), reproduced from an earlier volume, shows a tree of this species, with a hardy Bamboo (Thamnocalamus Falconeri), Indian Azaleas, &c., in the garden of Mr. Dillwynn Llewllyn, near Swansea. Ed.]

New Garden Plants.

CYPRIPEDIUM THIBAUTIANUM, *n. hyb. Angl., Veitch.*

A lovely new English Orchid! I was quite pleased when I opened the box and saw before me as elegant a thing as Cypripedium insigne Maulei—slender, graceful, and with the glazed varnish of Cypripedium villosum itself. It was kindly sent me by Mr. Harry Veitch, who tells me it is an offspring of Cypripedium Harrisianum and C. insigne Maulei. Now those are the parents of C. cœnanthum; this, however, is widely distinct, so that the parentage may have been inverted. C. cœnanthum is far larger, and has much the shape of C. Harrisianum. The new Orchid has quite the *tournure* of such slender things as C. insigne Maulei, as stated before, and as C. Ashburtoniæ. The upper sepal is nearly like that of C. Maulei. It has a green inner surface with a white upper margin, and numerous sepia-coloured blotches, nearly in rows. They are remarkable for some undecided hue, if I may so express myself. On closer inspection it may be seen that there are small darker spots around the lighter sepia-brown areas. The outside of the dorsal sepal is green with a white upper border and reddish apex. The lateral sepals are connate, nearly equal to the lip, with a few rows of brown spots on a green ground. Petals on the inner surface fine shining brown, the upper inner part light green, with small brown spots. Lip pallid yellowish, anterior parts fine brown, very elegant in its slender shape. Staminode with three teeth in front; ovary green with brown villous ribs; bract not equalling half the stalked ovary, green with brown. Peduncle dark purple-brown, with rather short hairs, not at all with a goat-like frissure, as in C. villosum. It is dedicated to Mons. Thibaut, of Sceaux, and who is stated by his friend, Mr. Harry Veitch, to be a great lover of Cypripedia.

I may add here that, at least on the Continent, there are very curious notions about Cypripedium insigne Maulei. As soon as a C. insigne has a good white border on the upper sepals it is called a Maulei, although this mistaken plant is just the original typical Cypripedium insigne, as may be seen from the representations of Sir William Hooker and Mr. Loddiges. I had my first flower of the Maulei variety from Mr. H. Low. Later, Messrs. Maule & Sons, of Bristol, were so kind as to send me a fine living plant that is doing very well still. It is quite distinct in its smaller dimensions and fine colours. Accustomed as we are to the large typical C. insigne, we are glad to see the slender plant with its fine white border to the dorsal sepal. *H. G. Rchb. f.*

Nerine Mansellii ×, *Hort. O'Brien.*

A hybrid between N. flexuosa and N. Fothergillii, exhibited at the meeting of the Scientific Committee of the Royal Horticultural Society, January 12, 1886.

Leaf lorate, bright green, 1¼ inch broad. Peduncle green, slightly compressed. Umbel centripetal, 10—20-flowered; spathe-valves two, lanceolate, reflexing, reddish, membranous, as long as the pedicels; pedicels 1—1½ inch long. Perianth bright rose-red, 1¼ inch long, slightly unequal; segments oblanceolate, ¼ inch broad, distinctly crisped. Stamens declinate, about as long as the perianth. Style ¼ inch longer than the stamens, abruptly upcurved towards the top.

A fine plant, just about half-way between its parents, with a very broad fleshy leaf, and bright red, slightly irregular flowers. A decided acquisition to the series of garden forms. *J. G. Baker.*

—— The advantage of cross-fertilisation is well exemplified in this fine plant, which is the most beautiful of pink Nerines. It was raised some years ago by me among a small batch of seedlings between N. flexuosa and N. Fothergillii major. The plants all appeared very strong growers and on flowering with very handsome soft vermilion flowers, were named N. cinnabarina; one which had not flowered, however, was sent to John L. Mansell, Esq., of Guernsey (a great Nerine grower), and this, the plant in question, flowered with lovely pink flowers instead of vermilion, thus proving quite new. The N. Masselliix flowered grandly this year with six spikes, each about 2 feet in height, and bearing ten to twenty glistening, crystalline, clear

rose-pink flowers, each about 2½ inches across. The dark green leaves are of extraordinary vigour, and more like those of Agapanthus than of Nerine, being often 18 inches in length, and 1½ inch in width. It is a great beauty, and of it Mr. Mansell says:—"My Nerine is very free-flowering from the middle of December well into the New Year. The

HYBRIDISING FLOWERS, &c.

In all classes of florists' flowers which are annually raised from seed it is necessary carefully to select the plants that the seed is to be saved from, and by this means the strain may be improved from year to year, whereas if due care be not taken the strain will be sure to deteriorate, as the inferior varieties usually seed more freely than the finer formed and better coloured varieties; the seed will also germinate quicker, and often overgrow and destroy the most desirable plants.



FIG. 18.—FAGUS BETULOIDES AND HARDY BAMBOO, NEAR SWANSEA (SEE P. 104)

pot I have contains six bulbs, all of which bloomed this season; the largest bulb has bloomed four years in succession. The flower-heads are large, containing from ten to twenty flowers, which are of a beautiful clear rose colour, borne on strong spikes about 2 feet in height. It shows its flower-spikes when the foliage are about 6 inches long. The leaves are long, broad, and abundant—slightly glaucous. The bulbs are large and strong. Comparing the foliage and considering the lateness of blooming, I believe its most likely parents to be Nerine flexuosa and N. corusca major." *J. O'Brien.*

PRIMULA SINENSIS.

In selecting plants for seed there are three points to be considered, *i.e.*, habit of plant, form of flower, and colour. First, habit of plant.—Well, many will say that this depends upon how the plants are grown, and so it does to a great extent; there is, however, a great difference to be found in the general character of plants grown under precisely the same conditions. Some will produce long leaf-stalks and tall straggling heads of flower, while others will be too dense and pigmy, the flower-stalks being too short to bring the flowers above the foliage. Second, form of flowers —The large, flat, deeply fringed flowers are generally considered the best, though we have seen some varieties where the petals overlap each other, and the outline has been somewhat irregular, which have been very pretty. Thirdly, the colour.—This should be as distinct as possible, and the eye of the flower well defined.

When the plants are selected each variety or colour should be separated; and for fertilising them a separate brush should be kept for each sort. In

making any crosses it should be remembered that the progeny will generally resemble the pollen-plant in colour, and the seed-bearing plant in habit; therefore, if a plant of good habit and well formed flowers is selected the colour can be improved by using pollen from a plant of brighter colour. By crossing the various shades of colour some very pretty tints may be obtained, but for general purposes it is best to keep each colour separate, and to use the pollen from flowers of the brightest shade.

Where plants are grown expressly for seed they are usually sown late in the summer, so as to have them in flower about March—a time when they will seed more freely than they do during the earlier winter months. With care, however, plants that are in flower now will produce a fair quantity of seed. The best position for plants that are intended for seeding now will be on a shelf in a house where an intermediate temperature is maintained, and where there is a free circulation of air. The flowers should be fertilised from time to time by the aid of a camel's-hair brush; this should always be done after a bright dry morning; it will be easy to ascertain if the pollen is dry enough for the operation, as it will not adhere to the brush if not quite dry. *A. H.*

AUSTRALIAN GARDENING.

UNDOUBTEDLY we are fast becoming much more fond of the gardening art than was possible in the former unsettled years of the colony—say 1855—60; witness the many beautiful private gardens at Malvern, Hawthorn, &c. (suburbs of Melbourne). Walter Savage-Landor once gave a truly beautiful sentimeut in these words:—

> "Nature I loved, and next to Nature, Art;
> I warmed both hands in the fire of life."

So it would seem that the love of Nature must very fully engross one's thoughts in the first place, and thus our efforts in gardening matters will be so managed that cultural imitations of Nature will be the result. The spot to which I am about to refer has but few charms to the lover of flowers—indeed, it has at some points a weird and rather neglected look. However, a painter would find materials here for a charming picture. The spot is one practically useless for cultivation, being a portion of a reclaimed swamp, and situated near the River Yarra (and iron foot-bridge, 300 feet long), and close to one of the principal entrance-gates of the Botanic Gardens. The soil is sour, the water brackish, yet the ground is covered with a luxuriant growth of various native as well as exotic plants—viz.,—Melaleuca ericifolia (the most abundant of all in the locality), Eucalyptus rostrata (the Red Gum tree), Corypha australis, Arundo donax, Gynerium argenteum, Coprosma lucida, Gleditschia triacanthos, Robinia Pseudo-Acacia, Salix babylonica, Cratægus oxyacantha, Rubus fruticosus, Populus alba, Cordyline australis, Phormium tenax, Paspalum distichum (native Buffalo-grass), Calla æthiopica; and near by is a pool in which are plants of Nymphæa alba—the latter, though not now observable, will shortly be developing leaves, and pushing their beautiful flower-buds above the water. The edge of the pond or pool close to the mass of vegetation above referred to is fringed with an abundance of Typha angustifolia; whilst every now and then may be seen gliding gracefully by, white European as well as black native swans, or a webless-footed moor-hen skimming the surface of the water. The beauty of the spot is much enhanced by reason of the long white stems of the Red Gums and Melaleucas, not unlike the European Birch in whiteness, shading down deeply with the greenery into the sometimes clear water. The spot becomes still more charming owing to the twitter and song of various birds, which have here a home and safe retreat.

A FERN TREE GULLY,

and one well worthy of the name, was constructed by the present Director of the Gardens (Mr. W. R. Guilfoyle, F.L.S.), about ten years since. It has by yearly additions from many outside sources been much beautified. It occupies a naturally rather humid spot of about 1½ acre in extent midway between two hills, and divides the Gardens as nearly as possible in two equal halves. This "gully" is well sheltered by many species of trees, such as Pinus halepensis, P. Pinaster, P. insignis, Ficus macrophylla, Populus fastigiata, Sterculia acerifolia, Gleditschia tricanthos, Tamarix gallica and T. dioica, Araucaria excelsa, Pittosporum eugenioides, P. undulatum, Quercus Robur, with here and there a Red Gum tree (Eucalyptus rostrata); whilst climbing up some of the trees may be seen in full luxuriance Banksian and other climbing Roses, which have reached the height of 40 feet; also various Tacsonias, Dolichos lignosus, &c. On the stems of many of the trees are fastened (and growing well, too) very many plants of Platycerium grande, P. alcicorne, Asplenium nidus, and others of a similar nature.

Under the shelter of the trees referred to may be seen many hundreds of all sizes of tree and other species of Ferns, such as Alsophila australis, Cyathea dealbata, C. medullaris, Dicksonia antarctica, also Gleichenia dicarpa, and others of dwarf habit, whilst many bulky Todeas (T. barbara) occupy positions right in the bed of a small creek which runs through the gully, and empties itself in the lake near by. Many plants, too, similar in foliage to Ferns, are thriving here, also others, and these serve, as intended when they were planted, to give the gully a more luxuriant (subtropical) appearance. I will name a few of them:—Arundo donax, plain and variegated; Aralia papyrifera, Phormium tenax, Bananas (Musa Ensete and others), also some fine specimens of Strelitzia angusta, Bambusa, various; Palms, as Areca sapida, Chamærops excelsa, &c.

By having so many plants both overhead, surrounding as well as interspersed with the Ferns, humidity is greatly fostered; whilst overhead, fastened to the various trees, are several spray producers, distributed evenly all over the gully, being fed by water forced from the Yarra through compo or lead piping. These spray producers are about 2 inches across; they revolve (being similar to a steamer's screw) by force of the water, and scatter a fine mist over the whole mass, causing a most luxuriant growth of vegetation.

The gully was by no means easy of access at one time, but a happy plan was devised about three years ago, by which the many visitors to the Gardens may have, on a real hot-wind day, a cool and calm retreat when crossing the miniature creek in several places by a winding path, which last is in length perhaps 500 feet.

ENGLISH BLACKBIRDS,

Several of these favourite birds were liberated in the Gardens at the same time as the thrushes (to be referred to later on), but nothing was ever known about them for many years. However, only within the last year or so two male birds have been frequently noticed as having settled in the grounds. It is a pity no helpmates can be provided: hence the young gentlemen being bachelors by necessity pass their time in fighting, but which, under happier circumstances, would be devoted to song and courtesy.

ENGLISH THRUSHES.

These may now be considered fully acclimatised, and like all good colonists are fond of their new home. I observe them daily hopping across one of the lawns, or borders, and they may be seen in secluded spots, such as the Fern gully, feeding on worms, &c., occasionally also on shell snails, but not often, other food being more agreeable. The thrush is a merry bird indeed, and cheers the garden lover with his song, especially in the early morning, or late in the afternoon of this our spring-time. Only this afternoon I saw a fine fellow going from branch to branch of a "Flame tree" (Sterculia acerifolia), pouring out his "service of song." The thrushes may be counted in scores any day in various places near to cover. These birds (or rather their progenitors) were introduced here by the Victorian Acclimatisation Society about 1860, and so also were the shell snails, the latter being intended as food for the birds in question; but, alas! folly was never more a substitute for wisdom than in this unfortunate instance for the "interesting" strangers took so kindly to the climate, and so enormously have they increased, that only by the most vigilant efforts, aided by fresh (air-slaked) lime, can valued plants, including Ferns, be kept from actual annihilation. Snails! Why, they are everywhere. Only a week or so since I observed quantities of them at Queen's Cliff (our Heads—entrance to the bay, 50 miles by land from Melbourne) on the sand hummocks under the "Tea" trees (Melaleuca parviflora and Leptospermum lævigatum), near the sea and lighthouses. I am told, and am not slow to believe, they are a veritable scourge to small flower gardens in the vicinity. No doubt in Britain the severe winter destroys myriads of these "shellbacks," but here our winters are too mild, and I question if any die except at the hands of exasperated gardeners or from old age; so, of course, as may be expected, the progeny of this unhappy importation of the Acclimatisation Society, increases at a terrible rate. Would that the thrushes had proved good enough to volunteer a fair amount of assistance in destroying the snails, if only out of gratitude to their importers for the happy life the birds have here, in a clime more sunny than their own. Can any of your numerous readers quote an effective and easily applied remedy for these scourges and enemies of our gardens? The writer was busy for a time this morning picking them off Cabbages, Broad Beans, Peas, Carrots, &c., then from the stems of Figs, Gooseberries, Cyatheas, Cordylines, and from various flowering plants; but it is only a temporary respite, as, of course, the invasion occurs nightly. "The cry is, 'Still they come!'" *Penshyn, South Yarra, Melbourne, November* 5, 1885.

AUTUMNAL STOCKS.

I THINK that these useful Stocks are not nearly so much grown as they deserve to be. The autumnal Stocks comprise what are known in Germany as autumnal intermediate Stocks, that is to say, if sown early in the year and planted out they bloom in the autumn, succeeding the ordinary Ten-week, and so carrying on the floral service until the approach of winter cuts it short. In this country these autumnal Stocks are grown largely for market, but the English market Stock is represented by a type of the same general character, but less branching, throwing up a fine main spike, with a good supply of lateral spikes also. But our market Stocks are sown about the month of July, the plants are potted in the autumn or spring, and so brought on into bloom in cold frames, in which the plants are kept close to the glass.

The German growers have two strains of autumnal Stocks, one earlier to flower than the other, but both of the same character. The plants are somewhat dwarf and compact in growth. They throw up a main spike, and round about this are produced many others, which yield a great supply of flowers. It is obvious that the earliest strain is simply a selection from the other. The autumnal Stocks are of regular growth, and the plants being so free branching soon cover a bed. They are extremely useful for cutting from, and remain in flower for a considerable time.

I take it that the East Lothian Intermediate Stocks represent a Scotch selection from the autumnal type, but they are more branched—that is to say, they are of freer growth, and throw out their side branches wider and taller than the autumnal. I do not wonder at these Stocks being so popular in Scotland; they appear to be suited to the climate, they grow strongly, and they flower finely and freely. The usual practice is to sow the seeds in early spring, and when strong enough the plants are placed out in the open ground where they have to flower. They do well on outside Vine borders; in such a rich compost they bloom grandly, and in the case of the Scotch strains there is a large percentage of double flowers. The colours are crimson, scarlet, purple, and white. It is a practice in some parts to carefully lift the double plants in November, or as soon as it may be necessary to do so, pot them, and it is found they flower to some extent through the winter, and in March they are turned out in the open ground, and they then flower grandly, making a fresh growth, and from these fresh growths producing further flowers. In this way very large plants are had in full bloom before the ordinary Ten-week varieties come into bloom.

The Perpetual Emperors are also autumnal Stocks, and partake as much of the biennial as of the annual character; that is to say, they more nearly approach the true Brompton biennial type than do the autumnal. It is necessary the autumn should be quite favourable to have them in flower; but if the seed be sown early the plants grow on, and get out early into good and suitable soil; and if the autumn is fine, dry, and warm, a good deal of bloom may be taken from them. They also, if they stand the winter well, flower with great freedom in spring, but cold and wet combined are destructive to Stocks. I have seen them come through a dry hard winter, bearing traces of the fray, it is true, but alive, and capable of putting forth a generous spring growth. But, on the other hand,

excessive wet, followed by frost, lays many a plant low, and causes serious gaps to appear in the lines of Stocks.

The lifting and potting method adopted by the Lothians gardeners is one that should be more generally followed. It is occasionally done in this country, but nothing like so generally as in the North. By lifting plants of the autumnal Stocks when in flower, with balls of earth adhering to the roots, and placing them in pots, giving them the benefit of a warm house during the winter, an additional supply of cut flowers is secured at a time when flowers are scarce; and when planted out in spring they make large plants, and bloom abundantly for a long time.

Intermediate Stocks, which are autumnal varieties made to serve as biennials by sowing late in the season to flower the following spring, are far too much starved. I have scarcely ever seen anything to equal the beauty of two Stocks Mr. Samuel Barlow grows into fine specimens in large pots to flower in spring. They are Mauve Beauty, pyramidal, and Dyson's Crimson. Where they flower one is able to realise what Stocks are like when well grown. In pots of rich soil and well attended to they form large pyramids of flowers: and such flowers!—they should be seen in order that the possibilities of beauty in the Stock be correctly realised. *R. D.*

OAKWOOD.

THERE is some anxiety in visiting a garden after a week of such weather as we have lately had. At Oakwood yesterday I was happy to find little visible damage. The large Rhododendrons were unhurt, a good plant of Eucalyptus Gunni the snow had clung to and bent to the ground, but on clearing it there was little damage done. Our large Camellia appears all right, a tall one near it was bent over by the snow, but seems now uninjured. Our thermometer went down to 10° Fahr. on the 8th. The Maidenhair Ferns in their little caves are quite green, and in some parts of the garden there are still flowers of Primroses. The hard weather brought an onslaught of many sorts of birds on our Pernettya bushes which were in great beauty last week; the shades of colour from palest pink to darkest red give the effect of flowers. Different coloured threads had no deterrent effect; some stuffed rabbits hung up and bobbing about appear so far to have been taken for cats with good results. I think gardeners are much indebted to Mr. Davis, of Ogle Grove Nursery, County Down, for the great variety of colour he has introduced among the berries of the Pernettyas. One Veronica, having green leaves and still pretty pink-purple flowers, is broken to the ground; this appears to be our most serious loss. I am sorry to say that there has been more damage in the beautiful gardens in Oatlands Park, a great bough has fallen from my friend Mr. McIntosh's well known old Oak, and some of his large Rhododendrons have suffered. Of the two grand old Cedars at another friend's, Mr. Hancock's, the one which had been previously much injured is now a wreck, but the grand one opposite the house, though it has lost some boughs, is not, I think, very seriously injured. *George F. Wilson, Weybridge.*

ORCHIDS FOR AMATEURS.

(*Continued from p. 750, vol. xxiv.*)

SCHOMBURGKIA.—This genus is closely allied to and was formerly united with Epidendrum. They are South American Orchids, with large grooved pseudobulbs, surmounted when in flower by an enormous panicle of brown or purple flowers, which sometimes have an almost metallic lustre. The cultivation of Schomburgkias has been somewhat neglected of late years, as they are no rivals to the more magnificent and delicate Cattleyas and Lælias, and they are less easily brought to perfection in our hothouses; their quaint crisp flowers are, however, perfect marvels of beauty in their way, and the neglect they have suffered is much to be regretted.

Cultivation. — These plants may either be grown upon blocks of wood covered with moss, in baskets or in pots. In the latter case they need to be well elevated above the rim of the pot, and require the most perfect drainage, since they need a free supply of water at their roots during the growing season. Generally they require the same treatment as Cattleyas, but they appear to need more water and heat whilst growing, to enable them to form their enormous pseudobulbs, and as these retain much moisture they need a complete withdrawal of water when they are ripening their growth. The secret of success is to give them a long period of rest, with plenty of air, and no water at their roots, in a comparatively cool house.

S. crispa.—This is a native of Brazil, and when not in flower its appearance is not unlike that of a L. purpurata, with very thick short deeply grooved bulbs, which are usually completely surrounded with dry scale-like sheaths. The flowers are from 1½ to 2 inches in diameter, very numerous, and supported on a scape a yard or more in length, surrounded by a sheath like that of a Cattleya at its base. The sepals and petals are brown tinged with violet, with wavy crisped margins; the lip is white, streaked and shaded with violet. It flowers in winter.

S. Lyonsi.—A species from the mountains of Jamaica, resembling the last in habit. The flowers are, however, white, barred, and spotted with purple; the lip is shaded with yellow.

S. undulata is probably a mere variety of S. crispa. It is a native of La Guayra. It has larger and brighter flowers than S. crispa, and the flowering-stem is said to attain a length of 8 or 9 feet.

S. tibicinis.—The best known plant of the genus; a native of Honduras. It has a very remarkable habit. The ripe pseudobulbs are often two feet long, and curved like a cow's horn. They are deeply grooved and ribbed with annular constrictions at intervals. They are hollow, and the natives of Honduras cut off the ends, and use them as horns, producing a deep, loud note by blowing through them; hence the name tibicinis, which alludes to the horn or trumpet-like form. The flowers vary much in size and colour under cultivation, and seldom attain their natural magnitude. In good well-grown varieties they are often 3 inches in diameter. The flower-stem attains a height of 8 or 10 feet in Honduras, but not more than half this height under cultivation. The flowers are very numerous. The sepals and petals are of a deep pink, spotted with white outside, and with rich chocolate-red within. The labellum is very broad and three-lobed, the lateral lobes being large and round; it is cream-coloured, with a network of fine red veins in its centre. These extend well into the lateral lobes, which are richly shaded around the margin with purple and yellow. S. tibicinis flowers in early summer, and the flowers, which are of considerable substance, last five or six weeks.

ARPOPHYLLUM.

The plants of this genus are natives of the more temperate parts of South America. They have a more terrestrial habit than the majority of their allies.

Cultivation.—Well drained peat has been recommended as the best compost, but I believe that, like Cymbidium and the epiphyte Cypripediums they thrive best in a mixture of peat, charcoal, and good loam. They need to be repotted frequently, and the best time to perform this operation is during the season of rest just before growth recommences.

Whilst on this subject I would, even at the risk of being tedious, once more revert to the importance of absolute drainage, so essential to the successful culture of all Orchids. Once lose the roots and your plant is put back one year at least, and perhaps more. The reason of this is obvious: Orchids generally only make roots during one particular season, either after the completion of the year's growth or just before a new growth starts. Root-growth seldom extends beyond two or three months. Hence the destruction of the roots is always a great and often an irreparable misfortune; and the roots of all perish in a clogged or water-logged compost almost as soon as they are formed.

The Arpophyllums require much light, and no shading should be resorted to unless the sun is hot and scorching. During their period of growth they need an abundant supply of water, but when resting all water at the roots should be withheld, fine syringing or a moist atmosphere is sufficient to maintain them in health.

By fine syringing I mean the use of a syringe which reduces the water to so fine a state of division that it falls like a mist upon the plants, and I find the use of such a syringe invaluable in winter. A small brass syringe holding only 2 or 3 oz., with a very fine rose, will effect this and will be found most useful. I purchased such a syringe two or three years ago for a shilling, and I have never had any bad result from its free use two or three times a week in cold dull weather. I have recourse to it whenever the air of the house appears to me to be too dry; which it is apt to be when much fire-heat is needed.

A. cardinale.—A native of New Grenada, where it grows upon blocks of rock on the margins of bogs or upon low bushes in the marshes.

This species has reed-like stems about half an inch or less in diameter, and 6 or 8 inches long, completely sheathed with bracts; the stems are surmounted by a single evergreen leaf nearly 1 foot long. Both the stem and leaf are of an intense green colour. The flower-spike is developed in a yellowish-green spathe. The flowering-stem is 15 inches long, spotted with black, and bears a long dense cylindrical spike of shell-like flowers, with delicate rose-coloured sepals and petals, and a bright scarlet lip. It flowers in May and lasts a month in perfection. It is one of the most beautiful Orchids in cultivation.

A. giganteum.—A native of Mexico and Guatemala. It resembles the last in habit, but has a larger spike of rich purple flowers, it blooms a month earlier, and is a magnificent species.

A. spicatum, also from Mexico, and although far smaller than the last is a very desirable plant; its dense cylindrical spike of purple flowers is very distinct and beautiful. It flowers in winter.

Two or three other species are known, but are of less horticultural interest. *B. T. L.*

(*To be continued.*)

HARDY CYPRIPEDIUMS.

THE name of Mr. Edward Leeds, of Longford Bridge, Stretford, near Manchester, has been much before the public during the last few years in connection with the culture of the Narcissus, its species and varieties. It may not be so well known that Mr. Leeds was a very successful cultivator of the hardy Cypripediums, and that he kept the same plants in health and in a flowering state year after year. He cultivated them in large pans, 16 to 18 inches across, and 8 inches deep. The pans were filled to one-third of their depth with drainage, and the potting soil was such as one would scarcely expect the plants to do well in for a lengthened period. Here it is:—"One barrowload of decayed straw thatch or leaf-mould, but thatch is preferable; one-fourth of sandy red loam, one-fourth of pulverised lime rubbish, and one-fourth of clean sharp grey sand." Mr. Leeds planted the roots near the surface, with a handful of clean sand over the buds or crowns. Moss was encouraged to grow on the surface, and grass was planted round the edge of the pans. Some remarks are also made about dividing the crowns, which Mr. Leeds says, "should very seldom be done;" in this I quite agree with him. I have grown plants up to a large size from single crowns, especially C. calceolus and C. acaule, but when they were carefully divided they did no good afterwards. The plan adopted by Mr. Leeds was to carefully divide the crowns in October, to pot them at once while the leaves were green, and cover them with a glass to prevent their flagging. In summer the pans were placed out-of-doors, where they had the morning sun to shine upon them till 10 o'clock. For C. spectabile Mr. Leeds used peat instead of loam, using the old straw thatch. Fifty years ago old straw thatch could be obtained in many places where it would be vain to look for it now, and in the state in which it was used by Mr. Leeds it was merely well-decayed vegetable mould My own experience suggests leaf-mould as equally well adapted for the purpose. C. pubescens, C. parviflorum, C. humile, and C. arietinum, he grew in light leaf-mould and sand—as light as possible. One important part of the culture advocated by Mr. Leeds was this. He says:—"I never protect my Cypripediums from autumnal rains, as is the practice of many cultivators of this tribe of plants. I find that they do not in the slightest degree suffer from moisture, provided the pans are properly drained, so that the water can pass quickly away." With this treatment he had C. pubescens with fifteen flowering-stems, and C. calceolus with thirteen blossoms, both of which had been grown from very small plants. I have found in my own experience that three of the easiest to manage are C. acaule, C. pubescens, and C. calceolus. They can all be grown into nice

flowering specimens, but never be tempted to divide them. Evidently Mr. Leeds did not approve of it; nor do I. The present is a good time to purchase these interesting plants. I use for them one-third Orchid peat, one-third leaf-mould, to as much as the two together of yellow turfy loam. The crowns are left protruding above the surface. The pots in which they are grown are well drained, and some tough fibre from yellow loam is laid over the drainage. When the plants are purchased, one, two, or three crowns only are found on each small clump, and the largest of them will not require larger than 5-inch pots. A few plants of green moss are also set on the surface. They are then placed in a cold frame, plunged in cocoa fibre until they start to grow, when I move them to a pit that may be heated. They are never allowed to become really dry at the roots. The moss very speedily covers the entire surface of the soil. I repot them when at rest the next season, and each crown will probably produce two, C. acaule being the slowest of increase. C. spectabile does equally as well as the above, treated in the same way, except that the potting soil is four parts turfy peat to one of leaf-mould. They evidently grow in moist peat in their native country (North America), but it is fibrous peat, with a considerable proportion of vegetable matter, and the roots run along close to the surface, protected doubtless from the vicissitudes of the weather by thick herbage. The splendid yellow species, C. Irapeanum, seems to grow in the same way in its native home, but it will not thrive under similar cultural condition in this country. I do not like to own being beat in the culture of any plants, but this species I have not been able to establish either in the greenhouse or cool Orchid-house. Have any readers of the *Gardeners' Chronicle* been successful with it? Excellent plants of it were sold by Messrs. Sander a few years ago, and were no doubt widely distributed. In some country places it is just possible that some of these lovely Ladies' Slippers may be established and flowering well. If the above notes should meet the eye of any gardener who has successfully cultivated it, any remarks that would show the practical culture of this or any other species difficult to manage would be acceptable.

C. macranthum I have grown successfully and flowered it; but seems to degenerate after flowering once. I use for this species a larger proportion of loam, to keep which porous I add some potsherds broken fine and a little pounded charcoal. It is necessary to be careful to maintain the plants in good health when the flowering period is over, for if the leaves die off too quickly the crowns do not get developed, nor do they ripen off well unless the leaves keep green for about two months after at least, and die off rather rapidly at last of quite a yellow tint.

C. guttatum is a lovely Siberian species, which produces one flower on a slender stem between two rather large hirsute leaves. The flowers are distinct and very pretty, pure white, spotted and blotched with crimson. I have potted several perfectly healthy plants of it, but failed to get any to start into growth; and Mr. Elwes, who I fancy has had more experience with these plants than any other amateur in England, told me that this species is a very awkward subject to deal with, and that one of its characteristics is not to start at all. Mr. Ware, of Tottenham, has flowered it, and says, "It is found growing in damp, shady woods in peat and leaf-mould. I would recommend keeping the plants in pots in a cold frame until spring, and then planting out."

C. candidum is a pretty little species; the pouch is glossy white, and it is not a very difficult subject to deal with. I have flowered it in a low span-roofed pit, where the atmosphere was rather moist, and enough artificial heat used to keep out the frost.

C. arietinum, the Ram's-head Ladies' Slipper, I have tried to flower for years, but have not been successful. I never was able to get any plants that had just been imported, so that they could have been grown on from the first under my own care. It is interesting as being rather rare in cultivation, but is not very pretty.

C. californicum, from Oregon, is a rare and distinct species, producing from eight to ten axillary flowers on a stem. I have not grown this, nor

C. occidentale (Gray), Californian species, also of recent introduction. By what I have read about the last two species they ought to be well worth a little care expended on their culture. I have principally grown them in pots, but it would be well to try and establish them out-of-doors. Mr. Ware has had considerable success with many of these interesting species of hardy Orchids, out-of-doors, besides Ladies' Slippers.

Messrs. Backhouse, of York, have also done much interesting work in this direction. C. pubescens is easily established in any border of good soil, and C. spectabile in peat beds. Mr. Ware has found C. occidentale to succeed well in peat. It grows vigorously in a damp shady spot, and has proved to be quite hardy. I should advise those intending to cultivate these plants to procure them as soon as introduced from their native habitats. None of them are expensive, and it is easy enough to try them in the most likely positions out-of-doors, as well as under glass in pots. Those who are interested in hardy plants will find a great deal of pleasure in anticipating the flowering of such rarities, and will obtain valuable information concerning the nature and habits of the plant. *J. Douglas.*



THE FERNERY.

GYMNOGRAMMAS.

THE Gold and Silver Ferns are such general favourites and so well known that it is not necessary to say much about them by way of recommendation. Owing to their extremely sensitive nature they cannot be utilised for general decoration during the winter months, but for summer work they may be used with great effect, and give a pleasant change; and during the winter they are among the most attractive objects in the stove fernery. Their cultural requirements are simple, and as nearly all the sorts may be easily raised from spores a stock of young plants should always be grown on to succeed those that have outgrown the space allotted them, or have become stunted. Like many other Ferns, young plants grown on freely are far more beautiful than older plants. To grow Gymnogrammas to perfection they must not be allowed to become pot-bound, or receive a check in any way. The best position to grow them in is on an elevated shelf, or suspended to the roof. If grown in the stove among other plants they should be arranged in such a position that they will not get syringed or wetted overhead. The compost for potting should consist of good fibrous loam and leaf-mould in equal portions, with a liberal addition of sand; or if leaf-mould is not to be had, a little peat and well-rotted manure may be substituted.

WATERING.

After plants have been repotted this should be done very carefully, for, if plants that have not well filled their pots with roots get over-watered, and the soil gets soured, the plants will soon get into a sickly state. While the plants are in active growth a little weak manure-water will be beneficial where the pots are well filled with roots.

Gymnogramma chrysophylla. — This is the best known type of the Gold Fern, it is of erect growth, and the fronds are rather lax and narrow; plants raised from spores vary considerably, however; in some the fronds are much broader and shorter, and in some the yellow powder, or farina, is of a brighter colour. Some of the varieties are very distinct, and decided improvements on the normal form. Where a number of plants are grown, one of good habit should be selected and grown in an isolated position, for giving a supply of spores. G. c. Laucheana is one of the best varieties.

G. Parsonsi is a crested variety of the above, the fronds are erect, and terminate a dense tuft of multifid growths. It is not so easily obtained from spores as most of the varieties; but occasionally a good batch may be raised which will vary but little in character.

G. ochracea.—This is another very pretty form of the Gold Fern; the fronds are nearly triangular in shape, and have rather long stipes; the farina is of a deep yellow colour, and very abundant.

G. Alstoni.—A variety of the above, from which it differs in having the pinnæ curled inwards at the extremities, thus showing off the golden side of the fronds to greater advantage. This variety may sometimes be raised true from spores; but it often reverts to the normal form. As the spores germinate very quickly, and the character is shown while the plants are in quite a young state, it is easy to discard any that are not true, or to make fresh sowings if necessary.

G. decomposita, a very pretty species with finely cut fronds; farina, pale yellow, but not so abundant as in the other sorts alluded to.

G. peruviana argyrophylla.—Of the Silver Ferns this is a good type, the fronds are densely covered with white farina on the under side, and have a very glaucous appearance on the upper side. It makes a very graceful pot plant, the fronds being beautifully arched. When grown on freely; they attain to a good size, but once allowed to get pot-bound or stinted, it will be difficult to get them to grow away freely again.

G. tartarea, a free growing species, with larger fronds than the above; the fronds are bright green on the upper side, and very white on the under side.

G. Wettenhalliana, a very pretty crested form of G. sulphurea; the fronds are erect in growth, and heavily crested at the extremities; the farina, which is abundant, is of a pale sulphur colour. *H.*

Orchid Notes and Gleanings.

AËRANTHUS LEONIS

(if this is to be its name instead of Angræcum) has not only proved itself to be one of the most beautiful of the species, but the easiest to establish either in the Cattleya-house, or in a house 5° warmer. There is a point in the culture of this and kindred species on which difference of opinion may exist, and that is on the nature of the potting material. Mr. Williams, in the *Orchid Manual*, recommends sphagnum only; but I fancy this fleshy leaved species would do better with the addition of a little very fibrous peat added to it; at any rate I intend to try it.

The recent introductions of new species of Angræcum, and in much greater numbers than heretofore, have added greatly to the interest of collections. Masses of S. citratum flower with the greatest freedom annually, and still continue in a healthy, vigorous condition; so much cannot be said of all of them, for instance, A. Ellisii seems to become exhausted after producing a single spike, and A. articulatum seems of a similar character. Not so the grandest of all Angræcums, A. sesquipedale: year after year it continues to produce two spikes of its noble flowers from one stem, and shows not the least falling off in vigour; it is now producing its flowers. The charming little A. hyaloides is certainly the smallest of the whole genus, forming pretty little tufts, thickly beset with tiny spikelets of its pure white flowers. They all like the warmest treatment, and though most of them like to be near the glass they suffer from much sunshine. *J. D.*

AËRIDES CRASSIFOLIUM.

The *Orchidophile* for December gives a coloured figure of this elegant species bearing racemes of numerous flowers, each nearly 2 inches in the longest diameter with rose-coloured segments and a three-lobed lip, the anterior lobe largest, lozenge-shaped, deep rose.

MAXILLARIA PUNCTATA.

This Brazilian species was introduced to British gardens more than fifty years ago, and a white and a purple variety of it some years later. It still retains a place in gardens, or has been recently reimported, and is variously known as M. profusa or M. picta var. The first appellation it doubtless owes to its profuse flowering habit, as numerous peduncles are given off from one pseudobulb, each producing a solitary flower. The latter is small, but in the aggregate, not devoid of attractiveness, and possessed of a delicate fragrance. Although it belongs to the same section as M. picta, it is readily distinguishable from the latter by its much smaller, linear, oblong, straight sepals and petals. These are pale yellow internally, spotted with purple, while externally they as well as the lip are nearly white, more or less irregularly spotted purple. M. picta on the contrary is much darker coloured, larger, with the tips of the segments

remarkably incurved, not straight as in its congener. M. crocea, with brownish orange flowers resembles M. punctata, but the segments of the former are narrowed to a slender point. There is a figure of the species under notice in Loddiges' *Botanical Cabinet*, 1914. *J. F.*

APPLE CULTURE IN THE UNITED STATES, AMERICA.

At a meeting of Illinois horticulturists, recently, we learn from an American paper that the question of what varieties of Apples were most desirable and reliable to plant in that State was discussed. The conclusion come to, after considerable discussion, was that if 1000 trees were to be planted the selection should be made of the following varieties in the proportions stated with each:—Ben Davis, 475; Willow Twig, 400; Red Astrachan, 25; Jonathan, 20; Minkler, 20; Winesop, 20; and 10 each of the following:—Maiden's Blush, Ramsdell's, Sweet, and Stannard.

Here is a lesson assuredly to our local horticultural societies and clubs, which they might do well to copy. Among the hundreds of varieties grown in various parts of this country there are many that are not worth growing as compared with others, as they have nothing to recommend them in any respect, except perhaps some fitness for the particular district in which they happen to be well known. There are not a few Apples grown in this country that are almost universal in their adaptation to peculiarities of soil and climate; they appear to do well anywhere that Apples of any sort may be found to do. It is a better acquaintance with such as these that is wanted by the public rather than extended lists of highly reputed varieties. We do not want many varieties, but we want them to be possessed of all the excellences that pertain to the Apple, and that may be attained in our particular location. In the season, we should think, if the members of horticultural societies were to give close attention to this subject they would do a very great deal of good, more than can be obtained by attending great Apple shows, and making a list of all that appear desirable, without knowing whether they may be useful when planted in other circumstances than those under which the samples noted may have been grown. *North British Agriculturist.*

Florists' Flowers.

THE AURICULA.

The last time I wrote upon the Auricula was in September, when I had to say that the plants were in the height of their autumn growth. To-day they have nearly passed through their winter rest, for by the end of the last week in January the Auricula is ready to start into growth, that is, unless the plants are frozen, which from the present appearance of the weather is not unlikely. The modern system of growing the Auricula in heated pits is a good one, as the plants can be kept in a temperature above the freezing-point after the middle of January. I have up till now recommended surface dressings for Auriculas, and, indeed, all hardy Primulaceous plants, but after having discontinued the practice for two or three years have come to the conclusion that surface-dressing is quite unnecessary for them. Our plants have now been taken into the pit where they are to flower, and which will merely keep the frost out, but they will not be forced at all; indeed, forcing the Auricula causes the flowers to open very much out of character, unless strict attention be paid to the ventilation of the house, and the plants be placed as near as possible to the roof glass. Now is the best time to sow seeds, or, at least, it is a good time for that which ripened in the summer. I have placed the pots or pans containing the seeds in a gentle hotbed, but am not sure that much is gained that way. Sometimes when the seed pots have been in the hotbeds for two months, but few plants have appeared until, after taking the pots out, and placing them in the Auricula frame or house, the young plants have appeared quite freely. All the species of hardy Primulas succeed best if the seeds are sown early in the year, or as soon as they are ripe, and the pots or pans are placed in a shady part of a pit or frame. The soil ought always to be kept moderately moist, and never at any time very dry or wet. Should the surface where the seeds are become very dry when they are in a state of vegetating the young plants will be killed in embryo. Those who intend to exhibit hardy Primulas in April should now arrange their plants in the order of their flowering. All the early flowering varieties, such as P. rosea, P. denticulata, P. cashmiriana, P. nivalis, P. villosa, &c., should be placed, if possible, in a cold frame on the north side of a low wall; while such as flower late—*e.g.*, P. Monroi, P. Parryana, P. japonica, &c.—must be placed on a shelf in a greenhouse. Some of the late flowering Auriculas must be treated in the same way as the late Primulas, and the early flowering kinds as are the early Primulas. Auriculas of the alpine section planted out on the rockwork or in the flower borders must be looked over as soon as the snow and frosts disappear; the plants get loosened sometimes, and the labels are also thrown out of the ground by the frosts. The labels are, therefore, put in firmly, and the plants pressed into the ground with the fingers. If necessary some surface-dressing of good loam may be placed round each plant. *J. D.*

A SPORTIVE CAMELLIA.

The Camellia from whence the flowers (fig. 19) were taken is very prone to sporting; quite one-



[Fig. 19.—Camellia sport.]

half of the tree produces pink selfs, whilst the other bears almost white blossoms. The blooms on this specimen are on the same stem—in fact, come from one point; one is a lively pink, and the other nearly white. This tree is a fine example some 18 feet in height, and is flourishing in Messrs. Lucombe, Pince & Co.'s famous Camellia-house at Exeter. Just now it is loaded with flowers, and, as might be supposed, it is very attractive and pretty. *W. Napper.*

Philodendron Andreanum.—This is a new Aroid from the forests of Choco, New Grenada. It is a climbing species, emitting aërial roots from its stem, and bearing long, glossy, dark green cordate-lanceolate leaves on long stalks. The nervation at the base is pedalinerved, elsewhere feather-veined, with a prominent midrib, and rather distinct secondary nerves. M. de la Devansaye, who describes and figures the plant in the last number of the *Revue Horticole*, speaks of it as a decorative plant of the first order.

SOME NURSERIES IN HAMBURG.

While spending a holiday in Hamburg and neighbourhood this autumn I had an opportunity of visiting some of the most extensive plant growing nurseries in the immediate vicinity of that city, and also the public markets for plants, flowers, fruits, and vegetables. In the chief market, which is held in a large square in front of the magnificent church of St. Nicholas, may be seen vast quantities of vegetables and fruit, which for quality I am certain could not be beat anywhere. When I was there in the end of September, I was chiefly struck with the great quantities of splendid Cauliflowers. They were the variety called the Frankfurt, and very few of the hundreds I saw were smaller than a soup plate. The vegetables, fruits, &c., are chiefly brought to market from the surrounding country in boats, which can be taken close to the fields, orchards or gardens, by means of the numerous canals, which intersect the flat low-lying country in all directions. Then there is a wharf on a short canal leading from the Elbe, and close to the market-place to which all the boats come, so that the vegetables, fruits, &c., are put down quite fresh—no jolting on railways or on waggons having to be undergone.

The first nursery which I visited was away in a suburb of the city, called Emsbüttel, which I reached very easily by means of a tramway car. Entering this establishment by a broad walk bordered with ornamental shrubs and trees I came to the glass structures—a succession of long low pits mostly sunk, so that the eaves were level with the ground surface. The foreman coming up he courteously took me in charge and showed me everything of interest. The specialities here were Maidenhair Ferns—mostly A. cuneatum, grown for cutting—and young Vines. Some four or five long pits were entirely filled with Ferns, strong healthy stuff, some in pots and pans, and quantities planted out in beds, and even under the stages. Young Vines were grown in pots at short intervals amongst the Ferns, and, being trained to the roof, afforded a pleasant shade for the plants beneath them. A notable feature in this place was what may be termed the extreme simplicity shown in the construction of the houses and pits; they looked as if the roofs had simply been set down on the ground level, a trench dug out where the path or paths were to be, a rough stage constructed on either side on which to stand the plants, and the house is complete, with the exception of the heating apparatus, which usually consisted only of a single flow and return pipe running along the side of the path.

Leaving this establishment I next proceeded to the Rose nursery of Herr A. G. Ruschpler, which was close adjoining. This was simply a Rose nursery, nothing but Roses being grown. Everything about this place was tidy and in good order, the ground being clean, and free from weeds. The most peculiar feature that presented itself was the large quarters devoted to standard Roses. These Roses were tied to long poles, 8 to 9 feet high, and large squares of these, looked at from a distance, had a curious appearance. These standard Roses are very popular in Hamburg, and may be seen planted either singly or in clumps in almost every front plot. I do not care for their appearance, used in this indiscriminate fashion; they look too stiff and formal. I observed also a considerable quantity of Tea Roses, standards, half-standards, and bush, and they all appeared to be in vigorous health.

On the following day I again started on another round of visiting, this time directing my steps towards a suburb called Barmbeck, lying in a different direction from that which I had previously taken. After some little trouble, caused by my imperfect knowledge of the language, I found myself in a retired street, bordered on each side by lines of stately Limes. Walking along some little distance, I came to the establishment I was in search of. On entering I met the proprietor, and on explaining that I wished to look over his place, he readily assented, and calling one of his young men, he directed him to show me round the place. Here again the same curious feature of glass roofs, with their eaves at the ground level, presented itself. The style of horticultural architecture here exhibited was indeed curious and novel. The main portions of the glass structures were in two squares, consisting of span-roofed pits arranged on the ridge-and-furrow system, the eaves, as I said before, being level with the ground

surface, nothing being visible above-ground but the roofs. As I looked at these houses, or rather roofs of houses, I could discern no means of entrance, but the young man who was acting as my guide led me to where there was a sort of trap-door, which he threw open, disclosing a short flight of steps leading down into a vaulted brick passage. Getting down into this tunnel I found that it ran the whole length of the structures and parallel with their gables, connections branching off at right angles from the main path to each house in turn. By this arrangement the whole of the pits in the square were connected together under-ground, and one could go through the whole series without having to emerge at all into the open air. The chief design of such an arrangement as this is to economise heat, and doubtless that very desirable end is gained to a very considerable extent. The boilers being below, and the whole of the hot-water connections being carried to the various houses along the sides of the tunnel, it entails no loss of heat such as is caused by carrying hot-water pipes long distances in chambers. In cold stormy weather the opening of the doors of the houses is not followed by a rush of cold air into the houses, the whole of the underground air space being heated, nor do tender plants require to be exposed to any sudden change of temperature when conveying them from one house to another or to the potting bench. Potting is also carried on below-ground, light being provided by skylights in the roof of the tunnel. Doubtless there are also disadvantages connected with such an arrangement as above described, the cost of construction being heavy, and the communication from one group of pits to another being necessarily somewhat restricted.

In these pits there was a large stock of Palms, including Kentia Canterburyana. K. Mooreana, Latania borbonica, Phœnix dactylifera, Areca lutescens, Corypha australis, &c.; also a quantity of Dracæna indivisa, and other miscellaneous plants, all well grown and exceedingly healthy. Emerging from the subterranean passage, we next passed through a house in the construction of which wood had been entirely superseded by iron; the whole of the roof, fittings, ventilators included, were of iron; light T-iron being used for the astragals, and T-iron of a heavier description for the beams. This house was what is generally known as a lean-to, the back, front, and end walls being of concrete. The entire internal fittings were of iron and slate, the walls, like the outside walls, being of concrete—all very durable and strong.

I have no doubt but that this house will be enduring, but the design is very heavy and inartistic. The thick heavy concrete walls all round and the very flat-pitched roof painted bright-red made a combination which did not at all please the eye. In the above house, and one or two of the others, top-heat was made available by means of small pipes running along the roof, and hung from the rafters.

This iron house, and another house of the ordinary kind, were almost wholly filled with Cycas revoluta in all sizes, some large fine specimens being among them. Plunged in a bed of sand (heated by pipes) were large numbers of Cycas revoluta newly imported from Brazil. Many of these pieces were just starting into growth. I was much surprised to see so many plants of this Cycas, and on making enquiry as to what use they were put, I was told that in Germany the fronds are much used at funerals. I also noted large numbers of imported Dracæna stems. These being placed in beds of sand, with strong bottom-heat, soon break into growths, and produce many plants. We next went through four or five houses filled with Camellias of various sorts, all well grown healthy stuff, covered with buds. There would seem to be no diminution of the popularity of the Camellia on the Continent, judging from the numbers of young plants I saw growing in these nurseries.

Coming outside, the chief thing which attracted my attention was a large heated frame filled with Dracæna terminalis rosea, beautifully coloured. These were plunged in light soil on top of fermenting material, and were quite close to the glass. I saw also a few imported Orchids in one house, but Orchids do not yet seem to be at all grown in Hamburg by the market growers. In this place there was but very little ground not occupied by glass. What there was of open ground, was occupied chiefly with Azaleas and Roses in pots plunged, Lily of the Valley, Spiræa japonica, and other plants for forcing.

On the day following my visit to this nursery of Messrs. Riechers & Son, I went in company with a German friend to visit yet another plant-growing establishment, this time away on the Lubeckerstrasse (road to Lubeck). We travelled on this occasion in a steam tramway car, starting from the Exchange. These steam tramway cars are wonderfully efficient vehicles, moving rapidly, but without the least smoke or noise. Our course lay away out into the pleasant suburbs, through clean, well kept streets, lined, for the most part, with the graceful shady Linden and other trees, past charming villas, embowered in tastefully arranged grounds, and literally covered with climbing plants, and on, until the zone, if I may so term it, of nurseries and market gardens was reached. Arriving at the establishment of Herr Pabst, my friend, who was personally known to that gentleman, speedily introduced me and my business. Here, as elsewhere, I was cordially received and shown all that was to be seen.

In this place three things were made specialties of—Camellias, Azaleas, and Cyclamens—and I must say that a finer lot of plants is rarely seen. Four or five houses of considerable size were filled entirely with Camellias—young plants in bud—all in the highest possible state of health, the foliage strong, thick, and of a dark glossy green, and all the plants thickly set with plump flower-buds. The Azaleas, large and small, were all out-of-doors plunged in beds, thousands of them, all clean and healthy. The Cyclamens were growing in a number of frames close up to the glass—every plant being the picture of health and vigour. In this place I also observed two houses in which T-iron was used for the astragals, the rafters and other parts of the structures being of wood.

One impression which I brought away with me from Germany was that the nurserymen do not believe in laying out much money on their glass structures or grounds, that is, in the way of ornamentation. Cheapness of construction for glass structures seems to be the rule with them, nor do they seem to take so much pains as British nurserymen do to keep their grounds in high-class order. These facts might lead a stranger to suppose that such places were badly managed and perhaps scarcely worth visiting, but the high-class quality of their stock entirely dissipates such an idea. In all my visits to these plant growing establishments and nurseries I was treated with the greatest civility and cordiality, and I cannot close this paper without thanking these gentlemen for their unfailing courtesy. *J. Wilson, Jun., Greenside Gardens, St. Andrew's, N.B.*

The Apiary.

WATER FOR BEES.

It may seem strange at this time of the year to talk about water for bees, but the beekeeper must prepare in winter for the summer. Water is most essential to bees during all the time they are breeding, and that is the greatest part of the year. They have often been found in the vicinity of pumps and other places where water is sure to be found. Many devices are used to give bees water. If we want to supply bees with water two things are necessary; first, to give them a constant supply, and second, to see they do not drown. Mr. McPhedron, who is well known as a Renfrewshire beekeeper, has tried various things to supply water for bees, and at last has been highly successful. He tells me that for some time he made pretty little vessels, and filled them with moss and water, so arranged that the bees could alight on the moss and drink the water. But blackbirds came and scratched out the moss to look for worms. Then he cut out little lines in pieces of marble, and inverted a glass of water on it. The water ran along the lines, and the bees stood in rows drinking the water in safety. This was very successful, but marble was too dear. Finally he had a mould made, by means of which any number of grooved slabs in white glazed earthenware could be made. These are highly successful and moderate in price. Special glasses are made to suit the apparatus. I am bound to say that there are cheaper ways of watering bees than this, and as breeding time approaches the beekeeper would do well to be preparing something in that line. Some people put wet tea-leaves in a saucer for them. This does very well if it is remembered to wet them, but this may be forgotten. There is nothing like the inverted glass in some form or other, as it can be filled when seen to be empty. *Agnes.*

FEEDING BEES: SUSSEX METHOD.

Owing to the very changeable weather we are having I fear this will prove a bad season for wintering bees. Some days are so mild and bright that my bees are as lively as though it were May instead of January, then there comes a hard frost that sends them shivering back into winter quarters. This will, of course, cause them to consume a greater quantity of honey than if the weather were altogether cold, and many a hive that was rich in October will be like old Mother Hubbard's cupboard before the next honey season returns. My object in troubling you is to make known to such of your readers as are beekeepers a very simple plan of feeding bees—a plan that I have never seen mentioned in the *British Bee Journal* or any other work on apiculture. In the late autumn, before packing and covering up the hives for the winter, I buy a few pounds of sound black brandy balls (a sweet dear to the hearts of children) and over and round about the feed-hole on the top of the straw skep I pack carefully about 1 lb. of balls, over these I place four folds of common house-flannel, which must quite cover the top of the hive; next a nice warm sack, and over all a red earthern pan, to act as a weight, and keep all dry. The wooden bar-frame hives I treat much in the same way, packing, the balls over a hole cut in the quilt, covering over with plenty of flannel before putting on the roof. I have never lost a hive since I adopted this mode of feeding, and my bees always swarm early in the spring, showing that they are healthy and strong. It is an old Sussex fashion, and was told to me many years ago by a woman who was known for miles around as a successful bee keeper. *G. N. O. L.*

The Flower Garden.

SURFACING THE ROOTS OF CONIFERS, &c.

Attention should be given to Conifers in pleasure grounds, to see they are not suffering from exhaustion of the soil. Araucarias require special care, or else they soon become unsightly by losing their bottom branches. They should have their roots carefully lifted, and the poor soil removed for some feet beyond their extremities, its place being supplied by a good sound compost containing a liberal addition of peat if obtainable; but they will grow quite well without it. Look after duplicate leaders, and remove all but one without delay. If these are allowed to run on, the symmetry of the tree will be spoiled. Those trees which have lost their leaders, and have consequently become dwarfed, may be assisted by having their side branches shortened.

BARE SPOTS UNDER TREES AND ROCKERIES.

Where grass edgings will not grow under trees, form the edgings of angular stones, tree roots, &c.; by setting them in irregular manner. Partially fill in between these with loam and leaf-mould, and plant with Ferns, Stonecrop, and Periwinkle, Mahonia, &c., all of which succeed fairly well under shade. In forming rockwork great judgment is required to make it so as to be in keeping with the natural surroundings.

Avoid the meretricious style of throwing arches with stones and cement across walks leading from one part of the garden to another. These are suitable only in places where there is some deep dell with bold cliffs. Where the rockery is only of the ordinary class, let its presence be gradually indicated by sinking a stone here and there in the greensward. As you proceed, show an abutting rock partially hidden by some overhanging bush. Then it may be a descent of a step or two on to a natural shelf of rock in the path. In constructing rocks, always let the shelves slope backward, or else your plants will be deprived of moisture, and in dry weather, unless constantly watered, they will become parched. See that a body of good soil is placed at the back, and between the stones, to supply sustenance to the plants placed in the fissures. In all these operations let Nature be as faithfully copied as possible.

It will now be necessary to look carefully over the stock of bedding plants. If the stock of any variety is short, it should be placed in gentle heat, to facilitate propagation. The general propagation will be better deferred until the middle of next month. *W. M. Baillie, Luton Hoo Park.*

SEEDS TO SOW.

Seed lists are now in the hands of most persons, and no time should be lost, therefore, in obtaining a supply of half-hardy and, hardy annuals for the current season. By a judicious selection a constant succession of bloom can be had till frost sets in. I would recommend especially the East Lothian strain of Intermediate Stocks. In high and dry situations these may be had in bloom out-of-doors till near Christmas. Some prefer sowing them in autumn, but I have succeeded admirably by sowing in the middle of January in gentle heat. When ready to handle, prick off into boxes, and harden off by degrees, and by March they will be ready to prick off again into a cold frame, when they may with safety be transferred to open ground in April. *W. M. Baillie. Luton Hoo Park.*

PLANTS AND THEIR CULTURE.

HOUSE DECORATIVE PLANTS.

PLANTS of a small size for domestic decoration, as well as cut blooms, are yearly increasing in demand in the majority of establishments, taking the place of the large specimens that used to be grown either for use at home or in the exhibition tent; and according to the requirements, whether it be for home decoration or to supply the great demands of the London season, the amount required must be well calculated, always allowing a surplus, so that there shall be no lack of anything; much will depend on the amount of convenience and of the labour at command. It is a great mistake to attempt to grow too much—a failing that is generally seen in small places, and it generally leads to disappointment on the part of both employer and gardener. Furnishing plants should be selected and grown that are of a lasting and enduring character; the most graceful and happiest in colour for the different positions for which they are required. Crotons, Dracænas, Aralias, Panicums, Sonchus of sorts, are most useful; but Palms stand first for most purposes, and there is such a large number of them which have proved themselves very enduring as house decorative subjects when used under adverse circumstances.

The sorts that will be found most useful are Kentia australis and K. Fosteriana, Cocos Weddelliana, Geonoma gracilis, Areca sapida, Phœnix rupicola, P. reclinata, Seaforthia elegans, Euterpe edulis, and Livistonia borbonica. The present is the best time to add to the stock when deficient, either by procuring nice small plants with characteristic foliage, or young seedlings, and growing them on. These young plants are raised from seed in very large numbers both at our large nurseries and on the Continent. A few dozens, procured yearly and grown on with rapidity, will give a supply that will always be equal to the demand. There is one thing that must not be overlooked in house decorating—that is, never to allow the plants to remain longer in the house than is absolutely necessary, as they are sure to suffer, and sometimes to an irreparable degree; by having extra plants in stock, and using them for a short time only, this will be avoided.

Poinsettias, when done flowering, should be placed in an intermediate-house, and kept rather dry, so as to ripen the wood for early propagating purposes; the same applies to Euphorbia jacquiniflora; and such things as Thyrsacanthus, Libonias, Linums, Plumbago capensis, Eranthemum pulchellum, Sericographis, &c., should now receive a little encouragement to make wood suitable for cuttings. A few of the undermentioned may now be brought into a little bottom-heat to come in early:—Caladiums, Gloxinias, Gesneras, Achimenes, and Tuberoses. Harwoodias and such climbers as Bougainvilleas, Allamandas, may now be pruned; but Clerodendrons, Passifloras, Thunbergias, &c., had better be left untouched till a little later in the season.

THE FORCING HOUSE.

This should be well supplied with plants from cold pits and the plunging quarters according to the demand. There can be no rule laid down in this matter, as in nearly every garden there are plants which are much more appreciated than in others, and the requirements at different times are equally as varied as regards quantity, as in kind; but in most of them a quantity of Rhododendrons, Stapelias, Azaleas of the greenhouse sections, as well as Azalea Mollis, Prunuses of different kinds, Persian and other Lilacs, Deutzia gracilis, Andromedas, and a few Japan Maples for the sake of their foliage, Amaryllis, Hyacinths, Narcissi, Spiræa japonica, Lily of the Valley, the latter are best plunged in fibre or coal-ashes on bottom-heat. Temperature for the present:—the stove at 65°, the greenhouse at 50°; the fernery at 55°, and the forcing house at 65°. *A. Evans, Lythe Hill, Haslemere.*

THE ORCHID HOUSES.

POTTING PLEIONES.

THE remarks on these at p. 78 may mislead young cultivators. They ought to be potted as soon as the flowers fade, for this reason, that the young roots begin to form when the plants are in flower. The growths on our plants are, as stated, 1 and 2 inches long; but they have been potted a month. They ought to be potted every second year only. This I recommended some years ago. I well remember when calling upon Mr. Burbidge in 1884, he showed me a splendid specimen which had not been potted for two years. We get the largest masses of flowers on the unpotted plants, and they form equally good bulbs. I allude to the three varieties, P. maculata, P. lagenaria, and P. Wallichiana. Those that flower later, such as P. humilis, would require to be potted later. The point is that between the flowering of the plants, and their making a growth of 1 or 2 inches a period of six weeks is covered, and during all that time young roots are being formed which get sadly injured when the bulbs are separated. *J. D.* [Perhaps Mr. Bradshaw retards the flowering of his plants, hence the difference in time. ED.]

HARDY FRUIT GARDEN.

ORCHARD TREES.

LARGE trees which have become crowded with wood should be moderately thinned out. It is not advisable in the case of high trees (and where they are exposed to winds) to over-thin the branches. Any long straggling branches with a tendency to depart too far from the strong leaders should be shortened back, as the fruit on such, although always the finest and best coloured, generally gets bruised or blown off by the swaying of the branches. Old trees, which are not fruiting satisfactorily, in many instances would well repay a good top-dressing of the roots; but for these to obtain the full benefit of such, it should be applied under the turf, and not on the top. After removing the latter, by cutting it into convenient-sized pieces, and rolling back, the surface of the soil beneath the turf should be pricked up with a fork; the dressing should then be applied in the shape of good rich farmyard manure mixed with road-scrapings and edgings, or any other good material for the purpose which may be available.

PLANTING.

When planting fresh orchards, success in a great measure depends on the judicious selection of the situation, not only with due regard to the depth of good soil, but also the all-important matter of shelter from north and easterly winds. Low-lying, damp situations should not be chosen for the natural shelter which they may possess, as, comparatively speaking, in such a position the trees when in blossom would suffer more from late frosts than they would from winds if planted on higher and naturally more exposed, land. Unless the land is really good, forming an orchard with stardard-trained trees would not be advisable, that is to say, if the produce from the trees is intended to be the main source of profit from the space planted, as with a poor soil standard trees would seldom form large vigorous heads such as would naturally be expected from the distance at which the trees are generally placed apart. Where shallow soil has been most successfully dealt with it has been advisable to give attention to dwarf bush-shaped trees planted much thicker and on a smaller piece of land. After planting the trees some 7 or 8 feet apart a good mulching will be most valuable, not only to keep the ground moist and draw the roots to the surface, but also as a saving of hoeing and weeding throughout the season. Trees planted thus thickly on the ground should have their highest branches kept within reach of a man standing on the ground. When forming a plantation of dwarf trees of this kind, and where walls or other shelter does not exist it can be quickly provided by planting evergreen trees or shrubs; whereas in the case of an orchard being formed with standard trees, say, on 6 feet stems, if the required shelter is not already in existence it is obvious that longer time and more expense will be incurred in providing it. Apples for dwarf plantations should be on the Paradise stock. *G. H. Richards, Somerley, Ringwood.*

FRUITS UNDER GLASS.

EARLY MELONS.

IF seeds have not already been sown lose no time in doing so, placing one seed in light soil in the middle of a 60-sized pot, and inserting the pots in a bottom-heat of 70°—75°. Keep close to the glass to obtain stout short-jointed plants. Prepare and get ready the bottom-heat material, and when trodden well into the beds procure fresh fibry turf, 3 or 4 inches in thickness; turn the grassy side downwards, covering the whole of the beds, after which tread firmly, and when the plants are required to be planted, put about half-a-bushel rather fine loam, in which to plant them, the tender roots taking readily to this at starting. When the heat has declined to about 80° plant out the young seedlings firmly in the soil, and keep the night temperature at 65°—70°, allowing an increase of 5° by day; the temperature by sun-heat may rise to 80° before giving air. Shut up early to get all the benefit of the sun-heat possible. Syringe and damp the house as well as keep the evaporating troughs filled with water, to prevent spider from obtaining a footing. Water with warm water through a fine rose; at the same time be careful in keeping it away from the collar of the plants, as it is very likely to cause canker if allowed to lodge thereabouts. *J. Vert, Audley End Gardens.*

THE KITCHEN GARDEN.

GENERAL WORK.

HOTBEDS, when made up, should have the frames placed on, and a layer of leaves spread over the surface of the bed, followed by a foot of soil and allowed to settle a few days before sowing; if required for Carrots, or small seeds of any description, the soil should be sifted and made firm, a sprinkling of soot or lime occasionally will keep slugs and worms under, and also act as a stimulant. Make slight sowings in pans, or warm frames, where there has been any deficiency in autumn sowings, of Cauliflowers, Cabbage, Lettuce, &c. Sow Peas on warm sheltered borders; after a dusting of lime or soot, earth up those sown in November, and stake, and shelter with Laurel or Spruce branches. Introduce Seakale as required, a perfectly dark place with a gentle heat is all that is necessary; generally, provision is made in the Mushroom-house (and nowhere better), by adapting a space which can be covered and kept dark, with lids or shutters; the plants should be sparingly trimmed of any straggling roots, and packed thickly and firmly together, in a depth of soil sufficient to allow the crowns to be seen, water sparingly, until they show signs of starting; a covering of 6 inches of dry sweet Oak leaves will be found to assist the growth. Permanent plantations intended for forcing out-of-doors should have pots placed over them and a supply of leaves and dung prepared in readiness to cover with, previously liming and forking between the crowns. Rhubarb can be prepared for and treated in almost precisely the same manner as detailed for Seakale. Take up, pot, and place in gentle heat any herbs likely to be called for, such as Tarragon, Mint, Sorrel, &c., also Chicory, to be bleached in the Mushroom-house to augment salading. Collect material for succession Mushroom beds, which frequently turn; those in bearing should be supplied with tepid water, when necessary, which can generally be ascertained by the produce appearing dry, and the upper skin cracking. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan. 25	Royal Botanical and Horticultural Society, Manchester. Annual Meeting. Sale of 5000 Lilium auratum, from Japan, at Stevens' Rooms.
TUESDAY,	Jan. 26	Special show of Orchids in Flower, at Protheroe & Morris' Rooms. Sale of Fruit Trees, Roses, Shrubs, &c., at Stevens' Rooms.
WEDNESDAY,	Jan. 27	Sale of Lilium auratum, Roses, Plants, &c., at Protheroe & Morris' Rooms. Sale of Nursery Stock, at the Exotic Nursery, Tooting, by Protheroe & Morris.
THURSDAY,	Jan 28	Sale of Valuable Established Orchids, at Stevens' Rooms.
FRIDAY,	Jan. 29	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	Jan. 30	Sale of Fruit Trees, Roses, Shrubs, &c., at Stevens' Rooms.

THE preceding week was, as we noted in our last issue, a very busy one for London horticulturists, in spite of the severity of the weather, which was not such as one generally associates with horticultural amenities. The date at which we went to press prevented us from noticing still another meeting to add to the crowded list—we allude to the Annual General Meeting of the GARDENERS' ROYAL BENEVOLENT INSTITUTION, which took place on Friday last. We have often felt it a duty to commend this Society to the notice of our readers, and the duty has been rendered pleasant by the consciousness of the good work done by the Society, and of the admirable manner in which its affairs have been for so many years conducted by the committee, and especially by their evergreen Secretary, Mr. CUTLER. We look back to the successful attempt to increase the Pension Fund with unalloyed satisfaction, and we think that the statement we are about to make will be received by those interested with equal pleasure. At the annual meeting all the candidates—no fewer than twenty-six in number—were put on the pension list without the necessity for election. This means that all the applicants for the year were elected without the wearisome anxiety of a canvass, and that their friends and supporters were spared the worry, the labour, the expense, and the loss of time that we all know to be generally associated with elections of this character.

How well the funds of the Society must have been managed to enable this to be done without risk, will easily be understood. The balance-sheet, which we subjoin, will show in how satisfactory a position the Society really is, and will, we hope, stimulate those who have not yet become subscribers, or contributed to its funds, to do so forthwith. The reproach that the gardeners did so little for their own Society is no longer just in view of the donations and sacrifices that were made to increase the Pension Fund. Still, even now the amount of annual subscriptions is greatly too low, and the subscriptions of the gardeners are hardly proportionate to those of outsiders.

The anniversary festival will be held in July next, under the Presidency of Mr. JOHN SHERWOOD, of the firm of HURST & CO. The fact that it is very many years since a member of the trade occupied the position, joined to the personal popularity enjoyed by Mr. SHERWOOD, should secure a large attendance and a liberal subscription. Apart from personal motives, we are glad to see that the Chair is to be occupied by one of the fraternity, and that it is no longer considered necessary to have an outsider as Chairman. Surely we ought to be able to dispense with patronage of this kind, however well-intentioned it may be. The public will respect us all the more for doing our own business in our own way, and will not withhold their help from those that they see are doing their best to help themselves.

The following is a statement of the receipts and payments of the Gardeners' Royal Benevolent Institution for the year ending December 31, 1885 :—

DR.	£ s. d.	£ s. d.	£ s. d.
To Balance from 1884		..	386 8 10
Annual subscriptions ..	1204 13 0		
Donations at and in consequence of annual dinner ..	771 3 6		
		1975 16 6	
Advertisements	56 0 6		
Amount of collecting cards ..	143 7 0		
		199 7 6	
Dividends on stock	549 15 0		
Interest on deposits	2 10 3		
		552 5 3	
		2727 9 3	
Legacy from Mrs. Dodson ..	450 0 0		
,, ,, J. S. Law, Esq.	100 0 0		
		550 0 0	
Augmentation Fund account ..		4987 4 6	
			8264 13 9
			£8651 2 7

Stock, £21,100, £3 per Cent. Consols.

CR.	£ s. d.
By pensions	1655 1 4
Secretary's salary	160 0 0
Printing	117 4 3
Furniture for office	40 19 6
Hire of committee room	5 17 0
Stationery	17 16 4
Books of cheques	3 9 2
Advertising	6 1 6
Expense of annual dinner	78 5 3
Postages, travelling expenses, and sundry petty expenses	84 6 9
Solicitor's bill	2 2 0
	£2171 3 1

	£ s. d.	
Purchase of £5150 £3 per cent. Consols	4992 13 9	
Amount placed on deposit	1100 0 0	
		6092 13 9
Balances, viz.:—		
With Treasurer at banker's ..	371 19 9	
With the Secretary	15 6 0	
		387 5 9
		£8651 2 7

Audited January 11, 1886.
JOHN LEE.
JOSEPH F. MESTON.
JESSE WILLARD.

THE recent decision in the Court of Queen's Bench by Mr. Justice MATHEW, in WARD *v.* HENEGAN, reported in our last impression, p. 87, is important, inasmuch as it shows the liability of growers and buyers of fruit with regard to the return of baskets supplied to them by the salesmen, and proves the necessity on their part of keeping an accurate account of the receipt and of the return of the salesman's baskets.

The great strength of the plaintiff's (the salesman's) claim in the opinion of his Lordship (expressed in the early course of the trial) was that an accurate account appeared in his books of the number of baskets forwarded to the defendant, and of the number received from him, which circumstance entirely overruled the defence that it was contrary to custom to charge, and that in fact the defendant did not detain them. His Lordship, after hearing this evidence, at once suggested that the case should be stopped, and a settlement come to.

It may not be generally known to our readers that a salesman receiving an average consignment of 1000 baskets of fruit per day during the heavy part of the soft fruit season requires at least from 8000 to 10,000 baskets for stock, and as each basket costs from 1*s.* 2*d.* to 1*s.* 10*d.*, the capital employed in this branch of the business is not inconsiderable. The large proportion required is easily accounted for in the following manner. A grower sending daily fifty half sieves of fruit requires at least 150 to start with, for say commencing on Monday he has exhausted his stock by Wednesday, on which day the first fifty returns sent from the salesman should reach him, the railway companies always taking two and often three days when the season is heavy to deliver the returns. In the meanwhile fifty empties per day are crossing, so that by the time the week is up 300 more empties have been forwarded to the grower; making the total 450, or nine times the daily consignment. But the question naturally arises, What has become of the baskets that reached the salesman full at the early part of the week? May they not have been returned by this time? Experience shows that they rarely come back in less time than seven days and frequently longer, as large quantities of fruit are sold to go to the provincial markets, while a certain percentage never come back at all.

A serious loss to salesmen also yearly arises through careless growers allowing the baskets to be left here and there on their plantations frequently to be used for other purposes than that for which they are intended, and hence the trade are beginning to see the absolute necessity of making a regular charge in order to protect themselves.

Growers as a rule forget that at one time the salesman had no expense for baskets, all cost being found by his clients, who each bore their own loss on that head; but now the whole responsibility rests with the salesman, thus shifting the loss from the many to the one.

—— THE ASSISTANT DIRECTORSHIP, ROYAL GARDENS, KEW.—We are informed that Mr. D. MORRIS, the Director of the Botanic Gardens, Jamaica, has accepted the office vacated by Mr. DYER on his promotion to the Directorate.

—— ROYAL HORTICULTURAL SOCIETY.—It has been decided to hold the annual dinner of this Society at the "Criterion," Piccadilly Circus, and not (as we were misinformed last week) at the "Albion," Aldersgate Street.

—— PONTEDERIA CRASSIPES (fig. 20).—This singular aquatic, remarkable for the balloon-like dilatation of the leaf-stalk, by means of which it is enabled to float on the surface of the water, although an old inhabitant of the stove tank in the Oxford Botanic Garden, unlike its ally, the free-flowering Eichornia azurea, has not been induced to bloom until last summer, when it produced a few fine spikes of its beautiful flowers. Mr. BAXTER tells us that his plants of Pontederia crassipes, having survived the previous winter in better condition than usual, were placed early in March last in a space about 4 feet square, divided off from the main tank, leaving the water 9 or 10 inches deep over a layer of good loam, into which the plant rooted quickly, and soon became crowded together, losing the usual inflated foot-stalks and producing almost cylindrical ones, rising to a height of about 20 inches—the temperature of the water and other conditions being the same as for the Eichornia cœrulea. This is the first occasion that we ever remember to have seen this plant in bloom, and we are under obligations to Mr. BAXTER for calling attention to the circumstance.

—— THE BOTANICAL SOCIETY OF EDINBURGH.—The last issued part of the *Transactions* contains a conspectus of the Hepaticæ, by Dr. SPRUCE, whose name, however, does not appear in the title. This important monograph occupies nearly 300 pages, and is illustrated by twenty-two lithographs, showing details of structure.

—— ROYAL WARRANTS.—Messrs. JAMES CARTER & CO., who have supplied their celebrated grass seeds and other specialties to Her Majesty the QUEEN for nearly twenty years, have been appointed as seedsmen to the Royal Gardens, &c. Messrs. CARTER have for many years held Royal Warrants as seedsmen to H.R.H. the Prince of WALES, H.R.H. the Duke of CONNAUGHT, H.I.H. the King of ITALY, and H.I.M. the King of PORTUGAL.

—— MILDIOU.—We have often wondered why our French friends spell this word in the way they do. We now learn that this is supposed to be the phonetic spelling for our English word Mildew!

—— A PRACTICAL SUGGESTION.—In the Eberswald Fruit Society, amongst many useful subjects brought forward for discussion was one for the supplying of good trees of the best kinds to those persons in the district who were interested in fruit culture, and yet had not the means to buy trees, &c.—another practical suggestion worthy of adoption nearer home, and one we have often suggested to local horticultural societies instead of money prizes.

—— NEW IVY-LEAVED PELARGONIUM, SOUVENIR DE CHARLES TURNER.—Of the origin of this fine variety we have no information. The colour of the flowers is deep rose, shaded with amaranth; the habit is good; and it has been deemed good enough to be awarded the First-class Certificate of Merit of the Royal Horticultural Society.



FIG. 20.—PONTEDERIA CRASSIPES: FLOWERS OPALESCENT BLUE. (SEE P. 112).

—— THE "ORCHID ALBUM" FOR DECEMBER contains illustrations of the following species:—

Acranthus leonis, t. 213.—This species has been recently figured and described in our columns. Mr. WILLIAMS recommends that it should be cultivated in small baskets or pans suspended from the roof, with sphagnum moss and lumps of charcoal or potsherds intermixed with the moss. They require to be shaded from burning sun, and kept moist at the root during the summer. Insects and cockroaches should be watched for.

Dendrobium nobile nobilius, t. 214, is a fine variety of this old favourite, differing from the type in the larger flowers, with broad rosy-purple segments and a white lip with a deep purple blotch at the base, and a light rosy-pink apex.

Odontoglossum Insleayi splendens, t. 215.—A Mexican evergreen species, like O. grande. The flowers measure 4½ inches across the sepals and petals, are rich shining brown tipped and edged with yellow; the large expanded lip is yellow, spotted with bright carmine and having a deep orange crest. It flowers in October and November. Mr. WILLIAMS finds it does well in the warmest end of the Odontoglossum-house, and that it thrives well in fibrous peat with good drainage, a moderate supply of water being given at the roots during the growing season. The plants should be kept near the glass, shaded in bright sunshine.

Miltonia Warscewiczii, t. 216.—The flowers are in racemes, each 2 inches in the longest diameter, segments narrow, purplish-brown, edged with white, undulated at the edge; lip broadly oblong, two-lobed lobes, rounded slightly, overlapping, deep purple edged with white. The plant does well in the Cattleya-house, slightly shaded, grown in pots with fibrous peat mixed with lumps of charcoal.

—— THE "BOTANICAL MAGAZINE."—The January number contains illustrations of the following plants:—

Ixora macrothyrsa, t. 6853.—A magnificent species, native of the Dutch Indies, and figured in the *Florist*, 1878, p. 76, under the name of I. Duffii. The leaves are about 12 inches long, oblong lanceolate, acuminate. The sub-globose heads of flowers are about 8 inches in diameter, with innumerable scarlet flowers.

Martinezia caryotifolia, H.B.K., t. 6854, is a small tropical American Palm, with slender, unbranched, shiny, annulate stems, bearing a tuft of pinnate leaves, the pinnæ wedge-shaped, erose, springing from a spiny rachis. From its moderate height and ornamental character it is suitable for stoves of moderate dimensions.

Muscari Szovitzianum, Ruprecht, t. 6855.—Mr. BAKER says of this species that it is intermediate between M. botryoides and M. racemosum. It has the bright blue flowers of the former, but the raceme is denser, the leaves are narrower, and the perianth of a different shape.

Layia glandulosa, Hooker and Arnott, t. 6856.—A very pretty annual Composite of branching habit, and broadly linear hispid leaves. The branches are terminated by solitary flower-heads 1—1½ inch in diameter, surrounded by a single row of linear obtuse bracts. The ray-florets are pearly white, with a yellow disc. It was discovered in British Colombia by DOUGLAS, and occurs also in California. The seeds were introduced by Mr. THOMPSON, of Ipswich.

Rosa pisocarpa, A. Gray, t. 6857.—A pretty Californian Rose, with few prickles, pubescent, pinnate leaves of small size and pink flowers about an inch in diameter.

—— THE "GARTENFLORA."—The number for November, 1885, contains coloured figures of the following species:—

Phacelia Parryi, t. 1207.—A beautiful Californian annual, sent out by Messrs. DAMMANN & Co., of Naples. The leaves are in form like those of a Chinese Primrose, the flowers borne on cymose panicles, each with five rounded lobes of a deep purple colour.

Mamillaria echinata, t. 1208.—A very pretty little plant of the Stelligera section. The globular or oblong plant is studded with tubercles, from whose apices proceed tufts of numerous arching spines, straight, not hooked at the points. The flowers are produced in great abundance, and are succeeded by small reddish berries, which give the plant a very ornamental appearance.

—— "ONDERZOCK DER ZIEKTEN VAN HYACINTHEN, &c."—Under this title, Dr. J. H. WAKKER, of Amsterdam, researches into the diseases of Hyacinths caused by bacteria, the attacks of a Peziza, the diseases of Tulips, &c. The pamphlet, unfortunately for us, is in Dutch. It may be suggested that a *resumé* in Latin or French would be very acceptable to those benighted ones unacquainted with the Dutch language.

—— TRANSPORT OF CUTTINGS.—The following letter from Baron VON MUELLER will be of interest to those desirous of sending or receiving cuttings from a distance:—

"To show the facility with which cuttings also of rather hard-wooded plants can be sent to very long distances, I may mention that an experiment lately instituted by me in sending cuttings of Buddleia madagascariensis and B. globosa simply packed in wax-cloth, by post, all the way to Madras, proved perfectly successful, as stated by Mr. LAWSON and Mr. GAMBLE, while cuttings of the large-flowered Hypericum shrubs of Upper India, and of some other kinds of plants, reached me in return also quite safely by the same simple process. The time required for the sending of these cuttings was four to five weeks."

—— NORTH OF SCOTLAND HORTICULTURAL SOCIETY.—The monthly meeting of the North of Scotland Horticultural Association was held on the evening of Friday, the 15th inst., in the hall of the Christian Institute, Aberdeen. There was a large attendance of members. Mr. PETER HARPER, President of the Association, occupied the chair. The subject under discussion was, "Should Science or Practice obtain most Prominence in Discussion on Horticultural Subjects?" Mr. ALEXANDER ROBSON, Aberdeen, opened the discussion in favour of science with a capital paper, in which he dwelt on the importance of a scientific knowledge of the principles which regulated the growth and reproduction of plants, &c. Mr. J. HENDERSON, Wellwood, in an able and trenchant speech, supported the idea of practice being of the first importance to gardeners. A long discussion followed, at the close of which the advocates of science were found to be in a great minority. A cordial vote of thanks was passed to Messrs. ROBSON and HENDERSON, and a similar compliment having been passed to the President, the meeting ended.

—— WRIGHT'S BOILERS.—Messrs. WRIGHT'S Boiler Company, of Airdrie, have been awarded medals for their "Endless-flame Impact" hot-water boilers at both the London (Alexandra Palace) and Inventions International Exhibitions.

—— A NEW CELERY.—We take the following from a recent number of the *Journal de la Société Nationale d'Horticulture*:—The following are the chief advantages claimed for this new variety—Firstly, the plant is very hardy, and is not subject to fungus; secondly, it is dwarf, grows in close tufts like Endive, so that it can be easily grown in a frame; thirdly, it is not necessary to earth it up to blanch it, indeed it is sufficient to tie it up like Endive in summer and to cover it in winter with leaves or straw-mats. The new Celery introduced by M. FORGEOT has characteristics and habits of growth which distinguish it from ordinary Celery or from Celeriac. The leaf-stalks and root-stocks are smaller than usual, the latter forming a nearly ovoid body, only 2 or 3 centimetres thick: from the whole of the surface of which spring a great number of small, leafy branches. Hence a large and compact mass of leaves, much broader than high, and the general appearance of which is that of Endive.

—— THE BOTANY OF SINAI AND PALESTINE.—Mr. H. C. HART has recently published in the *Transactions* of the Royal Irish Academy an account of the botany of Sinai and Palestine. The desert flora is characterised here as in Africa, Persia, and North-west India, by plants of grey hoary colour and succulent or glaucous foliage, often prickly and not unfrequently covered with gummy exudation. Many are aromatic, some like Peganum, nauseous. On Sinai, at a height of 5500 feet, the Date Palm was found together with the pyramidal Cypress. Mount Sinai is described as a mountain of Labiatæ, Mount Hor as a mountain of bulbs, twenty species being found on the latter. In the plains near the Dead Sea, Calotropis procera, an Asclepiad, is the most remarkable plant. It might be compared to a gigantic Cabbage, 10 to 15 feet high; it has also an infusion of Cactus growth, and the bark of a Cork tree. Its fruit, the size of an Orange, is full of air and silk, and is probably to be identified with the Apples of the Dead Sea. An interesting Jerusalem species is the red berried Mistleto (Viscum cruciatum), parasitic on the Olive, and known elsewhere, only sparingly in Southern Spain. At Marsaba there is a Date Palm tied up in the courtyard of the convent, which the monks relate was planted by St. SABA, A.D. 490. This tree is of interest, however, since the fruit that it bears is always stoneless. A map and illustrations accompany the text.

—— COVENT GARDEN.—Since our last notes on the market, what a change is to be seen in the cut flower division; advances have also been made in vegetables and fruits. Orchids are now plentiful, Dendrobium nobile, various Oncidiums, Lælias, Cœlogynes, Lycastes, and Odontoglossums in variety, Camellias, Clove Carnations, Cannas and Mignonette, with Azalea indica and Eucharis, give a varied selection. One of the shops had a large bunch of Eucalyptus globulus showing both flowers and fruit on it, and both in quantity; this was doubtless from abroad, probably the South of France. Plants in pots consist of a good lot of bulbous plants, such as Hyacinths, Tulips, and Narcissi, to which may be added Ericas, Primulas, and Palms. Among fruits and vegetables Oranges are very fine, and arrive in enormous quantities, which may also be said of Bananas. Custard Apples are looking very good, as are Limes. Salads have now advanced to a decent size, and Sea-kale is plentiful. Leeks, Carrots, Cauliflowers, &c., are in very good condition. To these may be added Artichokes of both sorts, Turnips, Celery, Celeriac, Mushrooms, &c.

—— THE ADVANCE GUARD.—Mr. WARE sends us flowers of the beautiful white Hoop Petticoat, Narcissus monophyllus, and of Lachenalia quadricolor, with elongated, bell-shaped flowers, the yellow segments of which are turned up, and tipped with dull red. With these came a beautiful form of the lovely Iris reticulata, a dwarf form, with small flowers of the ordinary character, but smaller. It is now flowering in the open air at the Tottenham Nurseries.

—— READING CHRYSANTHEMUM SHOW.—This is carried out by an organisation quite independent of the Reading Horticultural Society, Mr. RICHARD CATCHPOOL, an old townsman, being the Hon. Secretary; and at the meeting of subscribers held a few days ago it was reported that the second exhibition, held in November last, proved as successful as the first, and there is now a balance in hand of something over £60.

—— THE RAILWAY ACCIDENT AT MANOR PARK.—The Mr. HORSMAN reported by us to have been injured in the recent accident on the railway near Manor Park Station, G. E. R., is the principal of the firm of FRED. HORSMAN & Co., Colchester, Orchid Importers, &c., and not an *employé* of the New Bulb Co., at the same place.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—The Annual General Meeting of this Society will be held on Monday evening next, January 25, at the "Old Four Swans," 83, Bishopsgate Street Within, City, at 7 o'clock precisely.

—— THE MECHANICAL INJURY TO TREES BY COLD.—At a recent meeting of the American Association, a paper on this subject was read by T. J. BURRILL, in which he stated that there are two kinds of mechanical injury due to a low temperature, viz. (1), the cracking and splitting of the bark and wood in a longitudinal-radial direction; and (2) the separation of the concentric layers of wood and bark, and especially the rupture of the cambium, thus destroying the bark and also killing the tree. The first injury is due to the shrinking of the tissues by cold. The second is due to the growth of ice-crystals in the annual rings on the surface of the wood.

—— GARDENING APPOINTMENTS.—Mr. JAMES MCNICOL has been appointed Head Gardener to JOHN MILES, Esq., Bisterne Park, Ringwood, Hants. —Mr. G. SPRINGTHORPE has been appointed Gardener to R. H. ALEXANDER, Esq., Gifford House, Roehampton, Surrey.—Mr. FRANCIS SCOTT, Gardener to J. M. GIBB, Esq., Sherborne Vicarage, Warwickshire, has been appointed as Gardener to M. B. EWING, Esq., Loch Park House, Denny, N.B.

HARDY WINTER BLOOMING SHRUBS, &c.

NUMEROUS and interesting as are the types of hardy plants suitable for flower gardens or lawns and shrubberies, there is, however, a special and distinctive feature, connected with winter or very early flowering examples, which claims more general admiration. Though these particular subjects are not numerous, it may be well at this planting season to draw attention to them.

CHIMONANTHUS FRAGRANS.

This is a deciduous shrub, introduced from Japan about the year 1775, growing to an average height of 7 feet, and producing numerous small flowers from the axils of the past leaves upon bare shoots, the colour of which is greenish-white outside, but more purple within, and possessing remarkable fragrance. When planted against a warm wall, and trained upon it, it grows to a much greater height—this mode of growit being very suitable, as by judicious pruning the many spurs formed are induced to bloom freely in addition to the young wood. An improved variety, named Chimonanthus fragrans grandiflora, should alone be planted. The English name of the plant is Winter Flower.

CYDONIA JAPONICA,

the Japan Quince tree, introduced about the year 1815 only, is to be met with so generally throughout the British Isles that it would seem superfluous to refer to it, but for the fact that amateur and juvenile readers are ever increasing in numbers.

Cydonia japonica is readily propagated, both by means of suckers, layers, and cuttings. Its growth is fairly free, treated to good soil upon open lawns, where the plant soon makes a fine bush. Against walls, where it always blooms best, it would seem to be much slower in furnishing needful spaces than most other subjects. The reason is to be found in the practice of permitting the young plants to form innumerable young branchlets around the base of the plants. By simply removing these as frequently as they are seen to form, as is done to all other climbing plants, an incentive to rise would be given to them. Standard Cydonias would prove very showy when in bloom, though no means have yet been found to graft them upon any useful kindred plant. The Cydonia may be said to bloom at all seasons of the year—certainly very early after the advent of the month of February in each year. Nurserymen offer the white-flowered Cydonia japonica alba and C. j. grandiflora, of which a semi-double-flowered variety existed a few years since. These desirable varieties are so seldom met with that they may be not inappropriately classed as novelties.

DAPHNE LAUREOLA.

The Spurge Laurel has distinct merits which should assure it a place in all shrubberies; it has the exceptionally favourable characteristic of growing freely and well under trees, the drip from which does not injure it in the least. Its leaves are deep shining green and dense; the average height of the plant being from the 3 to 4 feet. Though the numerous flowers, produced from January to March, are greenish-yellow, and by no means showy, they are nevertheless numerous and very fragrant. In some parts of the country it berries somewhat, freely and we are informed though birds eat them with evident safety they are nevertheless poisonous to animals. The plant is readily propagated by division, and it is not unfrequently used by nurserymen as a stock to graft other rarer species of Daphne upon.

D. pontica is a similar plant, the leaves upon which are more oval, and the flowers fewer in number, existing upon longer foot-stalks, which give it a freer, probably more pleasing appearance, besides which they are even more fragrant. This species thrives best in the shade also, and is well suited for low north aspect walls.

DAPHNE MEZEREUM.

The common Mezereon, which is sometimes called Spurge Olive, has long been popularised in connection with cottage gardens throughout Great Britain. The name Mezereon, is supposed to have been derived from the Persian name, "Madzaryon," but it is also considered an indigenous British plant. The plant commences to flower in February; the flowers, which clothe the generally leafless stems being deep red, pink, and white, according to the several varieties existing and grown, seedlings from either being sometimes given to vary as regards colour. The plant is very hardy and enduring, though it is seldom taken sufficient care of to permit of its growing to full size, at which stage it is an extremely showy object. Cottagers, and, I fear, gardeners, too, are too prone to divide their plants as often as rooted divisions exist, instead of permitting each to develope to its proper size or proportions, when it will obtain a height of 4 feet, being of equal size through or across, in neat bush form. Following the blooms, very cheerful crops of red berries form. These are generally devoured by birds. When taken off, so soon as ripe, and sowed in the open ground, they germinate and form young plants readily the following spring, whereas if permitted to remain in store for a season and to become dry they take another year or two to germinate. As these plants commence growing so early in autumn, it is highly desirable to transplant them not later than the first or second week in November. Many examples of them are lost owing to injudicious transplanting in the spring months. The whole thrive best in a deep loamy soil. They are used very commonly by nurserymen to graft greenhouse Daphnes upon. To ensure blooms and berries in abundance an open sunny aspect is very desirable, indeed they do not thrive when planted in shady places.

ERICA CARNEA.

The extremely pretty, hardy varieties of the Moor Heath, which bloom so freely, commencing with the month of January in each year, and onward, should be grown in every garden where American beds or places where peat-soil can be secured. As edgings to beds of Ghent and Mollis Azaleas, Kalmias, &c., they are indispensable. Apart from their decorative merits in the border, the flowers often afford very valuable addition to the store of cut flowers required during winter for household work. The flowers exhibit the most perfect immunity from injury by severe frosts, snow, &c., lasting a long time in full beauty. Nurserymen catalogue these species under the names of Erica herbacea, E. alba, and E. alba carnea, possessing presumably sub-species in kind. A considerable merit has still to be noted connected with these plants, viz., that when once properly planted they last for years, slowly increasing in size, so as to become objects of great beauty. They are very easily propagated, besides, it is only necessary to place an additional depth of peat soil around the base of each thrifty plant to insure the branches forming roots so freely as to admit of their being successfully divided at will, or, what is probably more convenient, have sundry young rooted parts removed without injury to the established plants..

ERICA MEDITERRANEA.

This, through a taller growing species of the Moor Heath, blooms also early in the month of March and onward. Though known as the Mediterranean Gypsocallis it is, I believe, indigenous on the western coast of Ireland, about Connemara. It is capable of growing into pyramidal shrub form, some 8 or 9 feet in height, in which form it is needless to say it is an object of great beauty, growing in single specimen form upon lawns. Such plants once existed at Syon House, but were unfortunately killed by the severe frost existing at the close of the year 1837. Nurserymen catalogue four or more distinct varieties of this species, amongst which Messrs. Little & Ballentyne includes a dwarf form under the name of E. M. nana.

JASMINUM NUDIFLORUM.

The naked-flowered Jasmine though probably the most popular or generally grown, is nevertheless, I believe, the latest introduced of all well-known forms up to the year 1884, Jasminum officinale having been introduced in the sixteenth century. J. nudiflorum, a native of China, flowers profusely, as is well known, upon its long whip-like branches, often from the month of November onward. It is a most free growing plant, adapted for any aspect, and would prove a very pleasing associate, if allowed to grow and intertwine with Chimonanthus fragrans, previously noted, the stalks being of a light ash or grey colour and stiff by contrast with the green repent growths of the Jasmine.

LONICERA STANDISHII.

Amongst the many plants introduced or named after that able horticulturist; whose memory is still vivid in the recollection of many readers, the winter flowering Honeysuckle, Lonicera Standishii, must, owing to its delightful fragrance hold high rank. It is more of a pillar plant than free climbing, as are many of its allies, and is an introduction from Japan. It succeeds well with a slight amount of pruning as a shrub, and its quaint flowers, of whitish colour, are enhanced by the display made with its stamens. Its usual time of flowering is during the Christmas week and onwards, and it is a plant of a most enduring hardy nature, the leaves being large, somewhat more rounded than true ovate, succeeding admirably even in the poorest stony soil, and if necessary upon a somewhat northern aspect. Owing to its freedom of flowers at such an exceptional date and moderate growth it is deserving a place against a wall, in instances where a large expanse has to be filled with a variety of subjects.

MAGNOLIA CONSPICUA.

The Chinese Yulan, or conspicuous Magnolia, must not be omitted from this list, more especially as during favourable seasons it blooms in this country during the month of February and onward. The huge white and fragrant flowers expanding before the leaves form make it indeed the most conspicuous of all flowering plants at this season of the year. It is admirably suited for large niches, &c., against sunny walls, though it is so hardy and free that it succeeds admirably in other situations, and the wonder is it is not more commonly planted, especially in suburban districts, where showy plants are always so very desirable a feature. Many noble plants—we may have written trees—of this noble species exist in the country, suffice that I refer to one only—that fine example annually blooming near one of the eastern entrances to the lower grounds attached to the Crystal Palace. In China, its native country, it attains to a height of from 40 to 50 feet, examples even in Britain having been known to reach between 30 and 40 feet. Magnolia conspicua becomes more or less endwarfed by grafting upon Magnolia purpurea, by which means more compact forms for low shrubbery planting are obtainable. It is also increased by layering, though branches often take two or three seasons to root properly.

BERBERIS JAPONICA.

Amongst the many beautiful flowering species of Berberis the Japanese form, Berberis japonica, stands out characteristically, owing to the boldness of its leaves and its peculiarity of blooming during the months of January and February. Though not a very showy plant as regards beauty, it has merit, nevertheless, and where a colony of winter-blooming shrubs are planted together, would prove an indispensable addition. Young plants are quite at home in front rows of shrubberies, and a clump of them have a charming effect, neatly planted alone upon the lawn. This species delights in deep loamy moderately enriched soils, any additional attention given to them in regard to culture being well repaid, owing to the fact that by this means much finer foliage is induced to form, enhancing appearances many-fold.

ULEX EUROPÆA FLORE PLENO.

The double-flowered variety of the common Furze, or Whin, is, owing to its freedom of flowering, and the intense colour of its yellow blooms, as seen in the mass, a very desirable shrubbery plant. It is well adapted besides as a divisional hedge within enclosed places, though seldom used for the purpose. Being very hardy, it not unfrequently during wild winters blooms from the month of September until May, and as a rule, blooms during the month of February, even following very severe winters. It is far more easily propagated by means of simple cuttings, dibbled into the ground in the beginning of September in each year, than is generally surmised. Such cuttings form roots so readily as to be fit for transplanting the following spring, and soon make showy plants fit for shrubbery planting. A variety offered by the trade, named Ulex europæa nana, is more dwarf, and worthy of attention.

VIBURNUM TINUS.

The Laurustinus, though a native of North Africa and South Europe, is sufficiently hardy in this country for all practical purposes. As a compact evergreen shrub alone it has distinct merit. When the fact that it often blooms from the month of December onward through the winter is taken into considera-

tion, it may well be considered indispensable in connection with all shrubbery and kindred plantations. These distinct merits have made it worth the while of Continental growers to train the plant in standard form, which are cultivated in tubs, or otherwise, for conservatory decoration in winter, and to stand upon terrace walks, &c., during the summer months. Occasionally plants in warm localities fruit, the small berries being of a bright metallic blue in colour. This plant is readily propagated by the usual method of striking minor branchlets, dibbled firmly into sandy soil in a shaded and sheltered situation during the month of November. *William Earley, Ilford.*

COLONIAL NOTES.

NATIVE PLANTS AT A NATAL FLOWER SHOW.

THE Pieter-Maritzburg Horticultural Society has just reached its majority. On November 3, 1885, a spring show was held in the handsome new Market House, and proved a success. About one hundred classes were well filled with the usual run of plants, cut flowers, and bouquets, but it is not these I am to speak of—flower shows in this respect are much the same everywhere. A note of the indigenous specimens shown may be more interesting. Squeezed together in a bouquet they are not seen to advantage, and to my thinking have a weedy look; better in table decorations, and best of all a few good trusses of each variety loosely set up in single glasses then every flower is properly seen. Very pretty was a quantity of Sandersonia aurantiaca, with drooping orange bells intermixed with long sprays of Adiantum æthiopica. White, Jasmine-like clusters of Pavetta Bowkeri contrasted with intense vermilion Gazania-like blooms of Gerbera aurantiaca; a very fine Asclepiad, probably a Gomphocarpus, bearing large clusters of ivory-white corymbs, the five linear coronal arms bent over the stigma; another Asclepiad, much like Hoya carnosa, but with the petals light pink, corona green; clusters of fine deep blue flowers in Petlandia variabilis near the lighter hued Scilla natalensis. Polygala virgata, a very pretty thing, drooping rosy-purple spikes. The rare and beautiful Anemone Fanninii, with large satin-white petals and handsome velvety leaves of great size. A most graceful drooping Sparaxis is worth notice. Imagine a stem some 4 feet long bearing many white bell-like flowers rising and falling with every breath of wind, but drooping, because its very nature is to do so—so is it seen growing in grassy meadows. How sharply it differs from the rigid tubular red-orange flowers of Burchellia capensis. I duly admired Galtonia candicans (or an allied species), rich in green and white, also a choice little gem with dainty spikes of red and white, but burdened with a heavy name, Hebenstreitia comosa, one of the Verbenaceæ. Standing up above other things were the long spikes of Tritoma (Kniphofia) natalensis. This handsome, distinct species, which Mr. J. M. Wood, of the Durban Botanic Gardens, has kindly named for me, has coral-red flowers, and, growing as it does on grassy hill-sides, at an elevation of 3500—4000 feet, ought to stand out as well as other Tritomas do at home.

Two well-looking Compositæ must not be forgotten—Vernonia hirsuta, large rich purple heads; and Callilepis laureola, large single flowers, ray florets white, disc black or nearly so. Bright yellow spikes of Crotalaria globifera, and the handsome sky-blue Thunbergia natalensis, together with Crinums, and white, pink, and maroon Pelargoniums—handsome some of these, with leaves very diverse, some fan-shaped, others split up into threads—make up the total of such as I recognised.

The Orchids must not be forgotten, though there were very few, it being rather too early in the season. One of our very finest, Lissochilus Krebsii, most unaccountably was absent, yet it is now in flower. What I did see was a white sweet-scented Satyrium—perhaps S. candidum, and one orange-red spike—perhaps a Satyrium or Disa; also a very curious little purple-brown Orchid, possibly a Corycium. A very fine specimen plant of Bowiea volubilis was also staged.

All the above-named plants, excepting Anemone Fanninii, grow within a 6-mile radius of this town; but very many others from the same area might have been collected, especially a very fine Moræa, which flowers now. It has a corolla 4 inches across, of a very delicate yellow, three segments with a bright yellow-purple tinted "eye." The leaves are long and narrow. I am sending corms home to the authority on Irideæ, so in time more may be heard of it. *R. W. Adlam, Pieter-Maritzburg, Natal.* [We are delighted to hear that our Colonial friends have adopted the plan we have so often urged, of exhibiting and developing their own plants, instead of repeating Old World vulgarities. ED.]

ORCHID SEED VESSELS.

PERISTERIA PENDULA has short oblong obtuse capsules, with a prominent beak consisting of the



FIG. 21.—SEED-VESSEL OF PERISTERIA PENDULA.

remains of the column. The mode in which it splits is shown in the illustration (fig. 21), taken from an imported specimen, for which we are indebted to Mr. Bonny.

ODONTOGLOSSUM MADRENSE.

The fruit or seed-pod of this plant is remarkable



FIG. 22.—SEED-VESSEL OF ODONTOGLOSSUM MADRENSE.

for its elongated form, bulging in the middle, and tapering to both ends. The plan (fig. 22) shows the manner in which the three carpels or pieces of which the seed-vessel is composed touch by their edges.

CŒLOGYNE BARBATA

has pendulous oval pods, marked with six prominent ridges, and surmounted by the withered remnants of the flower (fig. 23).

ONCIDIUM TIGRINUM

is a bold and handsome species, and the fruit or capsule seems from its size to partake of the same robust character. It is oblong and hexagonal, with six prominent ridges, and six corresponding but broader depressions. The pedicel of an individual fruit is about 1¾ inch long, and twisted. The apex of the capsule is narrowed into a short stout beak, crowned with the remains of the perianth segments on an exceedingly short, stout column. The outline of a transverse section is represented at C in the accompanying sketch (fig. 24).

HOME CORRESPONDENCE.

Iris reticulata var. sophenensis, which I described in the *Gardeners' Chronicle* last spring (see vol. xxiii., p. 470), opened this year a bloom on January 3, under the influence of a "snap" of sunshine. Since then a clump of blooms has remained fully developed, but closed, buffeted with frost, snow, rain, thaw, and wind, until to-day (January 16), when a few hours' feeble sunshine tempted half a score or so to open. It would thus appear that this new variety of I. reticulata promises to be the earliest of the group; for with me I. histrio and I. reticulata Krelagei, as well as the type, are still in bud, and if the present horrible weather continues, may remain so for many days. As I said in my note, this var. sophonensis is inferior in beauty to the type, but still it is not to be despised, and it promises to be a good flowerer, very small bulbs bearing bloom. The fact that the leaves have to complete their growth altogether after the flower, leads one to hope that it may fairly well survive the horrors of an English winter; and the trick it seems to have of throwing off a number of small bulblets from the base of the bulb, to an extent which I have never seen in the typical reticulata, will, I trust, help me to increase somewhat rapidly my slender stock. I. Vastani, from Palestine, which I described at the same time, has not flowered with me this winter, and did not flower with Mr. Max Leichtlin until much later than last year. It obviously does not wholly like the change from the sunny Holy Land to the damp murkiness of England. *M. Foster, Shelford, January 16.*

The Acacia at Masonic Funerals.—I regret the neglect in not acceding to your request earlier, to give the particulars I promised upon this interesting subject, I may say that I had prepared an article on the subject, which proved too lengthy through my having dipped freely into some voluminous notes on funeral trees; this portion I have now considered to send you on some future occasion, which, if you think worthy of your columns, you can then print. The custom of planting an Acacia or sprig of that tree on a grave amongst the Hebrews arose from the following circumstances. According to the Jewish law, no dead bodies were allowed to be buried within the walls of their cities. The priests were forbidden to cross a grave, and the Jews always avoided doing so, from a fear or belief that some evil would happen; they therefore placed a branch or sprig of Acacia, to mark the spot where a dead body was interred, and as the species called A. nilotica, grew profusely about Jerusalem this plant was largely adopted, and is the true species required at the interment of a departed brother by the Freemasons, whose rites and ceremonies are of Hebraic origin. This species of Acacia—which requires a warmer climate than our own for its cultivation—must not be confounded with the totally different Robinia Pseud-Acacia, an American plant, introduced into Europe some 250 years ago by M. Jean Robin, nurseryman to the King of France, after whom it was named Robinia. It must have been introduced about the same time into this country, as Parkinson mentions it growing in England in 1640. Evelyn speaks of it in 1662. A few years ago there was an ancient Robinia in the old arboretum at Kew which had attained a circumference of some 13 feet. The Acacia nilotica and its allied species, A. arabica and A. Seyal produce the gum arabic of commerce. A. Seyal yielded the Shittah, or Shittim wood of the Bible used in the manufacture of the Ark of the Covenants, as well as the furniture for the Tabernacle. The name Acacia is derived from the Greek —*a*, negative; and *κακος*, evil, signifying free from evil, innocent or incorruptible, probably from the wood which was considered incorruptible. Pliny describes it as incorruptible and durable in water, therefore useful for the sides of ships—"Quoniam incorrupta etiam, in aquis durat ob id utillissima

navium costis." (Pliny, lib. xiii., cap. 9.) Another purpose to which for ages the Acacia was applied was making the coffins in Eastern countries, especially for the kings of Egypt, and probably this was the same with Joseph, the first record extant of a body being placed in a coffin, or as an old Bible (A.D. 1580) in my possession, Gen., chap l., v. 26, says:—"They embalmed him and put him in a chest in Egypt." *Wm. E. Dixon. P.M.*, 294.

Lilium auratum.—In reply to the query of "B. W.," in last week's *Gardeners' Chronicle*, the proper compost in which to pot the above is equal parts of peat and fibry loam and well-rotted manure, using a good portion of coarse silver-sand in it, and also surrounding the bulb. Give ample drainage, and then half-fill the pot with the soil. The bulbs may be planted singly in 32's, or three bulbs may be put into a 12-inch pot; after placing the bulbs on the soil cover them nearly to the point of the bulbs, making them quite firm in their station. The pot should be filled up with the compost as the flower-stems acquire solidity. For early flowering, the bulbs when potted, may be stood in the greenhouse or cold pit, to be grown on till flowering time under glass. Those for late-blooming are best packed in leaves in the open, with slates or boards over the pots to keep the mice out, and covered with sufficient leaves or Fern to keep out frost and no more. These latter must be examined from time to time after February, removing to cold pits for a time those which are on the move. *M. W.*

—— In reply to "B. W.," the best compost wherein to pot the above is equal parts of rich garden soil, fibry loam, peat or leaf-mould, and silver-sand. Half fill a 6-inch pot with this, and insert the bulb, surrounding the base with silver-sand, and filling the pot with the compost to within an inch of the rim. The bulbs should be repotted when the stems have died down, taking care to give an ample change of soil, the pots should be placed in a cold frame, pit, or greenhouse during the winter, withholding water until there are signs of growth aboveground; then water freely, and as often as circumstances indicate the necessity. Those required for early blooming should be kept under glass, while those for late blooming should be kept out-of-doors, at the same time protecting them from frost. When in bloom put them in a cool dry place with a free current of air. They do best in the light, and bloom well for two years, after which they begin to deteriorate. *James Carter & Co.*

Pruning Dendrobium nobile.—It may be of interest to your readers to know the result of my first attempt at cutting away all the leaflessx bulbs of Dendrobium nobile. Having seen the splendid plant exhibited at the Orchid Conference by Mr. Princeps, a plant of D. nobile was selected growing in a 10-inch teak basket, which had annually made growths of 12 to 15 inches long; and on May 16 I cut cut away all the bulbs that were destitute of leaves, leaving only the second growths of the preceding season, and the young growths then a few inches long. After the removal of the old bulbs the young growths made rapid progress, without being subjected to more than ordinary heat, and when completed the growths averaged 22 inches long. When they started new growths, which by the end of September were 14 inches long, at which time the plant was removed to a vinery and remained their till early in December, when it was returned to the East India house, where it is now in bloom. The early growths produced twenty flowers on each bulb, and clothed with leaves to the bottom, the late growths of the preceding year also blooming freely. Certainly the plant is not only much more vigorous than before but presents a far better appearance, being now well furnished with healthy green leaves among the flowers, and the old unsightly bulbs are got rid of. The unfavourable weather prevented the plant being exhibited at the Floral Committee meeting at Kensington on Tuesday last. *William Parks, Fernside, Bickley.*

Eucharis amazonica Planted Out.—Having grown a large quantity of this popular flower, planted out in a large plant-stove here, for the last nine years, I am induced to make these few notes, as so few, if any, of your correspondents advocate this system of growing them. I had the bulbs planted in a narrow border close to the hot-water pipes, round the front, ends, and back of the stove, about nine years ago; they have had nothing but a little top-dressing of fresh soil since, and it is really astonishing the growth they make, and bloom far more freely than if kept in pots. Only last Friday we gathered a very large quantity for a special purpose, and shall have a good quantity for another fortnight. They bloom twice and occasionally three times in the year, and many of them with six blooms to each spike. I consider this the best way of growing them for a large quantity of fine flowers for cutting purposes. Others we have in pots



Fig. 23.—Seed vessel of Coelogyne barbata.

for house furnishing, but they neither grow nor flower so freely as when planted out. *E. Ward, Hewell, Bromsgrove, Jan.* 17.

Selecting Stove and Greenhouse Plants.—At this time of the year, when most plants should be at rest, and the gardener perhaps the least distracted with important and urgent work, it will not be amiss to turn one's thoughts for awhile to the coming season



Fig. 24.—Seed-vessel of Oncidium tigrinum.

and its work in this department. The duty which occurs to me as being the most important at the present time is the overhauling of our plants, with the object of throwing away any useless or worn-out subjects we may happen to possess. My experience leads me to think that we are all more or less liable to err on the side of growing too many plants for the space we have to occupy, and especially too many duplicates of certain varieties and species. Among specimen plants it is not an unusual occurrence in gardens to come across old cut-back and worn-out specimens, badly infested with scale and other insects, on which much valuable time is being constantly thrown away, and if kept on any longer more time and labour will be wasted in the futile endeavour to clean and reinvigorate them; it would be more economical and satisfactory in every respect to throw them away, and fill their places with young and healthy plants. The same may be said of table and decorative plants generally. It is not the number of plants we may possess, but their good quality and appropriateness for the work, that are appreciated. Now is a good time to look over these to decide on the number of plants we may require to grow to satisfy our requirements during the coming season, and above all to see that we have no stunted subjects among them that will not respond to generous treatment and repay us for time and skill expended. Such as these, if there are any, and from which cuttings are wanted, should be placed in a corner by themselves until the cuttings are taken, and then be thrown away, but if not wanted for cuttings such plants should be thrown away without loss of time. Happily the old system of crowding and huddling plants together with the object of producing an effective arrangement has given way to more sensible methods; hence the importance of turning out every plant we grow as perfect as it is possible to produce it, whether it be a flowering or a foliaged plant, and this can only be effected when we give every individual plant the space necessary for its fullest development. I know that it is distasteful to most gardeners to throw away plants which appear to them of some value, but if there is space to grow only six plants of any particular variety it is a mistake of some magnitude to try to grow twelve. To those who are contemplating exhibiting in the now popular classes for groups of plants arranged for effect the importance of bearing this in mind, and carrying it out in practice, is very great, the judges being often influenced in their decisions to a greater degree by the superior growth and quality of the plants themselves than by the effectiveness of the arrangement. *Quercus.*

Russelia juncea.—This fine old plant is not enough known nor so well grown as it deserves to be. Whether in or out of flower it is an attractive object, and for table or room decoration its graceful habit commends it to all. Its cultivation is of the easiest character. Potted in loam and leaf-mould in equal parts, with a dash of sand and finely broken potsherds, and placed in a cool corner of the plant stove where it will be slightly shaded, it will grow and flower luxuriantly. This plant is generally catalogued as a stove plant, but I find it does equally well in the intermediate-house or the greenhouse. *W. J. Clarke, Antony House, Cornwall.*

Root Fungi and Tree Roots.—You have done well to give on p. 80 an abstract of the startling idea recently advocated by Dr. Frank and Dr. Woronin, and accepted as correct by Prof. De Bary. The idea is, as you point out, that certain fungi found on the roots of Oaks, Beeches, Sweet Chestnuts, Hornbeams, Hazels, and Willows, together with the root-fungi of Conifers, are the agents by which the tree obtains its "soil food," the fungi in turn being fed by the juices of the tree. Tree and fungus mutually help each other to live; so say the three Doctors. It is well that the *Gardeners' Chronicle* does not say the case has been "proved," but counsels "an attitude of intelligent expectancy, on the part of those who are not in a position to add either proof or disproof." It is not necessary to ask what the opinion of horticulturists, foresters, and gardeners is as regards this matter. Their opinion is perfecty well known and generally accepted as correct and reasonable, viz., that root fungi of all sorts cause the death of trees, that when young trees are planted in positions where root fungi abound the trees cannot live, and that when trees are transplanted from fungus-infested positions to positions free from root-fungi they recover. Dr. Frank says he found the fungus present "in every root examined, belonging to the Cupuliferæ, also occasionally on Salicaceæ and Coniferæ, but not on woody plants belonging to other natural orders." It will be seen from this that the Cupuliferæ are exceptional in the possession of root-fungi. The facts mentioned by the French and German botanists in reference to the vital cohesion of root fungi and the roots of trees are no doubt quite correct, but the idea of the tree-roots and their fungi deriving mutual support from each other I consider fallacious. That

the roots of Cupuliferæ show a partiality for a soil rich in humus, as stated by Dr. Frank, I also consider a fallacy. Do the roots of the Coniferæ, too, show this partiality, or do they show the contrary? I have long kept up a MS. list of fungi as observed in Britain peculiar to certain natural orders of plants, and in this list the Cupuliferæ is quite exceptional and phenomenal as regards the number of species of fungi by which the members are attacked. Next after the Cupuliferæ, as regards large numbers of fungi, comes the Coniferæ. Some natural orders of plants are not attacked at all, they have neither leaf-fungi nor root-fungi. The common number of fungi peculiar to any natural order is about twelve or twenty, some have only one or two, but when the Cupuliferæ are studied there are more than 400 fungi found only on the members of this natural order. In the Coniferæ I have 239 fungi on my list. Some live on the living leaves, others on the dead leaves, many on the living wood, others on the dead wood and roots. As the members of the Cupuliferæ are plagued with more than 400 fungi peculiar to themselves it follows that the ground beneath the trees and the roots in the ground are liable to be infested with the innumerable spores and abundant fungus mycelium of 400 different fungi. The Coniferæ, as I have said, have their complement of at least 239. If we turn to the Tiliaceæ or Limes, we seldom find root-fungi, the trunks, branches, and leaves are also comparatively free, for, when all the fungi are told belonging to this natural order, they do not amount to twenty. When the spores of the 400 fungi peculiar to the Cupuliferæ, and the spores of the 239 fungi peculiar to the Coniferæ, fall to the ground and germinate, they in many instances necessarily attack the roots and rootlets, for the material of the tree, living or dead, is the natural *pabulum* of the fungi. Many root-fungi are well known in their perfect condition as destructive parasites, and a printed list could easily be given of them. Dr. Woronin comes to the startling conclusion that the root-fungi probably belong to the genus Boletus, as if the mycelium of only one fungus attacked tree roots. His guess could not have been more unfortunate, for if there is any one genus of fungi more purely non-parasitic than another it is the genus Boletus. There is, however, as in this case, no rule (or genus) without an exception. There are several other astonishing delusions in the account as published in the *Berichte der Deutsch Bot. Gesellschaft*, as the idea that "root hairs are not formed" in trees affected with root-fungi. To "settle" the fact that the trees above mentioned do not form root hairs would be quite as difficult as, or even more difficult than, the task Mr. Jensen set himself when he set about counting the fungus spores in the dirty water which trickled out of the bottom of a flower-pot. That the "discovery" "is comparable in all essential points to that of lichens" (referring, as the authors do, to the Schwendenerian hypothesis), the root-fungi "corresponding with the fungal element, the tree itself (!) to the algal gonidia (!)," I quite agree, for there is an equal amount of bad interpretation of facts in both "discoveries." *Worthington G. Smith, Dunstable.*

Passiflora edulis.—We have a large plant of this most useful fruit growing on the roof of a greenhouse here; it annually carries 300 or more fine fruit; it requires little attention beyond pruning back after the fruit is all gathered. The fruit is a great addition to the dessert during the winter months, and makes an excellent preserve, and worthy of a place in most gardens, but is seldom met with. *E. Ward, Hewell, Bromsgrove.*

An Orchid Society.—I am very glad to see that our Scottish friends are taking care of their own interests in this matter. I have always thought that the Royal Horticultural Society should have absorbed most of the special societies long ago, since without a doubt a multitude of separate interests means diffusion rather than a concentration of strength. As I write I have received a prospectus of an Orchid exhibition to be held in the Botanical Gardens, Birmingham, at which substantial money prizes are to be awarded, and the result will I am sure be worth a journey to see. I note with pleasure that the Fellows of the Royal Horticultural Society are to dine together next month, and I have no doubt but that many besides myself will look forward to the occasion as affording the chance of some semi-official information as to the future of this ill-starred institution. A new and well arranged start might place it once more at the head of the horticultural interest in England. *F. W. B.*

Bougainvilleas.—I have much pleasure in answering "X. Z.'s" three questions relative to the above, and trust that thereby success in flowering his plant may be his ultimate reward. As to compost, take two parts fibry peat, one part loam and one part coarse silver-sand, with a handful of bone-meal, and a few broken potsherds and small pieces of charcoal added thereto. The temperature of the house may be that of a greenhouse for B. glabra, but B. speciosa should have stove temperature, say from 60° to 75° during the growing season, with a corresponding rise in hot summer months. The sun's rays would not injure the roots providing the plant is not allowed to suffer from want of water when making its growth. Full particulars regarding the pot culture of B. speciosa will be found in the *Gardeners' Chronicle*, vol. xvii., p. 538. *J. H.*

Killing Seeds for Sale.—We feel sure that none would be more startled upon reading the extraordinary statement made by a Mr. P. Smith, of Timaru, in the *Gardeners' Chronicle* for January 9, p. 54, than the London seed trade; and we are really surprised that any person should pretend to write to an important journal like the *Gardeners' Chronicle*, whilst possessing what appears to be such an utter ignorance of the working of the London seed trade. In order to establish our impartiality, we at once state that Mr. Smith has not had any seeds from us, therefore his extraordinary statement does not affect us, more than it affects the whole of the London seed trade; and it is in the interests of the whole of the London trade that we utterly repudiate the abominable suggestions contained in Mr. Smith's letter, and we challenge him to produce satisfactory evidence that the seeds he obtained have been subjected to the treatment he insinuates. By all means let us have the commission of enquiry, and it is only fair to ask that the commission shall establish Mr. Smith's *bona fides* at the same time. *James Carter & Co.*

The Weather at Moor Park, January, 1886.—No doubt it will interest some of your readers to know that Moor Park is favoured by having a large sheet of water so enclosed by ornamental trees and shrubs that ice has been in good condition for skating since January 6, and at the present time the ice is on an average 4 inches thick and in splendid condition. The snow has never been allowed to remain on it longer than possible. I should like to know if there is any other place within a twenty miles radius of London so situated that continuous skating has been enjoyed? *J. C. M.*

Fuchsia Dominiana.—I am afraid there is great danger of this fine and unquestionably first-rate late autumn-blooming conservatory plant falling away into neglect. Not long since I saw some specimens of it growing in pots against the end of a small intermediate-house that were flowering very freely, and the grower, who prefers that his name should not be mentioned, stated that the flowers were greatly appreciated by his employer for table decoration in the winter season. One sometimes, in visiting small places, comes upon some specialty uncommonly well done, and this was the case with Dominy's hybrid Fuchsia. The plants had been raised from spring-struck cuttings, grown on and shifted as required, and stood out-of-doors during the summer until the end of August, when they were taken into a cold greenhouse, and by the end of September given a warmer temperature; this brought them on into bloom in the successful manner above mentioned. My informant stated that if he had a conservatory in which he could flower them he would grow them on for two years, giving the last shift at the expiration of fifteen or sixteen months from the time of striking, and then make his flowering-house gay with large and striking specimens. It is evident he could do one thing—grow Fuchsia Dominiana to perfection. *R. D.*

Timing the Blooming of Eucharis amazonica.—In your last issue, p. 85, Mr. Bayman asks me how I time my plants to bloom with such exactness. Permit me, at the onset, to say I do not presume to teach your readers on this subject, because I well know the majority know better than I do myself—I merely answer Mr. Bayman's question. Mr. Bayman is reported to say his plants are in perfect health. That being the case the matter of blooming is an easy one. I should suppose Mr. Bayman's plants are enjoying a temperature of from 65°—70°. If Mr. Bayman will remove one of these healthy specimens into an intermediate-house, ranging from 50°—55°, give it no water whatever at the root—a slight syringing over the surface of the pot, and the foliage will be ample; let it remain for five weeks, then give it a thorough soaking with tepid water, replacing the plant in a bottom-heat of 75°, with the usual stove temperature. He will find that, if healthy, the plant will throw up its blooms in about a fortnight or three weeks. When the young spikes are pushing through they can either be retarded or advanced by taking the plant out of the bottom-heat. In conclusion, let me say I do not starve my plants, but I ripen them. This practice I have followed for many years. I am always well satisfied with a good crop of Eucharis once a year from each plant, but the great majority give me two. *R. Gilbert.*

The Camellia as a Decorative Plant.—Most gardeners have a good share of decorative work to do just now, and a great many have an abundance of white and coloured Camellias on plants perhaps stationary or of immovable size. They may also have some old plants of Rhododendrons and Kalmias, which may not be of much use except for the purpose I am about to mention. Stump back a little, leaving a nice sprinkling of leaves; get the necessary quantity of Camellia bloom, which would otherwise perhaps rot on the borders, or be cast to the rubbish heap. Merely twist off the Camellias, wire on to the stumped plant the desired number you wish to make a nice looking specimen. Here you have a nice portable plant, to drop in your arrangement of foliage, or as a single vase plant, such as one can hardly expect on a natural Camellia plant in a small size. If a little deceptive it at any rate answers the desired end, and utilises what would go to waste. *W. R. R.* [Why not use a Camellia for the purpose? ED.]

Dahlia picta formosissima.—This striking and distinct old Dahlia, which Mr. Cannell was fortunate enough to rescue from an oblivion in which, it might have been expected to have been irretrievably lost, as proved exceedingly useful for cutting purposes, and will be grown by many to this end in preference to the single type. It grew about 4 feet in height during the past summer; it will go a little higher in moister weather—it is very free of bloom, and a capital thing to cut from for decorative purposes. For freedom of bloom it can scarcely be excelled. Early in the season it takes a semi-double form, but later on the flowers are fuller of petals, and therefore more double. With this should be associated one called Cochineal, the flowers rich dark crimson; it might be termed a semi-Cactus Dahlia, for it is not fully double, and yet sufficiently so to ensure lasting a fairly good time in water; it is also remarkably free, and the grower can cut and come again. It will not be matter for surprise if these two take the place of the single varieties, for the latter last so short a time when in a cut state. It is almost a misnomer to term these and others of the type "decorative Dahlias," because it may be taken as excluding many of the show and fancy types, which by their dwarf free branching growth, with upright stems, freedom of bloom, are remarkably well adapted for the purpose. *R. D.*

Amateurs.—It is not of the well-known gentlemen and lady amateurs, whose names figure so frequently whenever a horticultural exhibition takes place, that I wish to write, but of the obscure amateurs that belong to the lower and working classes, and who are not so much recognised by the horticultural authorities as they deserve to be. There can be no doubt expressed as to the fact that they do a great amount of good by showing the capabilities of the various subjects of which they make a hobby, as is well known to many persons who live in the localities where they are mostly found. The subjects they take in hand are, as may be imagined, somewhat numerous, and vary from the most choice of florists' flowers to the more useful vegetables. Wonderful ingenuity, combined with no mean gardening skill, has to be exercised by the majority of these amateur gardeners to enable them to produce such specimens as are to be seen (far too seldom) at local and other flower shows. Some districts are noted for a special subject, consequently

showing that where some succeed there will always be others anxious to vie with them and contest their right to be called the best growers in the district. It will be generally admitted that the growers in the northern counties bear the palm for unvarying endeavour, under discouraging surroundings in their efforts to succeed, which they undoubtedly do, and to an extent hardly to be credited, except by those who visit northern shows. When I allude to growers in the northern counties I refer principally to those in and around the large manufacturing and colliery districts, and not so much to those who pursue their avocations in more rural districts, where, if they have not the advantages of their more fortunate brethren of the southern counties, have at least a fine bracing atmosphere. It is really surprising, and at the same time highly gratifying, to find amongst the pitmen and weavers so many ardent lovers of horticulture. Of course nearly every one knows the crowded state of the district where these industries are carried on, and in such a locality the drawbacks to horticulture; and when we find Auriculas, Carnations, Picotees, Pansies, Dahlias, Hollyhocks, and Chrysanthemums grown, and in some cases to perfection too, it does seem as if these enthusiastic men ought to receive more recognition than they get as a rule. It is, however, certain that they themselves derive much pleasure and satisfaction in following their "hobby," and there can be no doubt some moral benefit likewise, for it hardly seems compatible with reason for a man to tend to his pet flowers all the week and go to a dog fight on a Sunday. One of the chief drawbacks, we think, is the difficulty experienced in their getting the best varieties of florists' flowers, as the prices are, as a rule, beyond their reach. It is difficult to suggest a remedy for this; but it is well known that, when once a variety gets amongst them, it is not long before, by an intricate system of "swopping," it is pretty generally distributed. In the way of "showing," all who are able to compete at their local shows have a chance of a small reward, but when the more adventurous spirits bring their exhibits to more important exhibitions they are usually heavily handicapped, and, while admitting the difficulty of making a distinction for any certain class of exhibitors, it would seem that there is yet room for more sections in the "amateur class" of most shows. In drawing these few notes to a close I am painfully aware that, although I have pointed out some of the drawbacks in connection with this class of amateurs, I do not make any suggestions of improvements, leaving this to wiser and more experienced heads than mine, merely calling attention to the subject at the present time, in order that committees in constructing their schedules may perhaps see their way to assist a class in every way deserving of hearty support from the gardening fraternity all over the kingdom. *C. I.*

Notices of Books.

Der Praktische Obstbaumizüchter.

The above is the title of an illustrated journal devoted to all matters relating to fruit culture and selling in Northern and Central Germany. It is issued in fornightly parts at the price of six shillings per year. It treats of the planting of fruit trees, the most practical forms of training, and in such a manner that the most unpractised as well as the experienced cultivator can readily comprehend the instructions given. Old and new kinds of all fruits will be noted and described, information as to what kinds are suitable for certain localities will be given, and in which form, and on which aspect they can be grown with the most advantage. The formation of fruit farms, fruit alleys (public and private), and trained fruit tree gardens will be described, and the methods to be pursued made thoroughly clear.

The drying of fruit, the manufacture of cider and fruit wine-jellies, and other methods of conservation, will receive special attention, as also the means by which the imports of foreign fruit can best be prevented, for it would seem that Germany, like our own country, is too abundantly supplied by its more southern neighbours. Injurious and useful insects and animals are also noticed, together with the means to destroy the one and preserve and propagate the others.

Should these objects, which are duly set forth in the programme, be well fulfilled, there can be little doubt but that the journal will meet with a ready sale in its own country, and should likewise be of value to fruit growers here who may be acquainted with the German tongue. The illustrations (woodcuts) seem to be very faithful representations of the particular sorts, and the various designs and methods of training both of free standing, and wall and espalier trained trees, are very good. Considerable space is devoted in the numbers before us to the best methods of drying and of packing fruit, and to the furnishing of the fruit-room. In the latter, besides some methods of warming, there is shown a set of folding-up fruit shelves—exceedingly handy things in seasons of great abundance, as they can be readily put into any frost-proof cellar or room. We find that in Saxony the roadmen are trained to be tree cultivators, or at least caretakers, so that there the roadside trees are cared for in a rational manner: certainly example is better than precept, as is well exemplified in this matter by Saxony.



Trees and Shrubs.

FOLIAGED DECIDUOUS TREES.

THIS is a strange term to apply to a race of trees that, as a rule, lose all their leafage during the winter months, but the rule is broken in the case of some Turkey Oaks, and probably of other trees, which, except Hornbeam and Beech, when in the form of hedges, I am not familiar with. There is here, of a number of Turkey Oaks, one that carries its foliage with peculiar density during the winter, excelling its fellows a long way. I think beyond the foliage of the latest summer or rather autumn growth, that every leaf made during the summer is retained, and as these are of good size, of course the foliage even in its brown and dried form is still thick. Such trees, if equally retentive of foliage during the winter would make good shelter. The crisp rustle heard from the leaves when moved by wind is both curious and weird, and at night calculated to affright nervous people, who might not unnaturally imagine that something unearthly was in the wind. It would be interesting to learn to what natural cause does this Oak owe its faculty of retaining its leafage, though it be dead, until the spring shall again clothe it with new foliage. I have thought it might be not without interest to those who have arboricultural tastes were I to take a branch of this particular tree with its dead leafage with me to South Kensington at the February meeting, and perhaps some others, nurserymen especially, may be induced to send at the same time sample branches of any trees they may have, which, being deciduous, yet retain their foliage through the winter. Such an exhibit would be both interesting and instructive, for there may be in diverse places many good things that come under this category, but are yet little known. This peculiar section of trees seems to need some distinguishing appellation to enable it to be distinguished from ordinary deciduous trees. *A. D.*

IRONBARK.

This is one of the most valuable of Australian timber trees, and grows abundantly in New South Wales. Some kinds are said to be almost indestructible in any situation, impervious alike to the white ant and the Teredo navalis, and, with all their defects, probably unequalled in the world for railway sleepers, piles for bridges, wharves, and jetties, fencing, or any kind of heavy carpentry, as well as ship-building, for beams, keelsons, sternposts, engine-beams, and other works below the line of flotation, where great strength is required and a heavy material is not objectionable. The "Ironbark" stands in the first class of Lloyd's list of shipbuilding timbers, and together with several other kinds is already extensively used by European shipbuilders. There are several kinds of Ironbark in use, all, however, true Eucalypts. The two best species are said to be the white narrow-leaved Ironbark (E. crebra), and the white, pale, or she Ironbark (E. paniculata), both growing in the open forest, and on poor or indifferent soil in the northern coast districts. Three other species—the red-flowering Ironbark (E. leucoxylon), the silver-leaved Ironbark (E. melanophloia), and the large-leaved Ironbark (E. siderophloia)—also grow in the northern districts, and make valuable timber, though inferior to the two first-named. Ironbark is largely used for bridges and piles where there is no danger of the terrible Teredo, and for poles and shafts of carriages, wheel-spokes, and railway sleepers. Owing to the difficulty of obtaining it, Ironbark is the most expensive of all New South Wales hardwoods, and has maintained its price of 20*s.* per 100 superficial feet, quoted fifteen years ago, although almost every other hardwood has decreased in price since then, especially during the last two or three years, the average retail price in Sydney of most of the hardwood being about 15*s.* The whole seaboard of New South Wales, from Cape Howe to the Richmond River, contains ridges of this splendid wood. Large shipments of it are sent from the Clarence and Richmond districts to New Zealand and to Melbourne, for bridge-building, and more especially for wharves, jetties, piles, and girders. There is some fine Ironbark country, too, on the Clyde, from which district a great deal was formerly shipped to New Zealand direct. Considering the great demand for it, the long distance it has to be drawn to the water before it can be shipped, and, considering, too, its splendid properties, the price, large though it seems in comparison with that paid for other timber, can hardly be called extravagantly high. *Australian Paper.*

Reports of Societies.

EDINBURGH BOTANICAL: Jan. 14.

THE Society met at 5, St. Andrew's Square this evening Professor Dickson, President, in the chair. At private business the name of Richard Spruce, Ph.D., Coneythorpe, Yorkshire, was added to the list of six British Honorary Fellows.

The following communications were read:—

I. "The Inflorescence, Floral Structure, and Pollination of Scrophularia aquatica and S. nodosa." By T. Wemyss Fulton, M.B.

The flowers of Scrophularia are cross-fertilised by the agency of wasps, but the exact mode by which they do it has been misunderstood. Professor Stephen Wilson, in a paper read before the British Association in 1878, 'On the Association of an Inconspicuous Corolla with Proterogynous Dichogamy,' states that indefinite inflorescences which have proterogynously dichogamic flowers have the younger pistillate flowers above the older flowers in the male stage, and selecting S. nodosa as an example, he describes how wasps alight on the top flower, pass in a somewhat irregular manner to the lower ones, and leave the plant 'from the lowest flower.' He states that this is the mode by which cross-fertilisation of different individuals is effected; and Müller adopts his opinion. But there is no limitation of the flowers in either of the two sexual stages to a particular portion of the raceme; they are irregularly intermixed, and both may be found on the same cyme. There are, of course, successive crops of flowers centripetally developed, but the different generations are not distinctly separated, but overlap, as it were, and thus there is no parity with a proterandrous indefinite inflorescence, such as Digitalis, where the development of the dichogamy has a simple positional relation to the whole inflorescence. The wasps, then, if they kept to one raceme and pursued a descending mode of visitation, would fertilise the great majority of its flowers with pollen from flowers higher up, and this would be very detrimental to the continuance of the species.

I have watched wasps visiting the flowers of S. nodosa and of S. aquatica on numerous occasions, but they never adopted a descending method of working, nor indeed any method. On the contrary, although very industrious, they display a total lack of the systematic habits of the bee, and flicker about from one raceme to another in the most arbitrary manner. They visit very few flowers on one inflorescence before passing to another, and then not always to the nearest. Nor do they necessarily visit the female flowers first, but alight indifferently on any one, in whatever stage, and at any part of the raceme; they may pass for a short distance up or down, or, what is more common, around the inflorescence, and they frequently return to the same raceme, and even to the same cyme, and after an interval to the same flower. It is obvious they are entirely guided as to which flowers they should alight on by the presence or absence of honey, which is visible from the outside. Now it is obvious this irregular mode of visitation corresponds with the irregular disposition of the flowers in the two sexual stages. It is probable that the interpollination which must frequently occur is rendered ineffectual by the prepotency of foreign pollen,

and since the flowers are most assiduously and repeatedly visited, cross-fertilisation can scarcely ever fail. The wasp, clinging back-downwards, thrusts in its head above the reproductive organs, which are touched by the under-surface of its head, prothorax, and the basal segments of the anterior legs.

Bees also occasionally visit the flowers of both species. I have observed four kinds of humble-bees at each, and rarely the hive-bee at S. nodosa. They were all sucking, and the smaller ones scraped pollen on to their under-surface. It is interesting to note that while the bees on the whole maintain their ascending habit, they do not usually systematically visit all the flowers in a raceme before leaving it; if a flower-bearing cyme of an adjacent raceme is interposed, they generally pass to that. On two occasions I observed a fly eating pollen; but these flowers are remarkably free from the visits of Diptera, and of the smaller insects which habitually haunt most open flowers.

Now it might be supposed that the peculiar features presented by the inflorescence of flowers of these plants were wholly due to the selective influence of wasps, but a careful study of the habit and action of bees on S. aquatica points to the conclusion that modification has gone on in two different directions, viz., first, and chiefly, in adaptation to wasps in order to ensure the maximum amount of cross-fertilisation; second, for the purpose of rendering themselves unattractive to bees. In regard to the former case, it may briefly be said that the plants show adaptation to wasps in the general structure, disposition and relation of the flowers; in the close proximity of different racemes, so that many of the flowers of one are intermingled with those of others; and in the duration of the period of flowering, which begins when wasps become abundant and terminates almost to a day with the disappearance of these insects. In November the last wasps of the year may be found, chilled and torpid, clinging to the leaves or flowers, which simultaneously have the movements of their reproductive organs arrested; that degree of cold inimical to the one destroys the other.

There are several minor advantages to the plant from having wasps instead of bees as the agents of fertilisation: they work later in the day, later in the year, and in windy weather when no bees are on the wing; their carnivorous habits secure immunity from the visits of merely pilfering insects; and, above all, because there are exceedingly few, and in some districts no other floral competitors for the visits of wasps.

In regard to the second point, that bees are really injurious, is highly probable, from the following considerations:—1. They often thrust their proboscis into scarcely opened flowers, and steal the nectar before the stigma is mature. 2. Even when the developed stigma is in a position to be fertiiised their slender proboscis can reach the nectar by the side of the upcurved style without the stigma being touched. 3. Many, but not all, of the humble-bees can always reach the nectar without necessarily touching the reproductive organs. 4. From this tendency to retain the ascending habit, much more interfertilisation than cross-fertilisation will be produced, thus diminishing fertility and weakening the progeny. The plants will, therefore, gain by being protected from bees; and this conclusion furnishes a clue to the explanation of many of the peculiarities of the floral arrangements.

The characters which render them comparatively unattractive to bees appear to be the absence of a conspicuous corolla of agreeable odour, the peculiar shape of the corolla, and, still more, the comparative paucity and wide separation of the flowers. The inconspicuousness of the corolla depends partly on its small size, and partly on its dull colour. But the size is adapted for the head of the wasp, and this explanation might suffice but for the fact that it is too small to secure the nectar and pollen from rain. After a shower a considerable number of the flowers have their pollen and nectar spoilt, and after a few hours of wind and rain the majority are full of water, and though wasps very soon begin to frequent the racemes they find very few worth alighting on. Kerner, Müller, and others have shown the admirable and often elaborate provisions provided in most flowers to protect these substances from rain, and their variety and commonness prove their importance. But in Scrophularia it seems to be less injurious to occasionally lose nectar and pollen, and to suffer a temporary suspension of the process of cross-fertilisation than to protect them at the risk of encouraging the visits of bees, for in order also to secure that the honey remain visible to the stupid wasp, and accessible to its truncated mouth-organs, such protection would imply amplification of the corolla, and this would entail the disadvantage of increased conspicuousness. Again, the most striking feature of the mouth of the corolla is the absence of any labellum, or foothold and platform for operations, so common in flowers adapted for bees. It looks like one of the latter reversed, and I have observed bees to slip from the corolla, especially when collecting pollen. The remarkable colour also points to the same conclusion. It resembles that of other wasp-fertilised flowers, and although not uncommon in those fertilised by flies, it is one of the least attractive to bees, and is besides in itself very inconspicuous. I was especially struck by this when using gauze nets to envelope portions of the raceme for experimental purposes. I first used dark green, but found that brown coloured ones were much less noticeable. When the flowers become blanched to a light green tint, as they ultimately do when cut racemes are kept standing in water in a shady room, they are more conspicuous at a distance than are the brownish-purple ones. It seems probable therefore that the colour is really protective. In this connection it is a noteworthy fact that the ripening ovary developes a dark purplish hue, and since it is clasped by the persistent and relatively large calyx (whose tension previously squeezes off the loosened corolla) it simulates to some degree the perfect flower. The buds, too, so different in this respect from those of the majority of plants, are as deeply coloured as the opened flowers. The object of these trivialities is, apparently, to shield the flowers by simulating them; and the result is obvious in the close scrutiny made by the insects up and down the racemes. On one occasion I observed a wasp carefully searching a brown seeding Dock that grew on the edge of a clump of S. aquatica, apparently mistaking it for the inflorescence of the latter.

But probably more important is the wide dispersion of the flowers. Aggregation is one of the most potent of the subsidiary attractions for bees, as enabling them to obtain the maximum of honey or pollen in the minimum of time. For instance, the individual flowers of Reseda luteola are small, colourless, inconspicuous, and odourless, yet there are few inflorescences more thronged with bees. The complete concealment of the honey in a valvular chamber to which the bee alone has the key, doubtless has something to do with this partiality; but the very close aggregation of the flowers furnishes a strong inducement, as there are more flowers in one inch of its raceme than on the whole inflorescence of S. aquatica.

These floral features, when considered in relation to the injurious action of bees, are, I think, strong arguments for concluding that they are modifications produced by the action of general laws, in order to protect the flowers from the bees' visits. Darwin tells us that the freely-exposed nectar of Epipactis latifolia, which is habitually visited by wasps, is never sucked by bees, which apparently dislike it. Whether bees would prove injurious to this plant, which is apparently protected from them by a change in the character of the secretion, or be less effective in performing cross-fertilisation, I do not know; but it may occasionally happen, that by reversion, or by retrograde variation, a plant will escape from the keen competition for the visits of bees, by limiting itself to the attraction of a less engaged species; and in that case it would be chiefly advantageous to keep the nectar for ir alone. Darwin says that the continuance of this Orchid is dependent on the existence of wasps, and the same may probably be said of the Figwort.

II. "On Calamagrostis strigosa, Hartm., as a British Plant, with records of others new to Scotland." By A. W. Bennett, F.L.S., Croydon. Communicated by Dr. Macfarlane.

III. Exhibition of Ustilago marina, from E. M. Holmes, F.L.S., F.R.H.S.; and Puccinia Buxi, from Miss C. Owen, Gorey.

IV. "Report on the Progress of Vegetation at the Royal Botanic Garden, Edinburgh." By Robert Lindsay, Curator.

The weather during the month of December has been very variable, sudden changes of temperature occurred during the greater portion, except from the 5th to the 11th, when steady frost prevailed. The thermometer was at or below the freezing point on fourteen mornings, indicating collectively 111° of frost. During the corresponding month of 1884 frost was registered on twenty mornings, the collective amount being 88° only.

The rainfall was extremely light for December. A slight fall of snow took place on the 9th and on the 29th, but on both occasions disappeared rapidly.

The lowest readings of the thermometer occurred on the 7th, 16°; 8th, 17°; 10th, 18°; 11th, 16°; 30th, 21°. The highest morning readings were on the 2d, 44°; 14th, 44°; 16th, 47°; 17th, 47°; 31st, 44°. The lowest day temperature was 27°, on the 10th of the month; and the highest was 54°, on the 16th. So far very little injury has been done by frost, comparatively tender plants being still uninjured in the open.

The following seven species came into flower during the month on the rock garden, viz., Dondia epipactis, Hepatica triloba, Helleborus niger, H. niger angustifolius, H. torquatus, H. purpurascens, and H. orientalis. The total number of species and well marked varieties, chiefly of herbaceous and alpine plants, which have flowered in the rock garden during the past year amounts to 1141. A record has been kept showing the date when each plant opened its first flower. This is the largest number which has flowered on the rock garden in one year, being twenty in excess of 1884. This result has been attained more by new plants being added to the collection from various sources than by any favourable circumstances connected with the weather of the past year, which was by no means conducive to the formation of flower-buds generally. Usually, the largest number of plants bloomed during the months of May and June, but last year by far the greater proportion flowered during June and July, owing to the very cold weather experienced during May.

V. "On the Temperature and Vegetation at the Glasgow Botanic Institute." By R. Bullen, Curator.

During the month [December] the night temperature has been below the freezing point twelve times, the lowest reading being 15° or 17° of frost during the night of the 5th. Total night frost, 118°. On the 6th, 7th, 8th, and 10th the day temperature varied from 1° to 5° below freezing point. From the latter date to the night of the 21st no frost was recorded. During the night of the 21st, 24th, 26th, 27th, and 28th frost came on again unexpectedly considering the high day temperature, 9° and 12° being registered during the nights of the 27th and 28th. Severe gales of wind were recorded during the nights of the 3d and 27th, and continued on the 28th, accompanied with showers of sleet and rain, ending with a heavy fall of snow at night. Within the last two or three days the mild unseasonable weather experienced during the middle of the month has again returned.



STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JANUARY 20, 1886.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Jan.	In.	In.	°	°	°	°	°	°			In.
14	29.72	−0.01	40.1	34.0	6.1	37.3	+ 0.8	34.1	88	N.W.	0.00
15	29.52	−0.21	45.6	29.0	16.6	39.5	+ 3.0	37.1	92	S.W.	0.18
16	29.50	−0.23	39.1	31.0	8.1	36.3	− 1.4	28.7	76	N.W., W. NW.	0.00
17	29.27	−0.47	41.2	31.9	9.3	36.6	− 0.2	32.7	86	S.W., S.S.W.	0.57
18	28.92	−0.84	35.5	32.0	3.5	33.5	− 3.4	30.9	90	N.W., W. NW.	0.00
19	29.18	−0.57	35.5	22.0	13.5	28.9	− 8.1	26.2	79	E.	0.00
20	29.40	−0.34	32.0	22.0	10.0	27.8	− 8.4	26.1	85	E.	0.00
Mean	29.36	−0.38	38.4	28.8	9.6	34.1	− 2.5	30.8	85	Variable.	0.75

Jan. 14.—Dull morning: fine bright afternoon and clear night.
— 15.—Dull throughout.
— 16.—Very fine day and night.
— 17.—Fine day; heavy rain a night.
— 18.—Slight fall of snow in early morning; dull day.
— 19.—Very fine in early morning; dull day: slight fall of snow at 1 P.M. Fine night.
— 20.—Fine and bright from early morning till 3.30 P.M.: misty and dull afterwards.

LONDON: *Atmospheric Pressure.*—During the week ending January 16, the reading of the barometer at the level of the sea decreased from 29.92 inches at the beginning of the week to 29.77 inches by 9 A.M. on the 11th, increased to 30.14 inches by 9 A.M. on the 12th, decreased to 29.22 inches by 1 P.M. on the 13th, increased to 29.99 inches by 5 P.M. on the 14th, dcreased to 29.59 inches by 5 P.M. on the 15th, increased to 29.74 inches by 1 P.M. on the 16th, and was 29.69 inches by the end of the week.

The mean reading of the barometer for the week was 29.79 inches, being 0.01 inch higher than last week, and 0.12 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 45°.6, on the 15th; on the 10th the highest temperature was 34°. The mean of the seven high day temperatures was 39°.5.

The lowest temperature was 29°, on the 15th; on the 14th the lowest temperature was 34°. The mean of the seven low night temperatures was 30°.7.

The greatest range of temperature in one day was 16°.6, on the 15th; the smallest, on the 10th, was 2°.9. The mean of the seven daily ranges was 8°.8.

The mean temperatures were, on the 10th, 31°.9; on the 11th, 35°.; on the 12th, 31°.8; on the 13th, 38°.8; and on the 14th, 37°.3; on the 15th, 39°.5; and on the 16th, 35°.3; of these the 13th, 14th, and 15th were above their averages by 2°.4, 0°.8, and 3° respectively; and the rest were below by 4°.4, 1°.3, 4°.6, and 1°.4 respectively.

The mean temperature was 35°.7, being 1°.6 higher than last week, and 0°.8 below the average of the week.

The highest reading of a minimum thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 65°.3 on the 16th. The mean of the seven readings was 49°.8.

The lowest reading of a minimum thermometer placed on grass was 27°.3, on the 12th. The mean of the seven readings was 29°.4.

Rain.—Rain fell on four days, to the amount of 1.30 inch.

ENGLAND: *Temperature.*—During the week ending January 16, the highest temperatures were 51°, at Truro, 50° at Plymouth and Sheffield; the highest, at Sunderland and Newcastle, was 44°, and at Bradford 44°.8, The general mean was 46°.8.

The lowest [temperatures were 20°.3 at Wolver-

hampton, 23° at Sheffield and Hull; the lowest at Truro was 35°, at Liverpool 31°.2, at Plymouth 30°.4. The general mean was 26°.5.

The greatest ranges were 27° at Sheffield, 26°.2 at Wolverhampton, 23° at Hull and Leeds; the least ranges were 16° at Truro, 16°.3 at Liverpool, 16°.6 at Blackheath. The general mean was 20°.3.

The mean of the seven high day temperatures was highest at Truro, 49°.1, at Plymouth 46°.8, at Liverpool 44°.1; and was lowest at Blackheath, 39°.5, at Hull and Sunderland 40°. The general mean was 42°.5.

The mean of the seven low night temperatures was highest at Truro, 37°.1, at Liverpool 34°.3, at Plymouth 33°.5; and was lowest at Wolverhampton, 26°.3, at Hull 29°.9, at Bradford 30°.4. The general mean was 31°.5.

The mean daily range was greatest at Wolverhampton, 14°.7, at Plymouth 13°.3, at Bristol 13°; and was least at Blackheath and Newcastle, 8°.8, at Sunderland 9°.1. The general mean was 11°.

The mean temperature was highest at Truro, 43°.2, at Plymouth 39°.9, at Liverpool 39°; and was lowest at Wolverhampton, 33°.4, at Hull 34°.7, at Sunderland 35°.2. The general mean was 36°.8.

Rain.—The largest falls were 1.38 inch at Preston, 1.30 inch at Blackheath, 1.18 inch at Brighton. The smallest falls were 0.28 inch at Newcastle, 0.39 inch at Plymouth, 0.65 inch at Hull. The general mean fall was 0.87 inch.

SCOTLAND: *Temperature.*—During the week ending January 16, the highest temperature was 48.°5, at Leith; at Dundee the highest temperature was 43.°8. The general mean was 46°.5.

The lowest temperature in the week was 20°.9, at Perth; at Aberdeen the lowest temperature was 28°. The general mean was 25°.3.

The mean temperature was highest at Leith, 37°.7; and lowest at Dundee and Perth, 34°.4. The general mean was 35°.8.

Rain.—The largest fall was 2.07 inches, at Greenock; the smallest fall was 0.35 inch, at Aberdeen. The general mean was 1.02 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, January 18, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has continued in a very changeable condition generally, with frequent showers of snow, sleet, hail, or rain. Thunder and lightning were experienced over our south-western counties on the 16th.

The *temperature* has again been below the mean, the deficit varying between 1° in "England, N.E.," the "Midland Counties," "England, S.," and the "Channel Islands," 3° in "Scotland, E.," "England, N.W.," and "Ireland, N.," and 5° in "Scotland, N." The maxima, which were registered on different days in the various districts, ranged from 53° in "Ireland, S." to 46° in "Scotland, N." The minima, which over the greater part of the kingdom were recorded on the 18th, ranged from 15° in "England, N.W.," to 24° over Ireland, 27° in "England, S.," and "England, E.," and to 35° in the "Channel Islands."

The *rainfall* has been slightly less than the mean in "Scotland, W.," and about equal to it in "England, N.E.," but more in all other districts.

The *bright sunshine* does not differ materially from that reported last week, the percentages of the possible amount of duration ranging from 4 in "Scotland, N.," and 8 in "Ireland, N.," to 17 in "Scotland, W.," and "Ireland, S.," to 37 in the "Channel Islands," and to 38 in "England, N.E."

Depressions observed.—During the whole of this period depressions have travelled from west to east over the northern part of our area, while some subsidiary disturbances have passed over the United Kingdom. Towards the end of the week the barometer over our islands was very low, the readings over Scotland and the greater part of England being below 29 inches. Westerly to north-westerly or northerly winds were most prevalent on our coasts, and were generally moderate or fresh in force, but at times they increased to a squally gale, which in a few localities blew with exceptional violence.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

BOILER SETTING: *Saraph.* Fire-bricks of the best quality should be used, and in saddle-form boilers a "fire-lump" at the end of the bars, to receive the first impact of the flame. Cement and lime in about equal proportions may be used for the setting, but some persons use fire-clay instead of cement.

CUTTING OFF LATERALS FROM A VINE AFTER GROWTH HAS BEGUN: *J. P.* No, there would be no injury done if the pruning was not carried out on a large scale, and bleeding would not ensue, or only to a trifling extent.

DENDROBIUM SPECIOSUM AND D. HILLI: *W. Easson.* It is not unusual for these to flower abundantly.

ERRATUM: LÆLIAS AT SOUTH KENSINGTON, JANUARY 12.—In our report of the last meeting of the Royal Horticultural Society Lælia Crawshayana was designated by mistake L. anceps Crawshayana. It is a distinct species, and not a variety of L. anceps.

FISH GUANO AND BEGONIA SEEDLINGS: *Ed. L.* It is quite possible that the amount of this substance in the compost may have killed the seeds, or the young germs as soon as they burst from the seeds. All such manures as are rich in nitrogenous substances, when not used in exceedingly small quantities, will act injuriously on seeds and young plants.

GRUBS ON VINES: *M. H.* They are the grubs of some species of weevil, but which, in their present state, it is not possible to tell. Trap them with hollowed-out slices of Potatos, Carrots, &c., and destroy them, as the weevils that attack the Vine are capable of doing much harm to both roots and shoots.

INSECTS: *W. H. D.* The insects which have sucked the leaves of your Cattleyas are the plant-bug (Capsus Cattleya), described and figured by us in *Gardeners' Chronicle*, 1877, vol. viii., p. 244. *I. O. W.*

NAMES OF FRUITS: *James Salter. Apples:* 1, Burr Knot; 2, not recognised—a local seedling.

NAMES OF PLANTS: *T. Kennedy & Co.* Pittosporum undulatum.—*T. N.* 2, Blechnum occidentale; 10, Selaginella erythropus.—*J. U.* 2, Adiantum tenerum; 3, A. excisum.—*John Short.* 1, Oncidium Wentworthianum; 2, Calanthe vestita rubro oculata; 3, C. v. lutea oculata.—*A. Bott.* Odontoglossum pulchellum major.—*H. J. Ross.* Not a Eulophia, but Pachystoma pubescens.—*A. D. W.* Thuiopsis borealis (we see no trace of hybridisation); and Juniperus recurva, probably.—*H. H.* 1, Euphorbia jacquiniflora; 2, Solanum venustum; 3, Peperomia argyreea.

PAINT ON WOOD AND IRON DISFIGURED WITH BLACK SPOTS: *Old Subscriber.* It may be owing to rust on the surface of the iron, and to "knotting" of too biting a quality on the woodwork; but you would do best to consult a builder or a practical painter.

PLANTS TO RETAIL: *T. M. Q.* We cannot recommend dealers. You could buy in Covent Garden such as are sold by public auction, or of the market growers, whose goods and addresses are sometimes advertised in our columns.

SHEPHERDIA ARGENTEA: *E. H. C.* It can be obtained at any good tree nursery.

TREES AND BUSINESS BUILDINGS ON LEASEHOLD LAND: *Inquirer.* To our certain knowledge such matters really become the property of the landlord, unless there is some special clause in the lease to the contrary. Temporary erections standing on the land, and not attached to it, or in it, as well as utensils used in trade are exempt.

VINES AND PASSION-FLOWERS: *Passiflora.* 1, Yes, Madresfield Court would grow when worked on Lady Downe's; 2, Lady Downe's would be later than Muscat of Alexandria, if grown in the same house; 3, perhaps Passiflora Buonapartea, P. edulis, which has blue and white flowers, and P. palmata, with flowers of blue and purple, are all beautiful climbers. The young Vines may be inarched on the stock, if that is of about an equal size with those, or on last year's shoots of the same diameter as themselves. The union with the stem is the proper one, unless you are inarching merely to fill up gaps in the spurs.

CATALOGUES RECEIVED.

STUART & MEIN, Kelso—Spring Catalogue and Guide.
DOMAIN ZÖSCHEN, near Merseburg, Germany—Wholesale List of Fruit and Forest Trees, Shrubs, &c.; Retail List of same.
COMPAGNIE CONTINENTALE D'HORTICULTURE, Ghent—General Seed Catalogue.
CARDNO & DARLING, 80, Union Street, Aberdeen—Vegetable and Flower Seeds.
THOS. KENNEDY & CO., Dumfries—Vegetable and Flower Seeds.
THOS. HORSMAN, 102, Godwin Street, Bradford—Garden and Flower Seeds.
J. COCKER & SONS, Sunnypark, Aberdeen—Vegetable and Flower Seeds.
P. J. KANE, John Street, Kells—Seeds.
G. COOLING & SONS, Broad Street, Bath—Vegetable and Flower Seeds.
JOHN DOWNIE, 144, Prince's Street, Edinburgh—Vegetable and Flower Seeds, Gladioli, &c.
WM. SAMSON & CO., AND W. & T. SAMSON, Kilmarnock—Seeds, Plants, &c.
W. TAIT & CO., 119 and 120, Capel Street, Dublin—Seeds, Plants, &c.
RICHARD DEAN, Ealing—Potatos, Primroses, Polyanthuses, Pansies, and Hardy Plants.
LITTLE & BALLANTYNE, Carlisle—Garden and Farm Seeds.
WOOD & INGRAM, Huntingdon—Vegetable, Flower, and Farm Seeds.
SAMUEL YATES, 16 and 18, Old Millgate, Manchester—Vegetable and Flower Seeds.
SUTTON & SONS, Reading—New Vegetables and Flowers.
AUSTIN & M'ASLAN, 16, Buchanan Street, Glasgow—Garden Seeds, &c.
WILLIAM M. BEALE, Wind Street, Neath—Vegetable and Flower Seeds.
W. PIERCY, 89, West Road, Forest Hill, London, S.E.—List of Chrysanthemums.
WESTERHAM NURSERIES AND SEED COMPANY, Westerham, Kent—Vegetable, Flower, and Agricultural Seeds.
W. M. PILLINGER & CO., Chepstow—Garden Seeds.
WILLIAM REID, 8, Hadden Street, Aberdeen—Garden and Flower Seeds, &c.
J. VICK, Rochester, N.Y.—Floral Guide.
JOHN WATKINS, Withington, near Hereford—Seed Potatos.
T. URQUHART & CO., 11, Union Street, Inverness—Vegetable and Flower Seeds.
GIBSON & REID, 14, Lower Ormond Quay, Dublin—Vegetable and Flower Seeds.

COMMUNICATIONS RECEIVED.—J. B.—S. C.—C. E. H.—Fungus.—J. G. B.—T. B.—J. R. J. N. E. B.—H. W. W.—W. E.—D. Wemyss, your note has been sent on to our Correspondent. J. Heywood, Manchester.—P. Wolkenstein.—W. W.—W. J.—C. W. D.—J. S.—H. H. D.—W. H.—Dr. King, Calcutta.—J. T. B.—W. S.—T. W.—C. E.—T. Mayes, next week.—J. Harding.

DIED, at Stanstead Park, Forest Hill, S.E., on the 20th inst., FRANCIS ERSKINE, youngest son of John LAING, nurseryman, in his twenty-second year, after a long and painful illness.

Markets.

COVENT GARDEN, January 21.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

MARKET quiet, with little alteration. A slight improvement in best Grapes. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0–	3 0	Pine-apples, Eng., lb.	1 0–	..
— Canadian, barrl.	10 0–	14 0	— St. Michael, each	2 6–	8 0
Grapes, per lb.	.. 1 6–	4 6	Pears, per dozen	.. 1 0–	2 6
Kent Cobs, 100 lb.	.. 30 0–	..	— per ½-sieve	.. 1 6–	3 0
Lemons, per case	.. 8 0–	10 0			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	6 0–	..	Mushrooms, punnet	1 0–	1 6
Beans, Kidney, lb.	2 0–	..	Mustard and Cress, do.	0 4–	..
Beet, red, per dozen	1 0–	2 0	Onions, per bushel	4 0–	..
Broccoli, bundle	.. 0 9–	1 0	Parsley, dozen bunch	2 0–	3 0
Cabbages, per dozen	1 6–	..	Parsnips, per dozen	1 0–	..
Capsicums, per doz.	0 6–	..	Potatos, per cwt.	.. 4 0–	5 0
Carrots, per bunch	.. 0 6–	..	,, kidney, per cwt	4 0–	5 0
Cauliflowers, per doz.	2 0–	3 0	Salsafy, per bundle	0 9–	..
Celeriac, per root	.. 0 3–	..	Scorzonera, p. bundle	1 0–	..
Celery, per bundle	1 6–	2 0	Seakale, punnet	.. 2 6–	..
Coleworts, doz. bunch	4 0–	6 0	Shallots, per pound	0 3–	0 4
Cucumbers, each	.. 1 0–	1 6	Spinach, per bushel	4 0–6	0
Endive, per dozen	.. 1 0–	2 0	Sprouts, per pound	0 3–	..
Herbs, per bunch	.. 0 2–	..	Sprue, bundle	.. 1 0–	..
Leeks, per bunch	.. 0 3–	0 4	Tomatos, per lb.	.. 1 0–	1 6
Lettuce, per dozen	.. 1 0–	1 6	Turnips, bunch	.. 0 4–	..

POTATOS.—Magnum Bonums, bad trade, 50s. to 80s.; Regents, 60s. to 80s. per ton; German Reds, 2s. to 2s. 6d. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0–18	0	Ficus elastica, each	1 6–	7 0
Arbo. vitæ (golden), per dozen	.. 6 0–18	0	Ferns, in variety, per dozen	.. 4 0–18	0
— (common) dozen	6 0–12	0	Foliage Plants, various, each	.. 2 0–10	0
Arum Lilies, dozen	12 0–18	0	Genista, per dozen	10 0–15	0
Azaleas, per doz.	.. 24 0–42	0	Hyacinths, per doz.	6 0–	9 0
Begonias, per dozen	6 0–12	0	Marguerite Daisy, per dozen	.. 8 0–12	0
Bouvardia, doz	.. 12 0–18	0	Myrtles, per dozen	6 0–12	0
Cineraria, per doz.	.. 10 0–12	0	Palms in var., each	2 6–21	0
Cyclamen, 12 pots	.. 12 0–24	0	Pelargoniums, scarlet, per dozen	.. 6 0–	9 0
Cyperus, per dozen	4 0–12	0	Poinsettia, per dozen	.. 12 0–18	0
Dracæna terminalis, per dozen	.. 30 0–60	0	Primulas, single, 12 pots	.. 4 0–	6 0
— viridis, per doz.	.. 12 0–24	0	Solanum, per dozen	8 0–12	0
Erica, various, doz.	12 0–24	0	Tulips, 12 pots	.. 6 0–	9 0
Euonymus, in var., per dozen	.. 6 0–18	0			
Evergreens, in var., per dozen	.. 6 0–24	0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Abutilon, 12 bunches	2 0	4 0	Lilac, French, bunch	2 0	7 0
Acacia (Mimosa), Fr., per bunch ..	.. 0 6	1 0	Lilium longiflorum, 12 blooms ..	.. 9 0	12 0
Arum Lilies, 12 blms.	4 0	9 0	Marguerites, 12 bun.	4 0	8 0
Azalea, 12 sprays ..	1 0	1 6	Pelargoniums, per 12 trusses ..	.. 1 0	1 6
Bouvardias, per bun.	0 6	1 0	— scarlet, 12 trusses	0 9	1 0
Camellias, 12 blms..	3 0	6 0	Poinsettia, 12 blms..	4 0	8 0
Carnations, 12 blms.	1 0	3 0	Primula, d le., bun.	1 0	1 6
Chrysanth., 12 blms.	2 0	4 0	— single, per bunch	0 6	..
— 12 bunches ..	9 0	18 0	Roses (indoor), doz.	1 0	3 0
Cyclamen, doz. blms.	0 4	0 6	— Tea, French, doz.	0 9	1 6
Daffodils, per bunch	1 0	2 0	— Parme, French,		
Epiphyllum, dozen blooms ..	.. 0 6	1 0	— red, French, doz.	2 0	4 0
Eucharis, per dozen	4 0	6 0	Snowdrops, bunch ..	0 6	1 0
Gardenias, 12 blooms	12 0	36 0	Tropæolum, 12 bun.	2 0	3 0
Hyacinths, Rom., 12 sprays ..	.. 0 9	1 6	Tuberoses, 12 blms..	2 0	3 0
Lapageria, white, 12 blooms ..	.. 2 0	3 0	Tulips, doz. blooms	0 9	1 6
— red, 12 blooms ..	1 0	2 0	Violets, 12 bunches	1 0	1 6
			— Czar, Fr., bunch	1 0	2 0
			— Parme, French, per bunch..	.. 4 0	6 0

SEEDS.

LONDON: *Jan.* 20.—No important change in the values of farm seeds can be reported to-day. The general demand as yet is moderate. The continued and considerable export of Clover seed from Europe to America excites remark, and naturally exercises a striking influence on prices: one estimate puts the total quantity now shipped at 1000 tons. For bird seeds the sale is small. Peas and Haricots move oft slowly at former rates. Feeding Linseed is firm. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

MARK LANE: *Jan.* 18.—English Wheat was unsaleable except at a further reduction of at least 6*d.* per quarter, whilst on foreign, which is relatively dearer, a decline of 1*s.* per quarter was not sufficient to induce purchases of quantity. The flour trade was also very dull and weak. Grinding Barley, with a slow sale, barely supported late values. Beans and Peas were unchanged.

Jan. 21.—Transactions in Wheat were too small to establish any change in the nominal quotations. Flour was equally flat and inactive. In Barley, Peas, Beans, and Oats there was next to nothing doing.

Average prices of corn for the week ending Jan. 16: —Wheat, 29*s.* 10*d.*; Barley, 28*s.* 11*d.*; Oats, 18*s.* 5*d.* For the corresponding period last year:—Wheat, 34*s.* 2*d.*; Barley, 32*s.* 3*d.*; Oats, 20*s.* 1*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Jan.* 20.—Good supplies of all kinds of vegetable produce sold at good prices. Quotations:—Apples, 2*s.* 6*d.* to 6*s.* per bushel; Cabbages, 2*s.* 6*d.* to 6*s.* per tally; Savoys, 4*s.* to 8*s.* do.; Beetroots, 3*s.* to 4*s.* 6*d.* do.; bunch greens, 3*s.* to 4*s.* per dozen bunches; do. Turnips, 3*s.* 6*d.* to 4*s.* do.; do. Carrots, 2*s.* 6*d.* to 3*s.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Cauliflowers, 2*s.* to 3*s.* per dozen; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve; Brussels Sprouts, 4*s.* to 4*s.* 6*d.* do.; Onions, 4*s.* 6*d.* to 5*s.* 6*d.* per cwt.; Carrots, 30*s.* to 50*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 25*s.* to 30*s.* do.; Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD: *Jan.* 19.—A fair trade was transacted at the following prices:—Cabbages, 5*s.* 6*d.* to 6*s.* per tally; Savoys, 7*s.* to 8*s.* do.; Mangels, 20*s.* to 22*s.* per ton; Turnips, 50*s.* to 65*s.* do.; Onions, 60*s.* to 75*s.* do.; Carrots, cattle feeding, 30*s.* do.; do. household, 35*s.* to 45*s.* do.; Horse Radish, 1*s.* to 1*s.* 3*d.* per bundle; Swedes, 23*s.* to 25*s.* per ton; Parsnips, 1*s.* to 1*s.* 2*d.* per score; Celery, 1*s.* per roll; Rhubarb, 2*s.* 6*d.* per dozen.

POTATOS.

BOROUGH AND SPITALFIELDS: *Jan.* 19.—Fair demand, and good supplies. Best samples well supported; inferior irregular. Quotations:—Regents, 60*s.* to 120*s.*; Magnum Bonums, 50*s.* to 100*s.*; and Champions, 50*s.* to 70*s.* per ton.

COLUMBIA (East London): *Jan.* 20.—Quotations: —Champions, 58*s.* to 60*s.*; Victorias, 60*s.* to 65*s.*; Regents, 60*s.* to 70*s.*; and Magnums, 50*s.* to 75*s.* per ton.

Imports.—The imports into London last week consisted of 1202 bags from Harlingen, 3 bags from Ghent, 121 bags from Boulogne, 600 bags from Hamburg, 18 bags from Rotterdam, and 20 sacks from Stettin.

HAY.

CUMBERLAND (Regent's Park): *Jan.* 12.—An increased supply, with a dull trade, at following rates:—Clover, best, 90*s.* to 105*s.*; seconds, 70*s.* to 90*s.*; hay, best, 75*s.* to 88*s.*; seconds, 60*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Jan.* 19.—Quotations:—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 36*s.* per load.

Government Stock.—Consols closed on Monday at 100 to 100⅛ for delivery, and 100⅛ to 100⅛ for the account. Tuesday's figures were 99⅞ to 100 for delivery, and 99⅞ to 100⅛ for the account. The final quotations of Wednesday were 99⅞ to 99⅞ for delivery, and 99⅛ to 99⅜ for the account. The closing prices on Thursday were 100 to 100⅛ for both transactions.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonsals from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18*s.*; ½-cwt., 9*s.* 6*d.*; ¼-cwt., 5*s.*; ⅛-cwt., 3*s.*; tins containing 7 lb., 2*s.* 6*d.*; 2½ lb., 1*s.*

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool.

Can also be had from all Nurserymen and Seedsmen. TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

Peat—Peat—Peat.

FOR Rhododendrons and common purposes. For Stove and Greenhouse Plants, Heaths, Ferns, &c. For Orchids (specially selected fibrous), in sacks or barrels. Fresh SPHAGNUM, very superior LEAF MOULD, LOAM, Fine and Coarse SILVER SAND.

Trade liberally dealt with. Prices on application to GATERELL AND SON, Wholesale Peat Merchants, Ringwood, Hants.

SILVER MEDALS—1868. GARDEN REQUISITES. BRONZE MEDAL—1876.

TWO PRIZE MEDALS.

Quality, THE BEST in the Market. (All sacks included.)
PEAT, best brown fibrous .. 4*s.* 6*d.* per sack; 5 sacks for 20*s.*
PEAT, best black fibrous .. 3*s.* 6*d.* „ 5 sacks for 15*s.*
PEAT, extra selected Orchid 5*s.* 6*d.* „
LOAM, best yellow fibrous ..
PREPARED COMPOST, best LEAF MOULD, best only .. } 1*s.* per bush., sacks included).
PEAT MOULD, „ „ ..
SILVER SAND, coarse, 1*s.* 3*d.* per bush., 12*s.* half ton, 22*s.* ton.
RAFFIA FIBRE, best only .. .. .. 1*s.* per lb.
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 18*s.*
TOBACCO PAPER „ (Spécialité) 8*d.* lb., 28 lb. 18*s.*
MUSHROOM SPAWN, finest Milltrack .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each; 10 sacks, 9*s.*; 15 sacks, 13*s.*; 20 sacks, 17*s.*; 30 sacks, 25*s.*; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

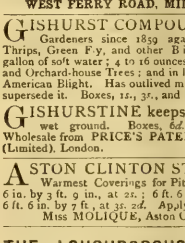
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THE LOUGHBOROUGH GREENHOUSE HOT-WATER APPARATUS.



Price, as engraving, with Boiler, open feed syphon, 12 feet of 4-inch hot-water pipe, and patent joints complete, £4 4*s.* Delivered free to any station. Discount for cash.

This is the simplest, cheapest, and most powerful apparatus made. It requires no brick setting, no stokehole, and no hot-water fitter for fixing. The Boiler stands in the Greenhouse, the front only being outside and flush with the outer wall, so that the whole of the heat from the boiler itself is utilised.

It burns over 12 hours without attention, at a nominal cost.

"Loughborough" Boilers to heat up to 650 feet of 4-inch pipe, with hot-water pipe, joints, &c., always in stock.

Cost of Apparatus COMPLETE for Greenhouses as below:—

10 by 6 ft., £4 14 0	15 by 9 ft., £5 10 8	25 by 12 ft., £6 16 8
12 by 8 ft., 5 1 0	20 by 10 ft., 6 0 0	42 by 16 ft., 12 12 4

Proportionate prices for other sizes. Estimates on application. The measurement of Greenhouse being given, every apparatus is delivered with pipes cut and fitted ready for fixing.

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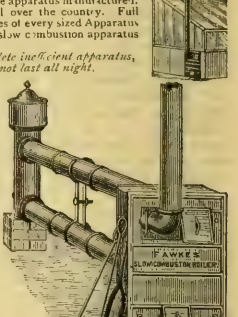


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Fawkes' Slow Combustion HEATING APPARATUS.
Most efficient and cheapest in existence.
Requires no sunk stokehole; will last all night without attention; will burn house cinders; costs nothing for fuel; is a tenant's fixture; any one can fix it; a domestic servant can stoke it. Price of Boiler to heat:—
65 feet 4-inch Pipe .. £2 10*s.*
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Complete Apparatus, with 2 rows of 4-inch Pipe, from £4 12*s.* 6*d.*
The most complete apparatus manufactured. Numbers in use all over the country. Full particulars and prices of every sized Apparatus post-free The only slow combustion apparatus of the kind.
Beware of incomplete inefficient apparatus, which will not last all night.

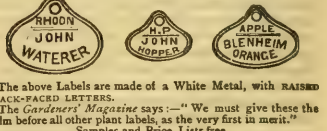


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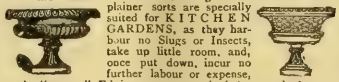
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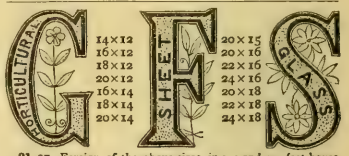
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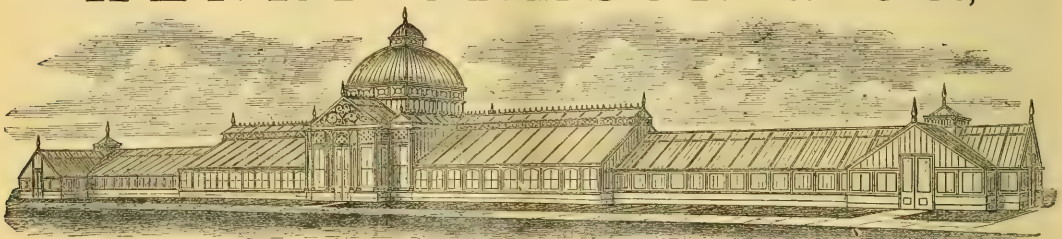
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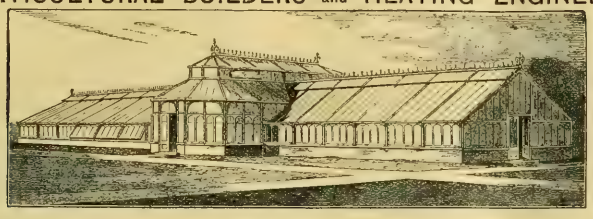
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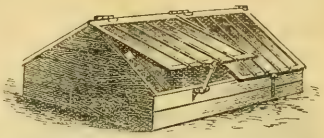
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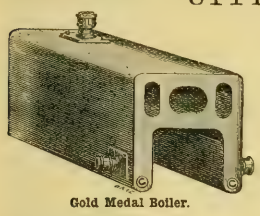
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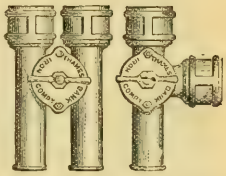


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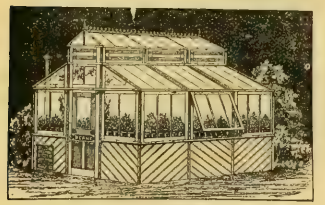
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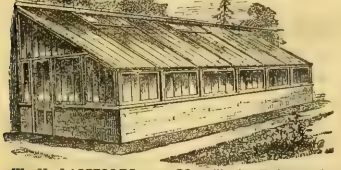
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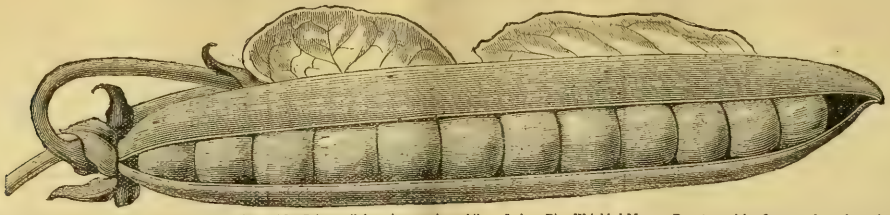
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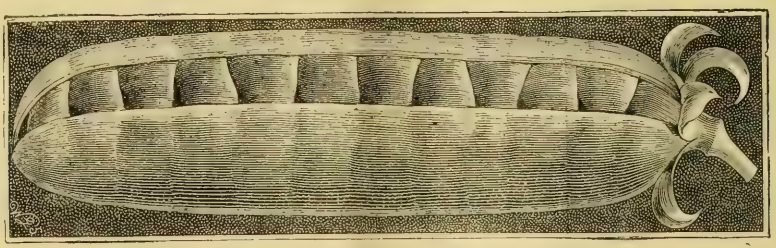
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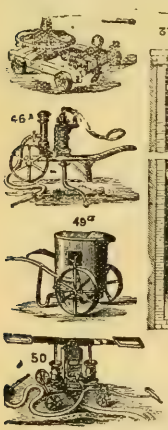
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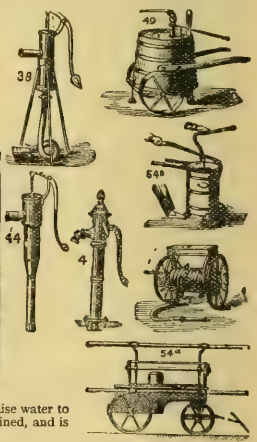
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THE GARDENERS' CHRONICLE,
Volume XXIV., JULY to DECEMBER, 1885.
W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The ANNUAL GENERAL MEETING of the Royal Horticultural Society will be held in the Conservatory at South Kensington on TUESDAY, February 9, to receive the Report of the Council and of the Auditors, and for the Election of Members of Council and Auditors, and for the removal from the Society of certain Fellows under the provisions of Bye Law 22.
Chair to be taken at 3 o'Clock P.M.

N.B.—At this Meeting Candidates for Fellowship will be elected.

The President, Council, and Fellows will dine together at the Criterion at 6 30 P.M. the same evening.

ROYAL HORTICULTURAL SOCIETY.

The President, Council, and Fellows of the Royal Horticultural Society will hold their first ANNUAL DINNER on TUESDAY, February 9, the day of the Annual General Meeting. The President, Sir TREVOR LAWRENCE, Bart., M.P., in the Chair. The Dinner will be held at the "Criterion," at 6.30 P.M. precisely.

Tickets, 30s. each (including wine), must be applied for on or before SATURDAY, February 6. Further information, and Tickets, can be obtained from WILLIAM LEE, Esq., Downside, Leatherhead; or at the Offices of the Royal Horticultural Society, South Kensington.

N.B.—Each Fellow can purchase one Extra Ticket for a Friend.

1886—Trade Price-Current—1886

PETER LAWSON AND SON (Limited), Edinburgh, have to intimate that their Annual CATALOGUE of GARDEN SEEDS, &c., has now been distributed, but should any of their Correspondents not have received one, a Copy will be posted upon application.

CALADIUM ARGYRITES. Large sound Bulbs 6s. per dozen, or will EXCHANGE for EUCHARIS AMAZONICA Bulbs warranted free from Eucharis Mite, or CARNATION MISS JOLLIFFE.
TURNER BROS., Florists, Green Hill Nursery, Allerton, Liverpool.

CHOICE FLOWER SEEDS for 1886. ONE FARTHING A PACKET!
AGENTS WANTED EVERYWHERE. Specimen Parcel of Eighty-four different Packets post-free, 1s. 9d.
LLOYD BOOTH, Flower Seed Merchant, Loudwater, High Wycombe.

Cheap Offer.

DWARF ROSES on Seedling Briers, first-class Plants, best sorts, Tea and H.P., 20s. per 100; second-class Plants, 10s. per 100.
STANDARD ROSES, first-class Plants, best sorts, 60s. per 100.
SEEDLING BRIERS, 5s. and 5s. per 1000.
Apply, B., *Gardeners' Chronicle* office, 41, Wellington Street, Strand, W.C.

LARCH, 1-yr. 1-yr., 5s. 6d.; 1 to 1½ foot, 10s. 6d.; 1½ to 2 feet, 16s.; 2 to 3 feet, 20s.; 3 to 4 feet, 25s.; 4 to 5 feet, 32s. 6d. per 1000. Nett cash. Ground wanted. Trade prices on application. Apply at once.
The Nurseries, Flanybuther.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.
The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Street, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

LAXTON'S "WHITE HEBRON" and "UTILITY." New Early and Late Keeping POTATOS. Particulars from
T. LAXTON, Seed Grower, Bedford.

Seed Potatos.

H. AND F. SHARPE will be pleased to make Special Offers of their choice selected stocks of SEED POTATOS, comprising all the best kinds in cultivation. Purchasers of a quantity treated liberally.
Seed Growing Establishment, Wisbech.

Notice to Senders.

WE HAVE NOW a good DEMAND for the undermentioned:—
GARDENIAS, VIOLETS,
CHRYSANTHEMUMS of all kinds (in quantity),
TUBEROSES, White AZALEA, White CAMELLIAS,
EUCHARIS, Roman HYACINTHS, ROSES,
ODONTOGLOSSUM and other ORCHIDS, &c.
Also GRAPES, TOMATOS, CUCUMBERS, &c.
WISE AND RIDES, Fruit and Flower Salesman, Covent Garden, W.C.

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

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BASKETS and LABELS supplied.

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WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers' and Trade references.

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H. CANNELL AND SONS, Swanley, Kent.

WANTED, MARECHAL NIEL ROSE GRAFTS, in good hard well ripened wood. Price per 100 or 1000 to
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WM. PAUL AND SON, Paul's Nurseries, Waltham Cross.

To the Trade.

CHARLES SHARPE AND CO.'S Wholesale Seed LIST is now ready, and will be forwarded, post-free, on application.
CHARLES SHARPE AND CO., Seed Merchants, Sleaford.

Platanus occidentalis (London Plane).

W. RUMSEY has still a fine lot of well-grown Trees to offer:—10 to 11 feet, 30s. per dozen; 12 to 14 feet, 42s. and 48s. per dozen. A few thousand very fine Dwarf H.P. ROSES: prices (low) on application.
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OFFER of DAHLIA TUBERS is now ready, and may be had upon application to
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MORLE AND CO. now offer splendid large firm Bulbs, 8 to 10, and 10 to 12 inches in circumference, at 35s. and 45s. per 100, 5s. and 6s. per dozen. Early Orders will oblige.
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To the Trade.

TWO HUNDRED GROS COLMAR VINES, in 48-pots, well rooted, struck from eyes, from Kay's noted Vineries, Finchley. £6 to the lot. Sample can be sent. JOHN MONRO, New Barnet.

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T. LAXTON, Seed Grower, Bedford.

To the Trade

MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Tuesday Next.

200 very fine English-grown CAMELLIAS and AZALEAS, 2 to 3½ feet, full of buds; GREENHOUSE PLANTS, in variety: 400 handsome Standard and other ROSES, of the best sorts; FRUIT TREES, CONIFERS and EVERGREEN SHRUBS, RHODODENDRONS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the City Rooms, 37 and 38, Gracechurch Street, E.C., on TUESDAY NEXT, February 2, at 12 o'Clock.

On view morning of Sale. Catalogues at the Rooms; and of the Auctioneers, 67 and 68, Cheapside, E.C.

Wednesday Next.

1000 very fine Bulbs of LILIUM AURATUM, and numerous distinct varieties of IRIS, from Japan; LILIUMS and CALOCHORTI, from California, including splendid Bulbs of Lilium Humboldtii, Washingtonianum, and other; 400 Standard and other ROSES, from an English Nursery; CAMELLIAS, AZALEAS, PALMS, FRUIT TREES, Hardy AZALEAS, 300 CARNATIONS and PICOTEES, LILY of the VALLEY, SPIRÆAS, and a general assortment of Hardy English-grown LILIES and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on WEDNESDAY NEXT, February 3, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, February 5, at half-past 12 o'Clock precisely, by order of the New Plant and Bulb Co., selected pieces of the best type of ODONTOGLOSSUM ALEXANDRÆ, O. PESCATOREI, and many other ORCHIDS; a fine lot of ODONTOGLOSSUM ALEXANDRÆ, CATTLEYA MOSSIÆ, and other ORCHIDS, from Messrs. Cypher, Cardiff, & Co; ORCHIDS in FLOWER from Messrs. F. Horsman & Co., &c.

On view morning of Sale, and Catalogues had.

BY ORDER OF THE EXECUTORS.

Leytonstone and Wanstead, Essex.

IMPORTANT UNRESERVED SALE of valuable NURSERY STOCK, extending over several acres of ground, the whole having been carefully prepared for removal.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the American Nurseries (adjoining Leytonstone Railway Station), and the Wanstead Nursery, Wanstead Flats (about a mile from Leytonstone and Forest Gate Stations), on WEDNESDAY, February 10, and two following days, at 12 o'Clock precisely each day, without reserve, a large portion of the remarkably well-grown NURSERY STOCK, consisting of a splendid variety of Coniferæ and Evergreen Shrubs adapted for immediate effective planting, ranging in height from 2 to 10 feet; 10,000 Ornamental and Forest Trees in variety, 5000 very fine Limes, 8 to 15 feet; Deciduous Shrubs, selected Fruit Trees, beautifully grown trees, many with large fruiting heads, and in all the leading kinds of Apples, Pears, Plums, Cherries, Peaches, &c.; hardy American Plants, including a large selection of Rhododendrons from the noted collection of named and hybrid varieties; 1000 Standard, Dwarf, and Climbing Roses of all the finest named sorts, and an assortment of CAMELLIAS, AZALEAS, and other GREENHOUSE PLANTS.

The whole may be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C., and Leytonstone, E.

IN LIQUIDATION.

The Cranston Nursery and Seed Company (Limited), King's Acre Nurseries, Hereford.

PRELIMINARY NOTICE.

Important to Noblemen, Gentlemen, Nurserymen, and Others extensively engaged in Planting.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from the Liquidator to make preparations for the SALE by AUCTION, of the whole of the extensive Stock of EVERGREENS, CONIFERS, FRUIT TREES, ORNAMENTAL and FOREST TREES, &c., during the present year. The first SALE will take place on TUESDAY and WEDNESDAY, February 23 and 24, fuller particulars of which will appear in further advertisements.

Auction Offices, 67 and 68, Cheapside, E.C.

Monday Next.—(Sale No. 7779.)

5000 splendid Bulbs of LILIUM AURATUM, from Japan; American and South African TUBEROSES, Rare Californian LILIES, CALOCHORTI, TIGRIDIAS, GLADIOLI, Japanese IRIS, home-grown LILIES, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT February 1, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale, No. 7081.) ROSES, FRUIT TREES, BULBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, February 3, at half-past 12 o'Clock precisely, several hundred first-class Standard and Dwarf ROSES, including all the leading varieties; Pyramidal and Dwarf-trained FRUIT TREES, BORDER PLANTS, LILIUMS, GLADIOLI, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7082.) SOBRALIA XANTHOLEUCA.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, February 4, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, a grand importation of the lovely and rare yellow SOBRALIA XANTHOLEUCA, CATTLEYA MOSSIÆ in extra fine species, ONCIDIUM CUCULLATUM GIGANTEUM, O. JONESIANUM, LYCASTE SKINNERI, CATTLEYA SKINNERI, C. CITRINA, and many other valuable ORCHIDS.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS IN FLOWER will take place on THURSDAY, February 11, and he will be glad if Gentlemen desirous of ENTERING PLANTS for this Sale will please send particulars of same not later than THURSDAY NEXT.

Kingsbury House, Shortlands.

The SECOND PORTION of the VALUABLE COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 11, at half-past 12 o'Clock precisely, the Second Portion of the above extensive Collection, consisting chiefly of PLANTS in FLOWER and BUD.

Further particulars in next Advertisement.

Valuable Collection of Orchids on Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the CATALOGUE of the large and valuable COLLECTION of ORCHIDS formed by the late R. P. Percival, Esq., of Birkdale, Southport, is now ready, and will be sent post-free on application. The Orchids are also now ready for inspection, and orders will be booked; but no Plants will be sent out until TUESDAY, February 2. See Catalogues for full particulars.

The Collection includes magnificent specimens of all the leading varieties of ORCHIDS, and many new and rare varieties.

The Vineyard, Garston, Liverpool,
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

To Nurserymen and others.

FOR IMMEDIATE DISPOSAL, as a going concern, the old and lucrative BUSINESS of Messrs. G. and W. YATES, Nurserymen and Florists, who are relinquishing this branch of trade in order to entirely devote their attention to their well-known established and increasing Wholesale and Retail Seed Business. There are upwards of eight acres of good fertile land (well stocked with selected Shrubs and Trees adapted to the locality), which may be had on long lease at a low rent, and known as "Green Lane Nurseries," situate at Heaton Norris, five miles from Manchester, and one mile from Stockport, Lancashire, by road or rail. The Glass, Plants, Heaters (nine in number), Pits, Stable, Sheds, &c., are replete with all modern requirements for a first-class trade, which has been successfully carried on for over twenty years. The Stove and Greenhouse Plants optional

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Portion of the money may remain on mortgage.

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FOR SALE, a GREENGROCER'S and FLORIST'S, Long Lease, Horse, Vans, everything for use. Apply to

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TO BE DISPOSED OF, with Immediate Possession, a genuine SEED, FLORIST, and JOBBING BUSINESS, comprising 9 Plant-houses, heated on the most modern principles, a well-built Seed Shop, handsomely fitted, Conservatory facing road, and an Eight-roomed Dwelling-house, which may be had furnished. Situated in the main thoroughfare of a populous town, 20 miles from London.

R. K., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

Little Gem Peas.

CHARLES SHARPE AND CO., Sleaford, have the above, which they can offer to the Trade at a moderate price. Samples on application.

NEW CHRYSANTHEMUM. — Yellow Globe, incurved, a sport from White Globe, of a fine canary-yellow or primrose colour. Showy growing, and free flowering. A fine large bloom for exhibition. First-class Certificate from the National Chrysanthemum Society, November 11, 1885. Price, good Plants, 5s. each, cash with order.

W. MARTIN, Blackstone, Woodmancote, Henfield, Sussex.

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Special Offer to the Trade.

		s.	d.	
PEAS—Harrison's Glory		9	6	per bushel.
" Kentish Invicta		10	0	"
" Paradise Marrow		8	6	"
" Prizetaker		10	6	"
" Pride of the Market		16	0	"
" Princess Royal		10	0	"
" McLean's Advancer		14	0	"
" " Little Gem		16	0	"
" " Prince of Wales		20	0	"
" " Premier		22	6	"
BEANS—Green Longpod		8	6	"
" Dwarf Kidney, leading varieties		11	0	"
CARROT—Early Scarlet Horn		70	0	per cwt.
" Long Red Surrey		55	0	"
RADISH—Wood's Early Frame		23	0	per bushel.
" Long Scarlet		21	0	"
TURNIP—Green-top Yellow Scotch		17	0	"
" Purple		18	0	"
" Hartley's Short-top Swede		18	6	"

All are nice samples. Peas and Beans well Hand-picked.

ALFRED LEGERTON,
Seed Merchant, 5, Aldgate, London, E.

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H. BENNETT begs to state that he has the finest stock in Europe of this beautiful novelty, having imported it a year before any other house. Strong, hard, dormant plants from pots, just fit for planting out or for forcing.

A Single Plant will be sent post-free on receipt of 1s. 9d. Trade Price, 13s. per dozen (cash with order), including package and free to Shepperton Station.

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With the Change in the Weather, I would draw my Customers' attention to my

NEW SEED CATALOGUE, containing many NOVELTIES, and all PERENNIALS, GREENHOUSE PLANTS, FLORISTS' FLOWERS, HARDY ANNUALS, &c., worth growing. Also complete LISTS of GLADIOLUS, DAHLIA TUBERS, &c. These have been already posted to all customers, and may be had gratuitously upon application to

THOS. S. WARE, Hale Farm Nurseries, Tottenham, London.

DAHLIAS — POT ROOTS For immediate Propagation.

We have the finest, most complete, and best kept collection in the world. Above 400 best varieties, our selection, 4s. 6d. per dozen.

Send for the best Illustrated Descriptive CATALOGUE ever issued.

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SHARPE'S COLLECTION of SEEDS are the best and cheapest. Boxes, 10s. 6d., 15s., 21s., 30s., 42s., and 63s. each.

CHARLES SHARPE AND CO., Seed Merchants, Sleaford.

F. LEWIS has a few thousand ADIANTUM CUNEATUM in 60's to dispose of out of pots. 18s. per 100, £8 per 1000, cash. Packing free.

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BURBURY'S PEAS — Two Peas. EARLY KENILWORTH, the best Early Pea known. 1s. per pint; WILLIAM THE CONQUEROR, earlier and superior to William I., 2s. per pint; AMERICAN WONDER (true American Seed), 7d. per pint.

The best Early Dwarf. Three varieties, free by post, 3s.

CATALOGUES gratis on application.

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FOR SALE, a few thousands of Scarlet, White, or Pink GERANIUMS, Autumn struck, 8s. per 100, £3 per 1000. Also a few thousands of fine old Crimson CLOVE, established in 60-pots.

J. E. BUTTERFIELD, Freezywater, Waltham Cross, N.; and New Flower Market, Covent Garden, W.C.

PALMS.—A few hundred splendidly grown Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, Areca lutescens, and Euterpe edulis, 12 inches high, 4s. per dozen, 25s. per 100. Latania borbonica, Seaforthia elegans, and Euterpe edulis, 20 inches high, 12s. per dozen; less quantity, 1s. 3d. each. Packages and Parcels post-free.

GARDENER, Holly Lodge, Stamford Hill, London, N.

Early Peas.—Ask your Seedsmen for

BURBURY'S EARLY KENILWORTH and WILLIAM THE CONQUEROR. One trial will prove the fact, that these Peas have no equals among the Earlies. Testimonials and price, free on application to

W. BURBURY, The Crew, Kenilworth, Warwick.

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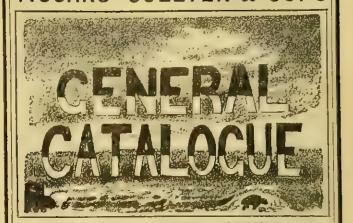
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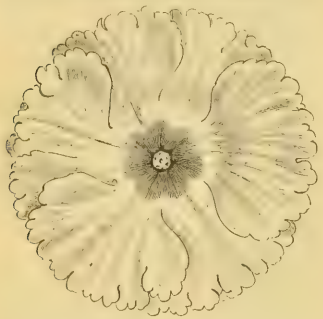
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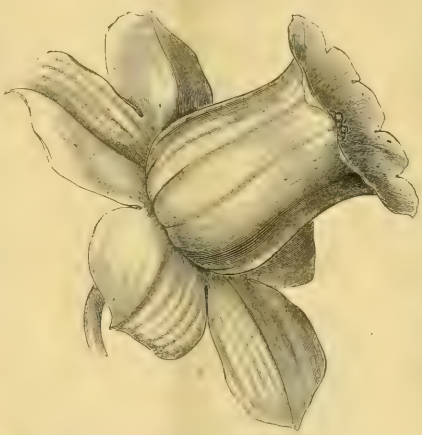
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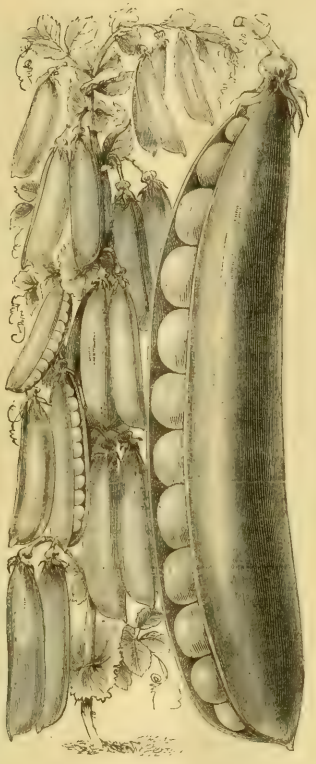
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In Sealed Packet, 3s. per Pint

"The Pea 'Chancellor' has proved an excellent variety. The haulms being heavily laden with handsome, well-filled pods, containing on an average nine large Peas of excellent flavour."—Mr. H. W. WARD, *Gardener to the* Right Hon. the Earl of Radnor.

"In spite of the unfavourableness of the season, your New Pea 'Chancellor' proved very prolific and good in quality. It produced an abundance of broad pods, well filled with sweet and tender Peas—decidedly a profitable sort for any garden."—Mr. W. IGGULDEN, *Gardener to the* Right Hon. the Earl of Cork.

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THE
Gardeners' Chronicle.
SATURDAY, JANUARY 30, 1886.

HEATHERSIDE.

THE extensive waste lands in Surrey and the adjoining counties of Hants and Berks, beautiful at all seasons of the year, are, perhaps, seen at their best in the winter months, when fields and hedgerows are bare and deciduous trees leafless.

The Scotch Fir forests suggest warmth and comfort; the younger trees, with their rich and varied shades of green sparkling in the bright morning sunlight, and the reddish-brown stems of those of more mature age, make a pleasing contrast to the general barenness of the country at this season; vast stretches of Heather lighted up by patches of yellow bracken and an occasional bush of Gorse precociously displaying its golden blossoms, convert the hills and dales of these apparently dreary wastes into picturesque landscapes of great beauty.

On a bright and frosty morning not long since, after a most enjoyable ramble over these charming commons, I found myself at Camberly, a rapidly rising district situate on the Ascot and Woking branch of the London and South-Western Railway, and within an easy distance of the Heatherside Nurseries.

The avenue of Wellingtonias, the fine collection of Conifers and other hardy trees planted there just over twenty years ago, were well known to me when in their infancy. Wishing to ascertain the progress they had made during those twenty years, I called at the nurseries, and was most courteously received and conducted through by Mr. Street, by whom the nurseries are now carried on.

Although the subjoined notes may not contain any information which, as regards the growth of Conifers, has not already been laid before your readers, they may serve the purpose of comparison, and perhaps induce those who have had greater experience than the writer to supply such details as may serve to promote the more extensive planting of this, the most beautiful and useful section of all our hardy exotic trees.

The avenue of Wellingtonias is formed by two rows nearly 1½ mile in length, 60 feet wide, and the trees 30 feet apart in each line: they were 1 foot high when planted twenty-one years ago, and are now from 30 to 35 feet high, all well shaped and furnished and uniform in growth. The elevation is 450 feet above the sea level, the land being a sandy peat with gravelly subsoil; they are all from cuttings, amply demonstrating, if necessary, that they make as fine trees as those raised from seed: care is, however, necessary in the selection of the cuttings as well as in their treatment after being rooted. I may remark that plants so raised are less liable to be attacked by the disease which has been so fatal amongst young seedlings.

For rapidity of growth, Abies Douglasii stands first, many specimens having attained the height of 50 feet, with well developed trunks and spreading branches. It should be extensively planted both for profit and ornament, as its excellent timber would probably be ready

for the market in a much shorter space of time than many of the kinds of Fir now planted for that purpose. Young plants are now to be obtained from the nurseries at low rates, so that the introduction of 100 or 200 plants per acre when forming new plantations or in filling up existing ones would not add greatly to the cost, whilst materially enhancing the future value. Of the Californian Hemlock Spruce (Tsuga Mertensiana) there are several grand examples 30 to 40 feet high, perfection in shape, most valuable for ornamental purposes, and of rapid growth. Tsuga Pattoniana, another Californian species, distinct in colour and habit, 12 feet high and 27 feet in circumference of branches at the base. Abies Lowiana, nobilis, nobilis robusta, and Nordmanniana have reached from 25 to 30 feet, whilst the magnificent A. grandis var. Gordoniana has attained 45 feet in the same time. This latter species is frequently supplied from nurseries under the name of grandis. It differs very materially from that sent home by Douglas in 1831. This may be accounted for by its having a different habitat, Douglas having found his grandis in Northern California, Gordoniana having been more recently introduced from Vancouver's Island. The Abies above noted are perhaps to be recommended as most generally useful; they are all of free growth, very hardy, and eventually make large and handsome trees, usually found in the rich soil of valleys and on the borders of large rivers. They also thrive well on dry soils at great elevations. The timber is well spoken of, and that grown on the higher grounds would doubtless be of superior quality. Special mention must be made of a unique example of Abies bracteata, 20 feet high, and perfectly furnished; the young shoots in most situations are injured by late spring frost, but for this drawback it would be one of the most distinguished of Conifers.

Araucaria imbricata is represented by handsome specimens 20 feet high, in robust health; Pinus insignis, 25 feet; Pinus macrocarpa, 25 feet; Abies orientalis, 30 feet; Cupressus Lawsoniana, Thuiopsis borealis, Thuia gigantea (Lobbii), 25 to 30 feet, and numerous good examples of other Conifers, making a representative collection.

In a sheltered nook I came upon a fine plant of the evergreen Chestnut of California (Castanea chrysophylla), 15 feet high, which although it does not take kindly to our climate as a rule, grows luxuriantly here.

The Heatherside Conifers have been greatly assisted in their growth by the judicious planting of the commoner Pines for their protection while young, the value of which cannot be overrated; although the necessity for sheltering Conifers is well known to those who engage in extensive planting, instances abound where valuable trees are taken from the warm rows of the nursery and planted in open and exposed places, only to become stunted in their growth, or more probable to dwindle and die.

In the nursery quarters are ample stocks of Rhododendrons, both of ponticum and choice hybrid kinds; Azaleas, Coniferæ, ornamental trees, shrubs, evergreens, and forest trees. Several houses are well filled with plants for cut flowers and Roses. Other houses and pits are used for the propagation of the general stock. Several acres are cropped with Strawberries, and farming is also carried on extensively. The whole is in excellent order, and reflects great credit on Mr. Street. *X.*

HUDDERSFIELD CHRYSANTHEMUM SOCIETY.—The condition of this Society seems to be in every way satisfactory, as may be inferred from the statement of the accounts rendered at the last general meeting—a sum of £77 4*s.* 10*d.* remaining after the payment of nearly £100 in prizes and all incidental expenses of management.

New Garden Plants.

LÆLIA ANCEPS (*Lindl.*) STELLA, *Rchb. f.*

THIS grand beauty lies before me in two very fine flowers. It has very long petals, rather broad sepals of a glorious white, the streaks on the side lacinia are broad and of the clearest purple; the yellow keels on the base of the mid-lacinia are good. Ten years ago you would have been much blamed for calling it Dawsoni; now-a-days many guineas form the gladly contributed payment for one or two purple blotches on the mid-lacinia. We progress; or, better, we see the princes of the Orchid theatre making fine progress.

Who was so lucky as to see the first flower? I cannot say. I believe Mr. C. G. Hill. His gardener, Mr. S. Davenport, sent me a grand flower from Arnot Hill, Arnold, Notts, January 8. On January 11 Mr. F. Sander sent "the first that has flowered in the country," from Mr. Ingram, of Elstead.

It is not I who can judge who was the first, though I could believe it was Mr. C. G. Hill. At all events, the winner in this race may only have arrived first by a horse-nose length. *H. G. Rchb. f., Jan.* 23.

POLYPODIUM (PHYMATODES) MACROURUM, *Baker, n. sp.**

This is a new species, resembling the well-known Polypodium Phymatodes in general habit, size and texture, but remarkable for its huge lanceolate terminal tail and for its small scattered sori, in which it resembles P. affine, insigne, dilatatum, and hemitomum. We received it at Kew last year from the Brisbane Botanic Garden, but do not know whether it is really a native of Queensland. Its near allies all come from some part of tropical Asia or Polynesia. A fine plant is to be seen now in a fully fructified state in the tropical Fern-house at Kew. Rhizome epigæous, shortly creeping, about the thickness of a man's little finger, bearing at first a few lanceolate paleæ, which soon disappear, leaving it green and naked. The stipe is short, stiffly erect, castaneous; the fronds rhomboid-caudate, 2—3 feet long, 6—12 inches broad, and moderately firm in texture, of a bright green colour, and glabrous on both surfaces; the upper part, or lanceolate simple tail, perhaps a foot or scarcely 2 feet in length, and 2 or 4 inches broad, repand only towards the base, the central part deeply pinnatifid, with lanceolate pinnæ, sometimes reaching a length of 6—8 inches, the lower part reduced to a simple entire narrow wing to the stipe. The primary veins are distinct, straight and erecto-patent. The other veinlets are indistinct and obscure, forming copious small hexagonal areolæ. The sori are copious, small, round, scattered, slightly immersed, and often confluent. *J. G. Baker.*

* *Polypodium* (*Phymatodes*) *macrourum*, Baker, n. sp.—Rhizomate epigæo breviter repente cite calvato crassitie digiti parvi humani; paleis parvis lanceolatis firmulis brunneis deciduis; stipite brevi erecto stricto nudo castaneo; fronde rhomboideo caudato 2—3 pedali simpliciter pinnatifido firmulo glabro utrinque viridi, superne simplici lanceolato, medio profunde pinnatifido, pinnis paucijugis lanceolatis, deorsum angustissimo simplici in stipitem sensim attenuato venis primariis rectis perspicuis, venulis reliquis obscuris immersis in areolas hexagonas parvas anastomantibus; soris parvis copiosis irregulariter sparsis leviter immersis sæpe confluentibus.

STEPHANOTIS FLORIBUNDA.

THE accompanying illustration (fig. 25), from a photograph, is a sample of the above plant, growing at Messrs. Lucombe, Pince & Co.'s well known nursery at Exeter. That it is nothing new nor remarkable either to see this exquisite plant grown to great perfection I am perfectly aware—the fine specimens frequently observed at most of the more important flower shows being evidence on this point. Moreover, in most gardens, the Stephanotis is well cultivated, and notwithstanding the length of time it has been in cultivation it will without doubt continue to be a favourite for a long time. Messrs. Lucombe, Pince & Co.'s success in flowering the plant is due to the system they follow in its culture, which, to sum up briefly, is as follows:—

The plants are rested in a cool-house after flowering, pruned, and started in January, and the shoots allowed each to climb singly on a string fixed near the glass in a stove until the growths are completed and the flower-buds set. The plants are stimulated occasionally when growing with Standen's manure, and the plants are subjected to a moist heat and much light during the growing season, and without which the best results are not attainable; and lastly, the plants are kept in a state of perfect cleanliness. The compost in which they are grown is broken up by hand and not passed through a sieve, and is composed of quite four-fifths fibrous loam, the remainder being the peat from the Haldon Hills, near Exeter, a little leaf-mould, and plenty of silver-sand. The specimen, the subject of this notice, was photographed in June soon after its return from the meeting of the Devon and Exeter Botanical and Horticultural Society, and, to borrow a well-known exhibitor's remark, "was quite a young piece:" it is now one of the permanent plants at the Exeter Nursery, having been planted out in a raised bed 3 feet by 3 feet, with brick sides. The reason for this is obvious, as all its roots are above the floor line, and are thereby benefited by the heat of the house. It was from this plant that the fruit figured in the *Gardeners' Chronicle* at p. 817, vol. xxiv., was gathered. *W. N.*

CAPE BULBS.

MR. BAKER'S short but pithy paper on the bulbous plants of South Africa will go a long way towards bringing to the front a great many of those bulbs which are known to be beautiful and useful as garden plants, and no doubt many will be induced by his observations to turn their attention to the question of growing and establishing Cape bulbs in this country. The difficulties, known or supposed, that are in the way of the cultivation of almost all Cape bulbs out-of-doors, are clearly placed before us in Mr. Baker's paper, and in the several questions put to practical gardeners with respect to flowering time, &c., we have the whole subject reduced to that which most affects English cultivators. But so far as I understand the first of these questions asked by Mr. Baker, there is no insuperable difficulty in the way of outdoor cultivation for the great majority of Cape bulbs. "How far is it possible by cultivation to change the natural flowering time of these south temperate plants?" that is the question; and it appears to me that we have no means of making any change by cultivation simply; the only method being that of removing the bulbs from the open ground, and keeping them dry for a time, thus compelling them to remain dormant, when if in the ground they would be actively growing. In the discussion that followed Mr. Baker's paper it was stated that there was no evidence to show that by cultivation, apart from forcing on the one hand, or enforced rest through total dryness on the other, we could alter the flowering season of any plant. Thus, the Nerines flower and grow in our late autumn or winter, and rest in our summer, so also do the Belladonna and Guernsey Lilies, and the same rule holds good with all Cape plants whose flowering time is during our winter. If we turn to other plants than those of the Cape, we find plenty of evidence to prove that plants with a short and fixed flowering season do not change it under new conditions. Orchids contain many examples, so also do Chrysanthemums, Ericas, Epacris, many Acanthads, Poinsettias, Aloes, and hosts of other plants. Who ever succeeded in growing a batch of Poinsettias that would flower in June, or Chrysanthemums, or Erica hyemalis? We may succeed by raising new varieties with a tendency to vary in their season of flowering, but given an exact or as near as possible exact imitation of natural conditions in regard to temperature, soil, and moisture, and the same plant will flower in the same month all the world over. If this were not so, why need we trouble about raising late-flowering Pears and other fruits? Plants are true conservatives, on this point at all events.

Reverting to Cape bulbs I may mention here a few facts gathered during the last year or so, whilst taking part in an endeavour to establish a collection of Cape bulbs in an outdoor border at Kew. In the spring of 1883 a border under a high wall with a south aspect was prepared for the reception of Cape bulbs; the old soil was taken out to a depth of 2 feet, 9 inches of drainage (broken bricks, &c.) was put in the bottom, and upon this a mixture of good soil. In

April the bulbs were planted, and during the summer many of the plants made satisfactory growth. The plants thus treated were many species of Gladiolus, Watsonia, Antholyza, Ixia, Moræa, Babiana, Crinum, Vallota, Lachenalia, Albuca, Eucomis, Ornithogalum, &c. As the cold weather approached most of the plants lost their foliage—indeed a large number had gone to rest soon after midsummer. So far, then, all looked promising. But soon after Christmas we saw that the majority of the plants were pushing up young leaves, and before February was over we were protecting foliage a foot high on the Gladioli and Watsonias. Of course the absence of warmth and light told fearfully on the health of the growths, and in not a few cases proved fatal to the plants. There were, however, a few of the plants that turned out a success, but unfortunately these were none other than such as were already known to be safe if left out-of-doors all the year round. Crinum Mooreanum, C. longifolium, C. capense, and the Belladonna Lily, with one or two species of Ecomis, and one species of Watsonia, viz., rosea (this last perhaps an exception). In a conversation with Professor Foster on this subject, just before the above experiment was begun, I learnt that he intended trying Cape bulbs in a similar way, and either he recommended, or I suggested and he approved, that deep planting would be the right thing for the larger bulbs, *i.e.*, Gladiolus, Watsonias, &c. This, however, made no difference as regards the time when growth set in, and I afterwards inclined to the opinion that deep planting, except perhaps for Crinums, was a mistake. Last autumn we took up all the Iridaceous genera, and have kept them dry, intending to replant them in spring. There is, however, under a greenhouse wall on the south side of the T-range, a collection of Ixias, Sparaxis, Babianas, and Freesias, which have been left in the border for the last two winters, and these have now some of them leaves 1 foot long. We protect them by hanging a Frigi-Domo curtain in front and over them every night, but in such weather as we are having now there is little chance of their ever doing any good. Looking at these plants to-day I saw close by them two beds of Moutan Pæonies, which, notwithstanding the bitter cold of the last few weeks are bursting into growth and must soon be protected. In the face of this it appears to me hopeless to expect any real good to come from attempts to change, by cultivation alone, the flowering time of Cape bulbs or of any other plant. It would be beside the point at issue to enumerate here those plants from the Cape which will thrive out-of-doors and flower in summer with us, for there seems no doubt that such plants flower at a corresponding period in their native haunts. We cannot assume that all the plants of the Cape, or even the bulbs, flower at the same time. I suspect our garden Gladioli have descended from species which at the Cape flower in the same months as their progeny do here.

I have heard that during the hot dry season—that is, the summer—at the Cape these bulbous plants are at rest, and that it is on the approach of the cold season and after heavy rains [that

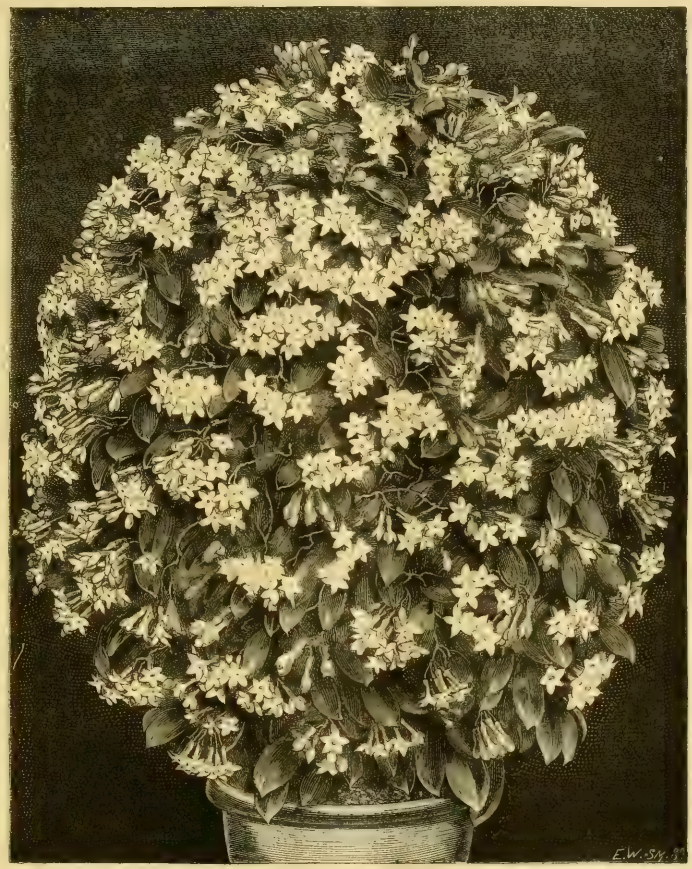


FIG. 25.—STEPHANOTIS FLORIBUNDA. (SEE P. 136)

the plains of the Cape are suddenly transformed from barren desert to fields of rich green and beautiful colours. This should be about January or February. On the other hand many plants no doubt grow in moist shaded situations, on the sides of streams, &c., and these would probably flower at various seasons; this will explain the summer flowering of some of the Hæmanthuses, Crinums, Lachenalias, and Vallotas.

If the above facts and suggestions go to prove anything it must be that, first, we cannot change the flowering season of Cape bulbs without subjecting them to treatment which weakens, and sooner or later destroys them; second, there are no plants, much less Cape bulbs, that have been thus changed; third, we must limit ourselves to those bulbs which flower at a favourable time with us if we would grow them out-of-doors permanently; and for the rest we must stick to indoor cultivation for at least a portion of the year. It is unnecessary to touch here upon the subject of pot culture for Cape bulbs, the question being the establishing of these plants out-of-doors. No doubt Mr. Moore, of Glasnevin, Mr. Barr, Mr. Ware, Mr. Ewbank, and other English bulb growers will be able to throw much light upon this business, whilst those masters of bulb culture, Messrs. Max Leichtlin, De Graaf, and other foreign growers will help much by recording their experience in the management of these plants. *W. Watson, Kew.*

WINTER BEDDING AND OTHER PLANTS AT MESSRS. LEE'S NURSERY, ISLEWORTH.

A DEMAND has arisen within the last few years that our gardens shall, in some measure at least, be as well furnished with plants of beauty in winter as in summer, brief as that season is. The firm abovementioned have endeavoured to meet the demand for these winter decorative subjects, with much success. We had lately the opportunity afforded us to inspect their remarkable stock, and it well illustrated the great value of hardy ornamental-foliaged plants for the enlivenment and improvement of our gardens during the dull months of the year, and also for the formation of permanent carpet-like beds, their dwarf compact habit, their ability to retain it by being pruned, and the various and pleasing shades of colour to be found amongst them, rendering them especially serviceable for this purpose—vieing, indeed, with the summer bedders, associated with which they form happy combinations. As a practical illustration of their use in particoloured beds we need only refer to their use for this purpose in the gardens at Heckfield, where Mr. Wildsmith has employed them with much artistic effect.

We have referred to this class of plants as being valuable for outdoor decoration—they may be used indoors also with good effect, as for conservatories in which there is no heating apparatus, halls and staircases, porticos, &c.

As giving some idea of the magnitude of the demand for this class of plants, it may be of interest to mention that 50,000 golden and other Euonymuses, and a vast proportion of small evergreens suitable for window boxes and planting in beds, &c., are propagated and grown at this nursery.

As it may prove interesting and useful to those concerned, we append an alphabetical list of the plants noted. Those marked C are adapted for carpet bedding, those marked S are low standards for centres of beds, P are pyramids for corners of parterres:—

NAME.	COLOUR OR TINT OF FOLIAGE.
Abies:—	
C. aurea	Gold
C. Engelmanni	Grey
C. Menziesii	Grey
Aucuba:—	
C. Vera femina—berried	Green and red
Biota (*Chinese Arborvitæ*), *varieties*:—	
P. argentea	Silver speckled
C. aurea	Golden-bronze
P. ,, variegata	Gold speckled
P. elegantissima	Tawny-gold
P. ,, picta	Gold, speckled silver
C. filiformis	Bright green
C. pertecta (somewhat new)	Green in winter, bright sulphur gold in spring
C. semper-aurea	Golden-bronze
Berberis:—	
C. pygmæa	Deep green
Buxus:—	
C. nana variegata	Silver and green
Cedrus:—	
P. Deodara alba-spica	Silver
P. alba pendula	White and grey
P. ,, spica	White and grey
P. argentea	Silvery grey
P. aurea variegata	Large gold blotches
P. crecta viridis	Bright green
C. lutea	Yellow
C. nana glauca	Grey
P. ochracea	Yellowish-white
Cupressus:—	
P. macrocarpa Cippsi	Green, speckled white
P. sempervirens variegata	Green, speckled gold
Elæagnus:—	
,, pungens variegata	Golden margin
Euonymus japonicus, varieties:—	
C.P. aurea maculata	Gold in centre of leaves
P. Duc d'Anjou	Light and dark green striped
C.P.S. latifolia argentea	Gold and silver
C.P.S. ,, elegans	Bright silver
C.P.S. ,, aurea elegantissima	Deep gold margin
C. microphylla or pulchella	Deep green
C.S. radicans variegata	Bright silver margin
C. rotundifolia argentea	Silver margin
Genista:—	
,, argenteum compactum elegans	Silver striped
Hedera (*Ivy*), *varieties*:—	
S. arborea argentea	Bright silver margin
S. ,, aurea	Gold blotched
S. ,, elegantissima	Silver edge
S. ,, Rheingoldiana	Dark green
S. ,, yellow-berried	Green leaf
Juniperus, varieties:—	
P. chinensis aurea	Straw colour
P. drupacea	Bright green
C.P. japonica aurea	Entirely gold
P. ,, argentea variegata	Silver blotch
C.P. ,, aureo variegata	Gold striped
P. neoboriense	Greyish-green
P. virginiana argentea	Conspicuous white speckles
P. ,, columnaris	Dark green
P. ,, elegans (Lee)	Dark green, suffused with cream
Ligustrum (*Privet*), *varieties*:—	
C. coriaceum	Dark green
C.S. japonicum	Dark green
C.S. lucidum aureo-variegatum	Bright gold margin
C.S. ovalifolium aureo-variegatum	Brighter gold margin
C.S. sinensis tricolor	Green, silver, and rose colour
Osmanthus, varieties:—	
C.S. ilicifolia argentea	Silver margin
C.S. ,, aurea	Dull gold margin
Prunus lyx:—	
P. elegans	Light green
Retinospora, varieties:—	
C. cupressoides	Light brown
C. ericoides	Light brown
C. filifera	Green
C. juniperoides	Bluish-purple
C. obtusa nana aurea	Entirely gold
C. pisifera lutea	Yellow
C. plumosa	Light greenish-white
C. ,, alba-spica	Tips of branches white
C. ,, lutea	Yellow
C. squarrosa	Whitish grey
Taxodium:—	
P. alba spica	Bright silver tips to branches
Taxus (*Yew*), *varieties*:—	
C.P. aurea	Gold striped
C.P. elegantissima	Silver striped
C.P. fastigiata aurea	Entire gold
P. ,, variegata	Gold variegation
P. gracilis pendula	Deep green, elegant
P. pyramidalis variegata	Gold striped
P. Washingtoni	Bronze
Thuia (*American Arborvitæ*), *varieties*:—	
C. alba spica	White tips to branches
C. plicata lutea	Entire gold
C.P. Vervaeneeana	Light bronze

Amongst plants of a miscellaneous character noted were:—

Cupressus Lawsoniana erecta aurea, well named: it is a sport from erecta viridis, and is if anything brighter than lutea, therefore it may be readily imagined a "good thing."

A good London shrub is Ligustrum coriaceum with beautifully glossy green foliage. In passing, it may be appropriately noted here that Messrs. Lee planted what was known as the "Temple Garden" at the "Inventions" last year, with an admirable collection of shrubs from this nursery suited to town work, showing the wealth of subjects that lie at the planter's hand for this purpose.

Berberis pygmæa is a good flowering shrub, not nearly so well known as its merits deserve it to be.

The beautifully silver margined Osmanthus ilicifolia argentea, a very effective plant, is grown in quantity. Regarding O. aquifolius, it may be interesting, and prove of some service, to record that it is found to be quite hardy here when grafted on the common Privet, Ligustrum vulgaris, as a stock.

Ivies are a special feature, an extensive collection of all the approved sorts being grown, an old wall having some fine specimens of variegated sorts of the liveliest colour, admirably illustrating their use for this and other kinds of work. The most useful Ivy for general purposes is considered to be Hedera canariensis, the Irish Ivy, and the distinction is well deserved, its fine broad leaves rendering it very useful for covering buildings and large surfaces generally.

Golden and Silver Hollies, grand specimens, impart a brightness of colour especially acceptable at this season of the year, but it would be impossible to speak adequately of all the good hardy things here in our very limited space. *J. B.*

FRUIT NOTES.

STEWING PEARS.

WHAT is a stewing Pear? it may be asked. Any Pear will stew or bake that is not yet ripe. Some of the finest dessert or melting Pears are really excellent stewed, but these cannot be and are not what are properly called stewing Pears. Many Pears there are that are fit for no other purpose but stewing, and many more that are scarcely fit for that; what, then, is a stewing Pear? Stewing Pears, as generally understood and defined, are those Pears having firm solid flesh, which never becomes melting. The special qualities requisite in a stewing Pear would seem to be those of quality, tenderness of flesh, including flavour, colour of flesh—an important point—and size. That stewed Pears are very good and much appreciated goes without saying, yet how very seldom they are so used. Why should this be so? How much better to eat a Pear "stewed" than a Pear "raw, hard, and indigestible," that is put on the dinner-table and called dessert? It is almost fair to say that one-half of the late Pears are simply wasted. They cannot be eaten in a raw state as dessert, and they are not cooked as they ought to be. Stewed Pears are one of the most inexpensive of dishes, and one of the easiest of preparation.

In the good old times stewed or baked Pears would seem to have been much more in fashion than they are now. This may probably have been owing somewhat to the fact that there were few good melting Pears in those days; but, anyhow, the old ballads and songs testify to the high appreciation in which they were held. The "baked Wardens" and "Warden Pies" we read of have a homely spice of rusticity about them that is quite refreshing in these days—

> "All hot! All hot!
> Who knows what
> I have got
> In my pot?
> Smoking hot!
> Piping hot!
> Baked Wardens, all hot!"

Warden is the name of an abbey in Bedfordshire, from which the Pears named Warden, which are of several kinds, derive their name, according to the *Fruit Manual*, where it is also stated that in Bedford less than a hundred years ago "baked Wardens" were publicly hawked in the street. It may be noted that these "Warden Peares" are spoken of as "hot," whereas at the present time stewed Pears are never eaten hot, always being served cold.

Several years ago the Horticultural Society offered prizes for stewed Pears. I am old enough to remember a very spirited competition at the St. James's Hall in 1858, the conditions being that they were to be stewed "without sugar, or the aid of any colouring matter." I do not exactly remember the names of the most approved varieties, only that Vicar of Winkfield stood high for flavour, and Verulam for colour. It would be interesting to have another competition of this sort to test the merits of the many new aspirants to favour. Prizes for stewing Pears (uncooked) do little good, as this can only bring to the front size and appearance, which are not the only qualities desirable; the smaller, unattractive varieties may be the better quality; varieties with gritty flesh are those to be avoided.

As to variety, some seventy-five distinct sorts, selected from examples shown at the Pear Conference were shown at the meeting of the Fruit Committee at South Kensington on the 12th inst., which are all classed as stewing Pears. Several others were shown, which, as they never melt, may as well be classed in the same category, so that probably more than a hundred varieties are now in cultivation. A very small proportion of these seem worthy of note; it is scarcely worth while to enumerate the names. We select the following as the more prominent varieties,

and most generally worthy of cultivation:—1, Uvedale's St. Germain; 2, Catillac; 3, Bellissime d'Hiver; 4, Gilogil.

In respect of size Uvedale's St. Germain, or Belle Angevine as the French call it, has probably attained the champion place. Some few years ago "London" was startled by the appearance in Solomon's window, Covent Garden, of some monster Pears, ticketed at something like a guinea or two guineas each, and weighing several pounds apiece. These Pears were, it was said, let out to dinner parties at high charge per night, thus realising enormous profits. In the shops in Paris these sensation Pears may frequently be observed. At an exhibition at South Kensington in 1874 M. Bréhaut, of Guernsey, exhibited a dish of six of these Pears, weighing together about an ounce under 20 lb. The largest fruit weighed exactly 5 lb., and measured 20 inches in circumference! These were all grown on one single cordon tree! Fancy a Pear 5 lb. in weight! The largest one exhibited at the late Pear Conference (which was grown in France) weighed but 2 lb. 2 oz. In regard to quality, Uvedale's St. Germain is stated to be very good; it, however, requires to be grown on a wall or in a warm situation to become fully developed.

In respect of general usefulness Catillac may be noted as entitled to that position. When well grown the fruits are very large, frequently exceeding 1 lb. in weight. It is of first-class quality, and a very free and constant bearer. One singular trait worthy of notice is that when grafted on to the branch of another tree it always bears more profusely, and the fruits are finer.

As a handsome fruit Bellissime d'Hiver is well worthy of culture. The fruits are large, round, very even and regular, with a fine clear green skin and brilliant scarlet on the exposed side. The ordinary examples somewhat resemble Catillac.

Another remarkably handsome variety is Gilogil, or Gilles-ô-Gilles, as it is sometimes called, the fruits of which are large, roundish, or Bergamot-shaped, very regular in form, and covered throughout with a uniform coat of warm russet. This variety is very frequently mistaken for a melting kind. It decays before Christmas, so should be used early. The tree is a great bearer.

Of other varieties that may be grown we name the following:—Léon le Clerc de Laval, Grosse Calebasse, Gracieuse, Verulam, Spanish Bon Chrétien, and Franc Real d'Hiver.

It is questionable, however, whether stewing Pears are, as a class, really worthy of cultivation when it is remembered that any Pear will stew when taken in its proper season, and that many are not suitable for any other purpose, so that it seems somewhat stupid to grow Pears specially that are of no other use. To the small amateur cultivator they are certainly undesirable; to the market grower they are mostly unprofitable—for, excepting they be of great size and of very attractive appearance, they do not sell. It would be well, however, if it were not so. I should like to see the best stewing Pears exposed freely for sale, and in all large private gardens a few trees of the leading and best varieties should always be planted and well cultivated. *A. F. B.*

A CURIOUS LEMON.

A CORRESPONDENT obligingly sends us a curiosity in the shape of a fruit which to external appearance is that of a Lemon, but of which all the interior compartments except one are in colour, flavour, and perfume those of the Orange, the solitary exception having the attributes of a Lemon. Those who are curious in such matters should consult our volumes for 1841 and 1842. The subject is also discussed briefly in DARWIN'S *Domesticated Animals and Plants*. Various explanations have been afforded, but, so far as we know, the only one based on actual experiment is that of Gallesio, who tells us that he impregnated an Orange with the pollen of a Lemon, and that the fruit borne on the mother tree (Orange) had a raised stripe of peel upon it, like that of a Lemon both in colour and in taste. Supposing this statement to be accurate, we have thus an instance of the influence of the pollen, not on the germ only, but on the germ-case or ovary, which is of course part of the mother plant. Will not some one who happens to have the opportunity, as many must have, just set this question at rest by repeating under proper precautions such as every practical hybridiser is familiar with, the experiment of Gallesio? We make bold to ask Mr. Rivers, who has, as we suppose, the largest collection of various kinds of Orange in cultivation, to add to his fame by the performance of this very simple experiment.

Another explanation of this and similar cases has been offered—it has been asserted that they are the consequences of graft hybridisation. A Lemon has been worked on to an Orange stock, and hence the blended character of the fruit. Too many instances of this have been given in our columns for us to doubt the possibility of such an occurrence, particularly since the discovery of the "continuity of the protoplasm," or the power of transmission from cell to cell through their walls—formerly considered unpermeable in this way—of threads of protoplasm. If this be proved, as it seems likely, to be of general, not merely special occurrence, the difficulties in the way of accepting graft hybridisation are much reduced.

A third and, as we think, the most probable explanation, is that this is the fruit of a hybrid plant, manifesting a separation or dissociation of previously blended characteristics. Of course we know nothing of the history of the specimen before us, which was bought in the ordinary way, and our explanation is therefore only based on a balance of probabilities afforded by the specimen as it stands. Every hybridiser and cross-breeder knows that there is every degree of commingling in the case of a cross between the complete admixture of the attributes of the two parents and the faintest manifestation of the influence of one or of the other, so that in a case like that before us we might have crossed fruits presenting the characteristics of the Orange and of the Lemon in equal proportions, or fruits in which Orange or Lemon predominated in very varied degree.

GARDEN PALMS.

(*Continued from p. 75*)

LICUALA, *Thunb.*—Although no fewer than thirty species are included in this genus, and all of them are described as being dwarf and ornamental Palms, yet we do not find any of them at all popular in gardens, except the very distinct and handsome L. grandis, commonly known as Pritchardia grandis. When well managed, however, some of the species are most satisfactory as decorative Palms, though none of them will thrive unless placed in a moist stove and kept liberally supplied with water all the year round. Some growers recommend semi-aquatic treatment for several species, and although this has not been adopted at Kew there are good reasons why it should be followed in gardens where, owing to limited room, the plants are kept in small pots. L. horrida and L. elegans are the easiest to manage in an ordinary stove, and as they form compact tufts of elegant shining green foliage they fall within the capabilities of a moderate-sized plant-house. Plenty of water, a rich loamy soil, and a sunny position in a tropical house, are, however, necessary, both for these and the other introduced kinds. The Palm most eagerly sought after just now is unquestionably the very distinct and rare "round-leaved Palm," viz., L. grandis. When young it has a healthy, dark green, shining appearance at all times—given, of course, proper treatment—and it stands out quite distinct from all other garden Palms, because of its noble habit and the form of its foliage. At Kew there is a very fine specimen, which flowers annually, but which as yet has not matured seeds. It was figured in the *Botanical Magazine*, t. 6704, in 1883, where it is spoken of by Sir Joseph Hooker as being one of the most striking Palms that have ever been introduced into this country; it is graceful in habit, with a bold crown of brilliant green leaves, the rounded, cup-shaped form of which, delicately folded in innumerable plaits, and doubly cut round the edges, are characters quite unlike those of any other Palm known in cultivation. It was exhibited at the International Horticultural Show at Brussels in 1876 by Mr. W. Bull, from whose possession it passed into that of Mr. Wills, who presented it to Kew. We have heard that Mr. Bull received for this plant no less a sum than £200, which beats the highest price recorded for even any Orchid! Recently a Palm has been distributed by Messrs. Veitch as "the true Pritchardia grandis," which, however, has nothing to do with the genus Pritchardia, but is most probably a species of Licuala; for this the provisional name of Licuala Veitchii has been suggested in these pages. It is a distinct fan-leaved Palm, with a short spiny petiole, rounded copiously plaited blade, the texture stiff, and the colour a dull green. Unfortunately this new introduction has hitherto proved difficult to grow; there is a moderate specimen of it in the Kew collection, but it can only be kept healthy by placing it in an excessively hot frame, where steam is always rising from an open hot-water tank beneath.

The characters of the genus are, stems usually slender, low, unarmed, ringed, rough, with remains of fallen leaves, sometimes not present; leaves pinnately fan-shaped, or peltate, or entire, and forming a sort of cup; petioles provided along the edges with spines or short teeth. Fruits generally bright red, the size of Peas (L. amplifrons), or Peppercorns (L. horrida), and enclosing a small brown seed; seedling leaves simple, with a few notches at the apex.

L. acutifida, Mart. ("Penang Lawyer)."—(Stems are made into handsome walking-sticks known by this name.—Singapore and Penang.

L. amplifrons, Miq.—Sumatra.

L. elegans, Blume.—Sumatra.

L. grandis, H. Wendl., *Bot. Mag.*, t. 6704 (Pritchardi grandis, Hort. Bull).—New Britain.

L. horrida, Blume.—Java.

L. peltata, Roxb.—East Indies.

L. Rumphii, Bl. (L. spinosa, Bl.).—Moluccas, Borneo.

L. Vetchii, Hort.—Hab.? (Pritchardia grandis, Hort. Veitch.)

LIVISTONA, *Br.*

Fourteen species are placed under this genus by Sir Joseph Hooker, and of this number eleven are in cultivation at Kew. As in the case of the genus Phœnix, however, there appear to be in the close similarity some of these Livistonas bear to each other reasonable grounds for suspecting that some of them are identical. It may as well be stated here that the conclusions arrived at in respect to specific differences are the result of observation among Palms cultivated in English gardens only. Thus, L. rotundifolia and L. altissima are not easily distinguishable from each other; L. australis and L. humilis (including L. inermis and L. Leichardtii) are much alike in leaf characters, and habit; and between L. subglobosa, L. olivæformis and L. chinensis, there are few if any points of difference. So far as the Kew plants go there appears no reason why, for garden purposes, these several kinds should not be placed together. We must, however, bear in mind that many Palms which in the mature state are widely different from each other are, when young, very much alike. Of all Palms the one most common in gardens is L. chinensis, better known as Latania borbonica. For decorative uses of all kinds this species is grown in thousands both in England and in Continental countries, as it is easily maintained in health either when kept in small pots for a long time or when treated liberally with a view to growing it into large specimens. It thrives almost as well in a cool greenhouse or conservatory as in a stove, and it is one of the most useful and effective of plants employed for what is known as subtropical bedding in summer. A specimen, 56 feet high, in the Palm-house at Kew, yields an abundant crop of good seeds every year.

L. australis, commonly known as Corypha australis, is almost as useful a species as the above, but it lacks the grace and rich green of that kind. Similar in every respect to this is L. humilis, both coming from the same country and requiring the same treatment, and when young either name would do for them. The figure in *Bot. Mag.*, t. 6274, represents L. humilis, of which there are two very fine examples in the Palm-house at Kew, one of them with a stem nearly 60 feet high, and reaching to the highest point in the roof. Close by these may be seen a small trunkless plant of what is considered the true australis.

L. Hoogendorpii is a distinct and handsome Palm, having very stout, reddish-brown, shining petioles, armed with spines 1 inch long, and ¼ inch broad at the base, and an irregular palmate blade, 15 inches in diameter, and divided nearly to the base into eight segments.

L. Jenkinsiana is a handsome species, distinguished by its long spinous leaf-stalk and large round blade, 3—4 feet in diameter, and divided into 70—80 bilobed segments; it is also remarkable in having much the largest seeds in the genus, samples at Kew being as large as Walnuts, almost perfectly round, and deep

plum-coloured. The seeds vary considerably with the species, some being spherical, and half an inch in diameter (L. Hoogendorpii), others are ovoid, and the size of robin's eggs (L. chinensis), others smaller still, as in L. humilis and L. australis. They are all enclosed in a thin pericarp of a bluish colour. Seedling leaves simple, plicate.

L. altissima, Boll.—Java.

L. australis, Mart. (Corypha australis).—Eastern Australia.

L. chinensis, Mart. (L. mauritiana, Wall.; Latania borbonica, Lamk.).—South China.

L. Drudei, Wendl.—Hab. (?)

L. Hoogendorpii, T. and B.—Java (?)

L. humilis, Br.—(L. inermis, Br.; L. Leichardtii, Muell.; *Bot. Mag.*, t. 6274, as L. australis).—Tropical Australia.

L. Jenkinsiana, Griff.—Assam and Sikkim.

L. oliviæformis, Mart.—Java.

L. rotundifolia, Mart.—Malay Isles, Moluccas, Penang.

L. subglobosa, Mart.—Java.

L. Ramsayi, F. Muell., is now properly referred to Licuala Muelleri. *W. W.*

(*To be continued.*)

may be gained by comparing the illustrations here given with those at pp. 76, 77.

O. TRIUMPHANS (fig. 29, p. 141).—This is one of the grandest of our cool Orchids, with rich yellow flowers, barred and blotched with rich chestnut-brown, some of the varieties having flowers 4½ inches across; lip white, blotched with brown, crest yellow. New Grenada.

O. T. CINCTUM.—Sepals and petals yellow, blotched maroon; lip very broad, white, with maroon blotch; a very fine form.

O. PRÆNITENS.—A very pretty form, somewhat resembling a rather small O. triumphans. Sepals and petals bright yellow, with a few heavy red blotches; lip yellow, with one or two cinnamon coloured blotches, and white base.

O. HINNUS.—This is a very rare kind, with well-formed flowers, something like those of O. prænitens. Flowers wax-like; sepals and petals yellow, blotched with rich dark red; lip white and yellow, with an occasional brown blotch.

O. CRUENTUM is a very showy variety, with neat flowers of good substance. Sepals and petals yellow on the outer halves, the rest nearest the column being dark blood-red; lip nearly square, one of the angles blotched with brown, lip yellow at base, brown on the front half. It is suggested that it is intermediate between O. cristatum and O. triumphans.

O. LINDLEYANUM, sometimes called the weed among Odontoglossums, is by no means to be despised when well grown; recent importations also have brought us some new and graceful forms of which at the present time some really pretty things are flowering now with G. F. Wilson, Esq., of Heatherbank, Weybridge, and in the collection belonging to R. H. Measures, Esq., a grand mass of the best old form from Mr. Hanbury's collection is proving its worth. Flower-spikes graceful and unbranched, flowers starry. Sepals and petals yellow blotched, and striped with brown. Column and parallel keel of the lip white, long and projecting, blade brown and yellow. *James O'Brien.*

(*To be continued.*)

TREES AND SHRUBS.

ARBUTUS UNEDO.

I CAN fully endorse all that Mr. Earley (p. 83) says of this beautiful shrub, which is not made anything



FIG. 26.—ODONTOGLOSSUM HALLI. (SEE *ante*, P. 75.)



FIG. 27.—ODONTOGLOSSUM RADIATUM.

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 76.*)

ODONTOGLOSSUM RADIATUM, *Lindl.* (fig. 27).—In order to illustrate the extraordinary variability of the luteo-purpureum section of Odontoglossum we reproduce from the *Gardeners' Chronicle*, August 12, 1865, p. 746, the illustration which accompanied Dr. Lindley's original description of this as a distinct species. More recent importations, however, have revealed every grade between it and that narrow-petalled form of O. luteo-purpureum given in our columns at p. 76, and which is often called in gardens O. l. p. radiatum. According to the original illustration and description, however, that here given should more correctly bear the name, although the disposal of the markings need not always be the same, and in mature flowers the labellum will always fold over more or less. The figure of O. Halli (fig. 26) should have been inserted at p. 75, where it is mentioned.

In the same manner as the allies of O. luteo-purpureum were set forth at p. 76, another interesting chain may be traced from O. triumphans to O. Lindleyanum, all the members of which have distinct features of labellum and column, differing from O. luteo-purpureum varieties, and of which a notion bearing towards the column, plain on the two sides nearest the column, and finely serrated on the lower half.

O. POLYXANTHUM (fig. 28).—A very handsome plant, with flowers somewhat resembling O. triumphans. Sepals light yellow (often greenish-yellow) with several roundish chestnut-red blotches; petals light yellow, with a few brown marks near the column; lip heavily blotched with brown, and edged with white. Ecuador.

O. MIRANDUM.—This in general appearance is half-way between O. polyxanthum and O. Lindleyanum, the projection of the column and lip much resembling the last-named. The flowers, which are smaller than those of O. polyxanthum are yellow with a faint brown or green tint, and blotched with reddish-brown.

O. M. BREVE more nearer approaches O. Lindleyanum than the type, some of the poor forms being very close on it. Sepals and petals yellowish, often with only a single reddish-brown line up the middle of each.

O. VELLEUM is a curious, but rather dull looking form. Sepals and petals yellow with brown spots and lines, lip projected something like O. Lindleyanum, white with purplish lines and blotches.

O. CRISTALELLUM.—Flowers 2½ inches across. Sepals and petals of equal width, yellow, very heavily

like the use of in planting as its merits deserve, for it is one of the most strikingly ornamental plants any one can have on a lawn, but it must have a light sandy soil and a somewhat warm sheltered situation for it to do well. The best specimens I have ever seen of it are at Colonel Tomline's, at Orwell Park, where there are many tall dense bushes of it that are pictures of health, and the plants flower and fruit freely every year, when Mr. Wallis turns sprigs to good account for decorative purposes indoors—a purpose for which this shrub is very suitable, with its Lily-like racemes of pendulous blossoms and rich scarlet berries hanging so gracefully from it. Like all evergreens it succeeds best planted in spring, directly the cold March winds are over, as then, with the mild weather and genial showers, it starts into growth at once, and becomes quickly established. *J. S.*

WELLINGTONIA FRUITING.

Is the coning of the Wellingtonia a common occurrence or not? And if it be the former, at what age does the tree usually cone? I ask these questions because here, of a number of trees some eighteen years planted, one alone produced three small cones on a side branch in 1884, and just above and on the same branch three more last year, which are still hanging green; and now I observe that this same branch—and, curiously enough, this one alone—is

showing a quantity of bloom on its various minor branchlets. Although the tree is robust and full of growth, and is some 25 feet in height, yet it does not show a single bloom in any other of its parts except on this one branch, which is about 6 feet from the ground, and on the south side of the tree. I should also like to learn whether if cones are produced freely in this country they are also fruitful? If that be so, is the Wellingtonia bisexual, producing both male and female blooms, or is it unisexual and either of one or the other? Probably some readers of the *Gardeners' Chronicle* well up in Conifers may be disposed to give the information asked in this note. It is worthy of remark that Wellingtonias do fairly well here in stiff clay, but their bases are denser than their tops. Perhaps these will fill up with age. Deodars also do even better in this clay, where in the winter, as now after the thaw, the soil is half under water. Probably drier and more porous soil suits these Conifers best, but in any case here is evidence that they will thrive in soil which few would recommend. *A. Dean, Bedfont.*

[The Wellingtonia, like other Conifers, often produces cones in a young state. Young Conifers are very liable to produce male flowers only, or female flowers only, for a time, both sexes being produced later on. ED.]



FIG. 28.—ODONTOGLOSSUM POLYXANTHUM.



FIG. 29.—ODONTOGLOSSUM TRIUMPHANS.

SALISBURIA ADIANTIFOLIA AT COBHAM HALL.

In answer to an inquirer in the *Gardeners' Chronicle* of December 26 about a Salisburia adiantifolia, I may say that we have here two specimens one of which has a girth of trunk at the base of 10 feet, and at 6 feet from the ground of 8 feet 6 inches. It is 64 feet high, and begins to throw out its branches at 7 feet from the ground, and which droop to within 2 feet of the latter. The other tree is 7 feet in circumference at the base, and 6 feet 6 inches at 6 feet above the ground; it is 61 feet high. *F. Deuxberry.*

—— Seeing several remarks lately in reference to Tulip trees in the *Gardeners' Chronicle*, I am reminded that, in one of my travels in Virginia, United States, I was upon a farm belonging to a gentleman named Thomas Ambler, in Amelia County, about 35 miles from Richmond, where I found the remains of a Tulip tree that had been killed by lightning ten years previously. The bark being all removed, it resembled a large ship's mast; in height it was 80 feet where broken off; the diameter at 3 feet from the ground was 11 feet, and as straight as a gun-barrel. It was about 6 feet through at the top, which was 80 feet from the ground, and people came from all parts of America to see the remains of this tree, which is of primeval growth, and was left standing when all other trees were cleared for Tobacco plantations. It was supposed to be the largest tree of its kind in America. *Joseph Newton, 3, King William Street, Strand, W.C.*

Orchid Notes and Gleanings.

LÆLIA ANCEPS.

THIS species was introduced from Mexico so long ago as 1833, and it was figured from a vigorous specimen in the *Botanical Magazine* in 1841, tab. 3804. The plant had been grown at Woburn Abbey from a choice collection of these epiphytal Orchids grown upon branches of trees placed against the sides of the house. The branches were furnished with moss. This is a well-known and easily grown Orchid, and there are many large healthy examples in the country, including the specimen sent from Mrs. Hasselfoot's garden near Southampton (see p. 87) to illustrate Orchid pruning, which it certainly did not do, as it had not been pruned in the sense advocated by certain cultivators during the past few years. The back bulbs had not been removed for at least six years; probably those older than this that had lost their leaves had been cut off—a practice which is certainly not a recent discovery. The plant deserved and received a Cultural Commendation. The handful of distinct and beautiful varieties brought up to the Floral Committee from Baron Schroeder's garden by Mr. Ballantine was very interesting, as the collection contained the variety Dawsonii for comparison with the best of the new white varieties introduced recently by Mr. Sander and others. L. anceps Dawsonii has up till now been very expensive, because very scarce. This beautiful species was flowered almost simultaneously nearly twenty years ago by Mr. Hodges, gardener at Gravely Hill, Birmingham, and Mr. Anderson, Meadowbank, Uddingstone, N.B., and when well grown the broad pure white sepals and petals are very charming. The variety L. a. Sanderiana does not differ very materially from Dawsonii; the sepals and petals are longer and narrower, but other varieties may come nearer to Dawsonii; the rosy-purple markings on the lip are the same, so that it is possible this variety may merge into Dawsonii. The variety Williamsii is quite a distinct and beautiful white form. It is figured in the *Orchid Album*, plate 190, which well illustrates the plant as it was exhibited by Mr. Ballantine. For my own part I like this chaste and elegant variety as much I do Dawsonii, and as it has been but recently introduced by Mr. Sander the plants are not so strong as they will be in a few years hence, when the flowers may be larger. The variety Hilliana, also exhibited by Mr. Ballantine, has smaller flowers than either of the others, but it has been exhibited in good form before; the pale rose or pink blotch is very distinct. It has been named in honour of Mr. Hill, of Nottingham, by Professor Reichenbach, who first described it in the *Gardeners' Chronicle*, vol. xv., p. 169. The variety alba completes the series exhibited by Mr. Ballantine; this is pure white, and is more nearly allied to L. Williamsii, and has been cultivated for many years. In a few years the white forms will probably be quite as plentiful in collections as the normal species, and will probably be distinct from each other, though with slight variations. It may be possible to throw them into groups, of which L. anceps Dawsonii, or L. Williamsii and probably L. Hilliana, would be types. All these, though white forms, are sufficiently distinct to constitute separate groups. They are most valuable additions to our winter-flowering Orchids. *J. Douglas.*

ORCHIDS IN FLOWER AT DR. PATERSON'S, BRIDGE OF ALLAN.

At a recent visit Cymbidium giganteum was finely flowered, and was a splendid variety; C. Lowi was just opening twenty to twenty-five flowers on several spikes; Zygopetalum intermedium, a very chaste kind, and rather scarce; Z. Mackayi superbum were in flower and very fine; Cattleya Percivaliana and C. Trianæ were both bearing twelve fully expanded flowers, the sepals and petals pure white, very large, and of great substance—throat deep yellow, labellum of the deepest of purple, and of great size. This plant is very early, having been in flower for a month past. Cypripedium Boxalli, C. Maulei, Oncidium aureum, O. serratum, Ornithidium, Sophronites were nicely flowered; Aërides rubrum, a very rare plant, was showing two spikes.

Lælia superbiens had two long spikes, carrying altogether twenty-eight flowers; L. anceps, L. a. Hilliana, L. harpophylla, Dendrobium nobile coerulea, a very dark and fine flower; D. Ainsworthi, the best form of D. Wardianum; Calanthe masuca, Pilumna nobilis, Vanda Cathcartii, with twelve flowers; V. tricolor, the Dalkeith variety; Masdevallia ignea, several good varieties of O. Alexandræ, Odontoglossum Rossi majus, O. cordatum, very dark and fine; Saccolabium giganteum, Ansellia africana, were also showing for bloom; Leptotes bicolor; the very rare Rodriguezia paniculata was showing six spikes; Dendrobium Jamesianum and D. infundibulum, both grown in a perfectly cool house, were showing plenty of flower-buds. It is almost needless to say that the Doctor's Orchids are in splendid condition. *A. I., Jan.* 23.

PHALÆNOPSIS AT WADDESDON.

There is just now a magnificent display of Phalænopsis in flower at Waddesdon Manor, the seat of Baron Ferdinand Rothschild, M.P. The plants last season made splendid leaves, many of them 12 inches long and from 4 to 5 inches broad, thick and leathery; and following these are grand spikes of bloom, some with eighty flowers on each, which for colour and form leave nothing to be desired. We noticed a distinct form of Phalænopsis grandiflora, the whole lip and side-lobes being deep chrome-yellow. The variety of P. grandiflora is considered by Mr. Bradshaw one of the finest of recent introductions, the flower being so perfectly round and large, and having the above-described lip. P. Stuartiana, P. Sanderiana, P. amabilis, and its variety P. Dayana with its deep claret-rose blotch in lip, are represented by dozens of large plants. The whole collection is in robust health, and reflects high credit on the cultivator. *A.*

THE PÆONY.

THE Pæonies, hybrids and species, are amongst the most beautiful of hardy herbaceous plants. They comprise nearly every shade of colour, from pure white to deep crimson, some flowers being double, semi-double, and single. Most have noble and bold foliage, but some have small feathery and graceful foliage, as seen on P. tenuifolia fl.-pl., which is useful in a cut state with the bloom—especially where large bowls or long glasses are used—for halls, balconies, galleries, &c. The blooms of Pæonies, being very lasting, occasion a saving in the matter of cut bloom; one other addition to their value is that a great many of them are delicately scented, some having an odour like Tea Roses, others like Carnations, and some approaching the Lily of the Valley in sweetness, and which is retained nearly to the last. The Alexandrian Laurel (Ruscus racemosus) will be found very useful as cut foliage with the above, being a beautiful green and very lasting, and which contrasts better with the bloom than when more tender or delicate foliage is used.

The varieties of Pæonies are very numerous, there being many that appear in lists under different names, but which when grown and compared appear to be not quite so distinct, and the long lists of varieties can usually be much reduced in numbers. The following varieties are all good, viz., Marie Lemoine, Bernard Palissy, Louise Van Houtte, rosea superba, plenissima, grandiflora, multicolor, Triomphe de l'Exposition, Jeanne d'Arc, Zoë, Van Dyck, and Eugène Verdier.

As to position, in most gardens there are corners and spaces in which there is usually a desire to plant something; but these are such as very few things will thrive in, or if they grow they will not flower, owing to the shade of trees. These spots are just where the Pæony will grow freely and flower profusely, and where the bloom will be found more delicate or more intense in colour than when exposed to the sun.

Pæonies are very suitable for dotting, or for forming bordering to shrubberies, the margins of ornamental water, for beds or masses in mixed varieties, or in the American gardens, they are alike available. When calling on a friend of mine last summer, I was much struck by the way he had used a great number of them along the sides of walks in the pinetum as single specimens about 18 feet apart. The effect was very good and novel. They were also used there in the wild garden with telling effect.

The Tree Pæony, P. moutan, is also a noble type of plant, possessing a great amount of beauty, and affording plants of great utility in gardens, and its varieties are numerous. It is well adapted for the mixed border, but is best adapted for single specimens on lawns.

There is one objection to this class of plants, namely, that of being bare of foliage in winter; but that seems to me fully compensated for when it becomes covered with its beautiful foliage in early summer. For appearance sake, during the winter season, some Retinosporas, Thuia, Irish Yew, or other dwarf shrub from the reserve nursery, can be plunged or temporarily planted round the Pæonies, an edging of Euonymus or Ivy being used to finish off the group, thereby making an ornamental winter bed.

Pæonies prefer a good loam, with heavy dressings of cow-manure, and a rather moist situation is the most suitable one for them. It ought to be trenched to the depth of at least 2½ feet, and when the plants have become large good dressings of rich manure will be a necessity. They may be planted any time from October till May, if in pots, but if from the ground the autumn is the best time. They must not be expected to flower much until the second, or even the third year, after planting. *A. Evans.*

ABIES NORDMANNIANA.

OF all the hardy Conifers we should be disposed to put this first. Its handsome appearance, its deep green leaves, its rapid growth, its relative indifference to soil, climate, and aspect, its hardihood, all these give it a claim to first rank among ornamental Conifers, and for purposes of shelter. What the quality of its timber in this country may be we do not know. In its native country it is said to be more durable than that of O. orientalis. We should be obliged if some correspondent could give us any information on the subject. Judging from analogy, it ought to be as good as the Silver Fir, and if so, it should take the place of the Silver Fir, which is more tender, and not so free a grower. Mr. Webster, of Penrhyn, tells us that the "timber of A. Nordmanniana is clear in colour, even in texture; when cut into boards and planed, hard and firm, and resembling the wood of the Silver Fir, but harder in trees of equal age, and of a clearer yellowish-white colour."

The history of the tree is well known. It was found in the Crimea, and named in honour of its discoverer, Professor Nordmann, of Odessa; hence among the profane we have heard it spoken of as the "Norman Fir"—another illustration of the value of popular names. It has been thought to be a variety of the Silver Fir, and if any one so choose to consider it there is nothing to prevent him from indulging his choice. For practical purposes it is, however, more convenient to treat it as a distinct species. Whether it may or may not have originated from the same stock as the common Silver is a question no one can answer with certainty.

There is much more life and movement about these Conifers than people imagine. The "leader" of the tree before us, for instance, gyrates with considerable rapidity when it is making active growth. It is only necessary to watch it at frequent intervals to see this. Some few years since we published in these columns an account of the rate of movement as ascertained during twelve hours, and measured in degrees of a circle. Of course this movement is not confined to this species, but is observable in all fast-growing shoots of whatever species. Another interesting point is the arrangement and movements observable in the leaves. A Nordmanniana is one of these few species (in cultivation) wherein some of the leaves on the side branches lie along the branch, while the others project on either side at an angle. In this manner, the two sets of leaves get the benefit of sun and air, without interference one with the other. If they were all in the same plane, or nearly so, some would overshadow others. The movement of the leaves is very observable on a summer's day; the ordinarily appressed leaves then lift themselves up to expose the lower silvery surface, and permit the free evaporation of gases and vapours through the pores (stomates) in that situation. The tallest tree of this species is, or was, that at Whittinghame, East Lothian, which measured in 1878 60 feet in height, with a girth of 4 feet at 3 feet from the ground. The fullest details relating to this tree are given in Mr. Hutchinson's paper in the *Transactions* of the Highland and Agricultural Society of Scotland, 1878. (See fig. 30, p. 145.)

The Flower Garden.

FLOWER AND ROSE BEDS.

FLOWER beds and borders which have neither been dug nor bedded out with spring flowers should be ridged. A good method is to give first a dressing of old hotbed manure, which should consist principally of decayed tree leaves, then to trench the soil two spades deep, turning the top spit downwards, and to finish by ridging up the last spit. This exposes large surfaces to the action of the frost, by which the soil is made better fitted for plants. By deep cultivation only can we overcome the effects of our variable climate. See that newly planted trees and shrubs are securely fastened to prevent them being blown about. Roses should receive a good mulching of cow or pig manure. The best manure is that from animals that are liberally supplied with oil or cotton-cake or other rich food. In some soils it is almost a necessity to lift Roses wholly at intervals of three years. The Roses should be dug out of the beds, laying them in, in any vacant space by the heels, then give a dressing of about two barrow-loads of fresh loam and one of charred refuse to the square yard, and trench the soil of the bed two spades deep, but merely loosening the bottom with a steel fork. After allowing the soil to subside for a few weeks open the pits for the plants. Have ready some finer soil of the same description as that recommended above, then trim all the roots carefully with a knife, removing entirely all suckers. When all the plants have been prepared place them in the pits, and carefully spread over the roots, placing over them a spadeful or two of the prepared soil, and then fill in, treading all firmly as the work proceeds. This process, if properly carried out, gives the Roses a vigorous start again. See that all standard Roses are securely fastened. Where vacancies exist from any cause lose no time in securing plants to replace them. Standard Roses are frequently grown on the grass along the edge of walks. In planting or replanting such, be sure to move the soil for a considerable distance around and below the level of the roots, to secure a free passage for water, for if a hole be simply taken out the size of the roots, and the surrounding soil being hard and retentive, the hole will act as a receptacle for water, and the plant will never thrive.

CUTTINGS AND SEEDS.

Store plants of summer bedders, to facilitate future propagation, should now be placed in heat. Where a regular propagating house is not at command, make up a hotbed of two parts fallen leaves and one of stable manure. Sow now seeds of single Dahlias, Aralia Sieboldi, Cannas, Chamæpuce triacanthos, Ferdinanda eminens, Solanums of various sorts, Wigandia, Caracasana, placing the pots or pans in strong heat. If not already done, no time should be lost in sowing seeds of Pyrethrum aureum, and P. selaginoides: the latter is to be preferred. See that everything is got in readiness for potting Pelargoniums, and other autumn-struck cuttings; but the middle of February will be soon enough to proceed actually with the work.

SHRUBS.

Continue the trimming of shrubs in the pleasure ground. Do not cut them so as to give a too formal

appearance to them, but simply shorten back the leading shoots so as to equalise the flow of sap and allow the weaker shoots to strengthen. In pruning shrubs care should be taken to disguise the wounds caused by the knife and saw. Laurel banks may also be trimmed level when that form is desired, so as to present the appearance of a smooth, even surface, and the plants will be greatly benefited by a top-dressing of nice rich soil. Where blanks occur in such hedges they should be made good by planting, or by pegging down the branches from the nearest plants. Put in Sweet Bay, selecting those only which have a heel of old wood. If put into nice sandy soil in the nursery ground they will soon strike root. Cuttings of Ribes of various sorts may be similarly treated.

PLANTING IVY BANKS.

Where the soil is thin and poor, Ivy makes a beautiful covering for terraces and slopes. It has this advantage over the Laurel, viz., that it requires no trimming; but it is subject to red-spider in very hot seasons. In planting a slope it is not necessary that rooted plants be used, although if you have them it is preferable; but certain success will follow if you plant pieces of from 18 to 24 inches in length. Place the thick end of the shoot 3 or 4 inches below the level of the ground (commencing at the top of the slope). When made fast, place a stone or half a brick on the top; fasten the cutting to the soil near the middle with a stout peg, and always turn the points towards the bottom of the slope. If it is wished to have the ground rapidly covered, the plants must be put at from 6 to 8 inches apart, and the rooting end of the one be planted at the point of the other. If time be of no object they may be planted at double that distance apart. All the trimming necessary for such a slope is to stretch a line along the top and bottom and cut the edges straight with a pair of shears. *W. M. Baillie, Luton Hoo Park.*

THE ORCHID HOUSES.

EAST INDIAN HOUSE.

IN this house Phalænopsids of many kinds will be now in full flower. Every care ought to be taken to prolong their blooming season; if this be done they will very easily connect the flowering season with that of the first batch of Cattleya Trianæ that are now fast swelling their buds. While the Phalænopsids are in flower less moisture may be used about the plants, but by no means allow them to get dry at their roots or the sphagnum about them, for if such should be the case the damage done to them will be seen later. The greatest injury that can be caused to these plants is to subject them to extreme chills; they will bear a certain amount of air and exposure, if judiciously given, even in winter. The better plan is to grow them in the middle divisions of the houses, so that when the doors are opened air can be given at all times, and direct draughts be avoided. There is no need of any increase in temperature whilst this winterly weather lasts, but when we have a change to warmer days a rise of 4° or 5° will be of benefit to the plants. Keep a sharp look-out for insects, which will increase fast after the hard firing of the last month.

DENDROBIUM-HOUSE.

In this house many of the inmates will just now require vigilant attention; by no means allow the pseudobulbs to shrivel, as this means deformed flowers, and the young growth that is just starting will receive a check that will be observable during the whole season's growth. D. thyrsiflorum, which is one of the best of all Dendrobes, can be had in flower for a long time where there are several plants at command, as it will bear being pushed on a little. A batch may now be treated to a liberal supply of water and a little higher temperature, while others, if put on the north side of the house and only given enough water to keep them from shrivelling, may be brought on at various periods, as they are required. I think this is one of the most useful Orchids that any one can grow for all purposes, except for the bouquet, and it makes a good companion plant to the old D. nobile. Any Dendrobiums that may require potting or basketing should get attention just as they are about to start into growth, and in potting these and all kinds of Orchids I would again urge the necessity of potting with the best material procurable. The peat should be nothing but fibre, every particle of an earthy nature being knocked out of it, the charcoal of Oak only, and the sphagnum moss in a live state. D. Falconeri does best on rafts of Teak with a very little sphagnum packing, and should hang quite close to the glass.

MISCELLANEOUS.

Of Lælias, purpurata will now require careful treatment, for if this species does not get great attention and should get into a bad state of health, it will take a long time to recover. Soon we may expect occasionally bright rays of sunshine, and these early rays sometimes will disfigure the leaves of the plants before one is aware of it. The best plan is to grow them on the shady side of the house so that they may be sheltered from direct sunshine, the plant not being able to bear it to the degree that L. elegans can. A temperature of 62° at night, with a rise of 8° in the day will suit them well. Odontoglossum citrosmum is at home in the same house as the Lælias grow, but on the sunny side. If the pots are at all full and the plants low in the pots, they should be gently raised in the pot, so that the growth may come away without being crippled by the side of the pot. This Odontoglot enjoys a moist atmosphere, and a place near the glass, but not so near as to be deprived of the ever rising moisture that is found in a properly regulated Orchid-house. For the present Cœlogynes must be supplied with only sufficient water to develope their flowers and to keep their bulbs from shrivelling. On examining our Pleiones, which were potted on the 5th and 6th of this month, I find they are growing first-rate, and making excellent growth and roots too—in fact, quite as good as could be desired. *A. Bradshaw, Waddesdon Gardens.*

FRUITS UNDER GLASS.

CUCUMBER HOUSES.

THESE having grown and fruited through the dark days since November, will, sooner or later, show some effects of the want of sunlight, especially when they have been heavily cropped; notwithstanding the attention and good treatment they may have had. It will, therefore be advisable to lose no time in sowing seed and getting another lot of plants ready to fill their places, the variety I should recommend being Telegraph. Sow in 60's, using one seed in each pot, in light soil, filling to within about an inch of the top; place in a bottom heat of 70° or 75°, and as soon as the plants are up, put them in a genial warm pit or frame close to the glass to get all the light possible, and when an inch or so above the rim of the pot it will greatly benefit them to add a few pieces of warm, lumpy soil, filling the remainder of the space previously left; they will then soon be good strong plants, fit to take their places when planted out in the Cucumber-house, which must previously have been got ready by clearing out all the old material, and thoroughly cleansing and whitewashing the walls before putting in the material that has been prepared, which will have been done by turning it a few times to mix and sweeten it. When the pit or pits have been filled to the required height, put mounds of soil equidistant on each side of the bed, to a foot or more in height. This soil must be light, and consist of half leaf-soil and horse-droppings, the other half being of fibry loam, and when this has been in the house a sufficient time to get warmed through, the plants may be put out, keeping the temperature at from 65° to 70° by night, with a rise of 5° by day, allowing another rise of 5° with sun before giving air. *J. Vert, Audley End Gardens.*

THE ORCHARD.

THE present month is a good time to devote a little cultural attention to orchards which have hitherto not received that which the value of the produce of a well managed orchard entitles it to. That orchards are not so well managed as they ought to be, a drive through the rural districts will amply testify, as in most cases may be seen orchards consisting for the most part of trees whose branches are not only overcrowded, but are also covered with lichen and moss, which, in connection with a low damp situation and poorness of soil, are the result of an insufficiency of light and air among the branches.

OVERCROWDING.

To this cause the sterility of fruit trees in hundreds of orchards in this country may be ascribed, as in too many cases the trees are left year after year uncared for, by failing to make a timely and judicious use of the pruning saw and pruning shears, consequently the overcrowding of tree and branch, excluding, as already stated, sufficient light and air from the branches, prevents to a great extent the formation and development of fruit-buds, and encourages the growth of lichen and moss. Ill-placed branches, those which cross each other, should be cut out, so as to let plenty of light and air among those that are left, and which, as a matter of course, should be those best furnished with fruit-buds and indicating most vigour and health. The upright ones of these should, if necessary, be shortened so as to induce them to make fruit-buds. The thinning and shortening of the branches having been completed, the prunings should be faggoted and then removed to the faggot yard. The moss should then be scraped off the trees with a piece of hoop-iron or lath, the trunks and principal branches being afterwards scrubbed with an old besom. This done, sufficient quicklime to dress all the trees to be operated on should be dissolved in a large tub or iron tank, placed in a central position in the orchard, to which a small percentage of fresh soot should be added. The liquid, having been well stirred, should then be strained through a fine sieve into the garden engine, and, choosing a calm day for the work, be applied forthwith to the lichen-infested branches from every side of the tree, so that they may be thoroughly wetted with the solution. This simple and effectual remedy will soon cause the lichens to disappear, and the trees will become vigorous and fruitful. With a view of further promoting fertility a good surface dressing of whatever fertilising agent can be spared for that purpose should be laid on the soil, the substance of which, by the agency of the worms, will reach the roots in due time; moreover, if a trench from 3 to 4 feet deep and 2 wide be opened, as indicated at p. 791 of last volume, at from 3 to 5 feet from the bole (according to the size of the tree to be operated on), the roots in that space being cut clean away in the process of excavating the soil, the latter, with the addition, if necessary, of some richer soil being afterwards replaced in the trench, the result will be such as not only to compensate for the labour involved in the operation, but also to justify an extension of its application in the same direction afterwards, that is, to trees which fail to yield satisfactory crops during favourable seasons. The probability is that if our home orchards were to receive a little more attention in the direction indicated above, and a judicious selection of varieties was made in the planting of fresh orchards, the importation of Apples to this country from America would gradually diminish, in consequence of the supplies secured from the trees in her own orchards being more abundant than hitherto. *H. W. Ward.*

The Kitchen Garden.

RHUBARB.

WHERE fresh plantations are intended to be formed, any time during the next few weeks, when the state of the ground will permit, would be suitable. The site being fixed on, in an open position exposed to the sun, the ground should be deeply trenched and liberally manured. The clumps should be lifted from the open ground and divided, leaving a strong bud to each piece; these make the best plants for the purpose. Plant in rows, 4 feet apart and 5 feet asunder, placing the bud just underneath the surface. If an increase of stock is required, some of the smaller offsets may be retained and planted out 1 foot apart in nursery beds for finally planting next year; clumps also that have been forced, and afterwards placed in a sheltered position for a time, may be treated in a similar manner. Those intended for forcing should not have the leaves removed from them for the first two years after planting, and will thus be in fine condition for that purpose the third year. After-treatment will consist of keeping the ground clear of weeds, the flower-stalks removed, and an annual top-dressing of rotten dung forked in. *J. Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 1	Sale of 5000 Lilium auratum, from Japan, &c., at Stevens' Rooms.
TUESDAY,	Feb 2	Sale of Camellias, Roses, and Shrubs, at the City Auction Rooms, by Protheroe & Morris
WEDNESDAY,	Feb. 3	Sale of Roses, Fruit Trees, Border Plants, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	Feb 4	Sale of Lilium auratum, Plants, and Roses, at Protheroe & Morris' Rooms.
FRIDAY,	Feb. 5	Sale of Valuable Imported Orchids, from Mr. F. Sander, at Stevens' Rooms.
SATURDAY,	Feb. 6	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
		Sale of Roses, Fruit Trees, Border Plants, Bulbs, &c., at Stevens' Rooms.

THE question of the advisability of providing the labourer with SMALL HOLDINGS OR ALLOTMENTS—two very different things, by the way—has come to the front more obtrusively and suddenly than was expected. We cannot, of course, discuss the question from the point of view of party politics (than which surely no better method of obscuring and complicating matters could be devised), but from the standpoint of experience and practical observation we are not precluded from offering an opinion. There can be but one view as to the advantage it would be to many were it practicable for them to become allotment holders, or even small freeholders; but, supposing it were made compulsory for all labourers to be one or the other, is it not equally certain that a large proportion of the cultivators of the soil would be in a worse state than they were before, for the simple reason that they would not know what to do with the land if they had it? "But," it will be said, "anybody can manage a bit of land." They can indeed do so after a fashion; but unless a man knows exactly the right thing to do, and the cheapest way to go about it, in a very short time he will have a balance on the wrong side, and the ground will probably be considerably worse than it was when he started.

We do not make these observations without some substantial reasons to back them. In the first place, look at small farms, small market gardens, and, most important of all, small pieces of land which are under the management of working-men—we refer principally to village gardens, &c. We are satisfied that, after making allowance for exceptions, any one conversant with the subject, and carefully balancing the profitable, well-kept garden on the one hand, and the disreputable dirty "pieces" of land on the other, will come to the same conclusion—viz., that a large proportion of them are in incompetent hands. This state of affairs will disappear in proportion to the diffusion of information; but before either the allotment system or that of small proprietorship can work thoroughly well the working classes will have to be far better trained and educated for the purpose than they are at present. To take an illustration: most men like to have a few fruit trees on their plots—a commendable thing, provided the trees are placed in a good position, and are properly attended to; but how frequently do we find trees stuck in the most inappropriate situations, while crops of various kinds are planted close up to their stems, the trees never receiving any pruning, either root or branch, unless it be of the hacking or maiming order; and as for a good mulching, that is a treat not often provided. This is no overdrawn picture, it is one that can be seen in any locality. "Gardens," so-called, may be seen overgrown with fruit trees interlacing in all directions, and the large suckers are allowed to remain to the great detriment of the parent tree, and perhaps with a crop of Rhubarb underneath.

Another point often alluded to in these columns is the inferiority of the varieties that are too often cultivated. It is to be hoped that the fruit "congresses" may do something to supply a remedy for this evil.

With regard to the management of vegetables and other crops, similar remarks might also be made, but enough has been said to show that the time for the indiscriminate application of the saying, "The land for the people," has not yet come; and, what is more, it never will come. A better phrase would be, "The right people for the right land." We hear enough complaints from the present landholders and occupiers; from the gardener, who never has enough "hands;" from the farmer, who reflects in anything but complimentary terms on the "weather," &c.; from the market gardener, who is loud and deep in his denunciations of extraordinary tithes and the unfair competition of noblemen and others, who do not, in his opinion, pay a commensurate amount of taxes, and we are consequently not desirous of having the whole of the working class joining the legion of grumblers.

Those who think that *la petite culture* is fraught with so many advantages, may be reminded that the present depression is felt fully as much in France and in Belgium as it is here. Observation, moreover, has not convinced us that the lot of the small proprietor in those countries is so very much, if at all, preferable to that of the corresponding social class here. We may look abroad, however, in one particular with great advantage. Knowledge of the right sort is power. It is the want of this knowledge in great measure which prevents our large proprietors on the one hand, and our labourers on the other, from making the most of what opportunities they have. Now, in the means of acquiring this knowledge, whether it be of fundamental principles, or whether it be of the technical application of science, our neighbours are far better off than we are. The provisions for the practical training in the principles of science are ludicrously inadequate in this country, while as for technical education suitable for those who till allotment grounds or manage small holdings, there is none, though it is within the reach of most Belgian peasants. Much of the money, time, and energy that are now exclusively devoted to "getting up a show," might most advantageously be applied to the practical instruction of all who are concerned in the management of land in whatever manner, and in the diffusion of varieties of fruit trees, seeds, &c., of known excellence and suitability. This is a very old text of ours, but we may be excused for reverting to it, again and again, till our labourers are made competent to manage both their three acres and their cow, or whatever may be to their own advantage and the benefit of the community at large.

THE nature and functions of MANURE, its value, and the various modes of its application, have been standing themes of disputation among horticulturists ever since the history of gardening has been recorded. All who have read with any degree of attention the various theories which have from time to time been published, must have been struck, and also considerably puzzled, by the great difference of opinion amongst those who profess to know something about the subject. A. thinks there is nothing like ashes or lime; B. pins his faith on bone-dust and superphosphate; C. has no doubt that there is nothing like muck—stable manure being worth all the new-fangled fertilisers that foolish experimentalists have invented. His father and his great-grandfather, and all his ancestors, were of the same opinion, and therefore he must be right. D., fortified by long experience, in which all his neighbours have participated, holds manfully to the practice that liquid manure is the one thing needful to successful gardening. E. tells us that he made no money until he used guano, which has converted his barren soil into miracles of fertility, and he therefore looks with pity on all those who do not follow in his footsteps, and as old fogies, who are toiling on in the dark, ignorant of the true remedy for the infertility of their gardens. And thus these controversies have gone on from year to year—no one convinced by the arguments or the experience of others, but each adhering to his own theory and his own practice more strongly than ever.

Now, with the increased knowledge of the nineteenth century, it seems to us that all these various opinions and practices are equally right under certain circumstances, and wrong under other circumstances. No hard-and-fast rule can be laid down for the horticulturist any more than it can for the farmer; each case must be considered on its own merit, according to inherent soil-fertility, locality, and the climatal condition with which the gardener has to deal.

Since, then, every manure has its use and its value under given conditions, the great aim of the practical and thoughtful gardener should be to ascertain exactly what those conditions are, and the special circumstance under which their application can be made profitable.

Science has demonstrated very conclusively that every species of plant, whether growing wild or cultivated by the gardener, has its own peculiar chemical composition, consisting of a greater or lesser number of elementary substances united in well ascertained and definite proportions. It is also well understood by the horticultural chemist that plants have no power inherent in them of creating matter, but that their vitality only enables them to select and combine such materials as are presented to their feeding organs from without. The only sources of supply are the substances within reach of their absorbing or feeding organs, and these substances must therefore be contained in the soil or the atmosphere immediately contiguous to them.

The essential elements that are supplied by the atmosphere are carbon, which plants take from the carbonic acid of the air; oxygen and hydrogen, which come from the air to the soil and are absorbed by the roots of the plant, and a part of the nitrogen.

The essential ingredients that must come from the soil are potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, a small amount of chlorine, perhaps a minute quantity of silica, and, finally, considerable nitrogen.

Consequently, in order that our plants may grow and thrive, they must have at the disposal of their roots in the soil a sufficient quantity of each of these ingredients of their food. If any one of the more important constituents—potash, lime, phosphoric acid, or nitrogen—be deficient, the whole plant suffers.

If we have a gardener especially eloquent on the virtues of any particular manure, to the exclusion of all others, we may be sure that he is the cultivator of soil rich in most of the elements of plants, but deficient in one or two of them; the addition of these missing substances will then produce truly astonishing results, and those who witness them can hardly be persuaded that what has proved so useful to themselves can be useless in the hands of others.

Every cultivable soil, however exhausted it may be, is capable of supplying more or less of these essential elements of plant-food, which it derives from the *débris* of pre-existing vegetation. This is called its inherent fertility, or natural strength. To this important point it is our intention to return shortly, putting before our readers the best ascertained means by which the fertility of our gardens and fields may be maintained.

—— THE JENSEN PLAN OF GROWING POTATOS.—Experiments made at Tharand, by M. NOBBE, have failed like those at Chiswick, owing to the non-appearance of the fungus. The eminent German agriculturist concludes, however, that the process is

detrimental to the crop, and he believes that the method, if successful, could only prevent one method of introduction of the fungus (that by spores falling on the leaves), while the direct penetration of the spawn threads contained in the set into the haulm or young tuber, is nowise affected by the plan. Other observers confirm the fact of the diminished yield when the JENSEN plan is adopted. So far as the Chiswick experiments are concerned, it must be remembered that they were not undertaken to ascertain what would be the yield of the crop so treated or the cost of production, but what would be the effect of the high moulding and bending over of the top in preventing the spread of the fungus. But as the fungus did not appear the experiments failed in their object. In all such experiments it is necessary to bear in mind what are the real objects in view, and what are merely secondary and incidental.

—— "VINE CULTURE."—We have received a copy of this little publication from Messrs. J. R. PEARSON & SON, nurserymen, Chilwell, Notts. This is the fifth edition of the work, which has been revised by Mr. C. E. PEARSON. *Vine Culture* deals with the elements of Grape growing and is likely to be very useful to amateurs. Messrs. T. FORMAN & SONS, Sherwood Street, Nottingham, are the publishers.

—— THE LATE SIR WALTER W. BURRELL, BART.—In the death of this gentleman, the proprietor of West Grinstead Park, Horsham, the West Grinstead Horticultural Society loses an influential and generous supporter, the annual exhibition being held in his spacious park.

—— MR. SHIRLEY HIBBERD AND THE INTERNATIONAL POTATO EXHIBITION.—Mr. SHIRLEY HIBBERD writes to say he has withdrawn from the International Potato Exhibition, with which he has been connected since its commencement in the year 1875.

—— THE ROSE IN THE TROPICS.—A large number of Englishmen who settle in foreign lands love to surround themselves with the flowers which are associated with their native country. Unfortunately many of these refuse to permanently adapt themselves to the altered conditions of climate, &c. The Rose is a case in point; the new hybrid perpetuals and others are annually imported, but the majority, although they frequently grow luxuriantly enough, cease in a comparatively short time to produce flowers. Such a state of things may often be changed by working the refractory kinds on stocks of Rosa indica. This piece of practical information was given us, in conversation, by a gentleman who had had many years' horticultural experience in Brazil, and had imported a large number of Roses from Europe.

—— ROYAL HORTICULTURAL SOCIETY.—The list of persons recommended by the Council to be appointed to the offices of President, Treasurer, Secretary, and Auditors of the Society at the annual meeting on February 9, 1886, are—Sir TREVOR LAWRENCE, as President; WILLIAM HAUGHTON, Esq., as Treasurer; WILLIAM LEE, Esq. (Downside), as Secretary; and Messrs. JOHN LEE, JAMES F. WEST, and WILLIAM RICHARDS, as Auditors.

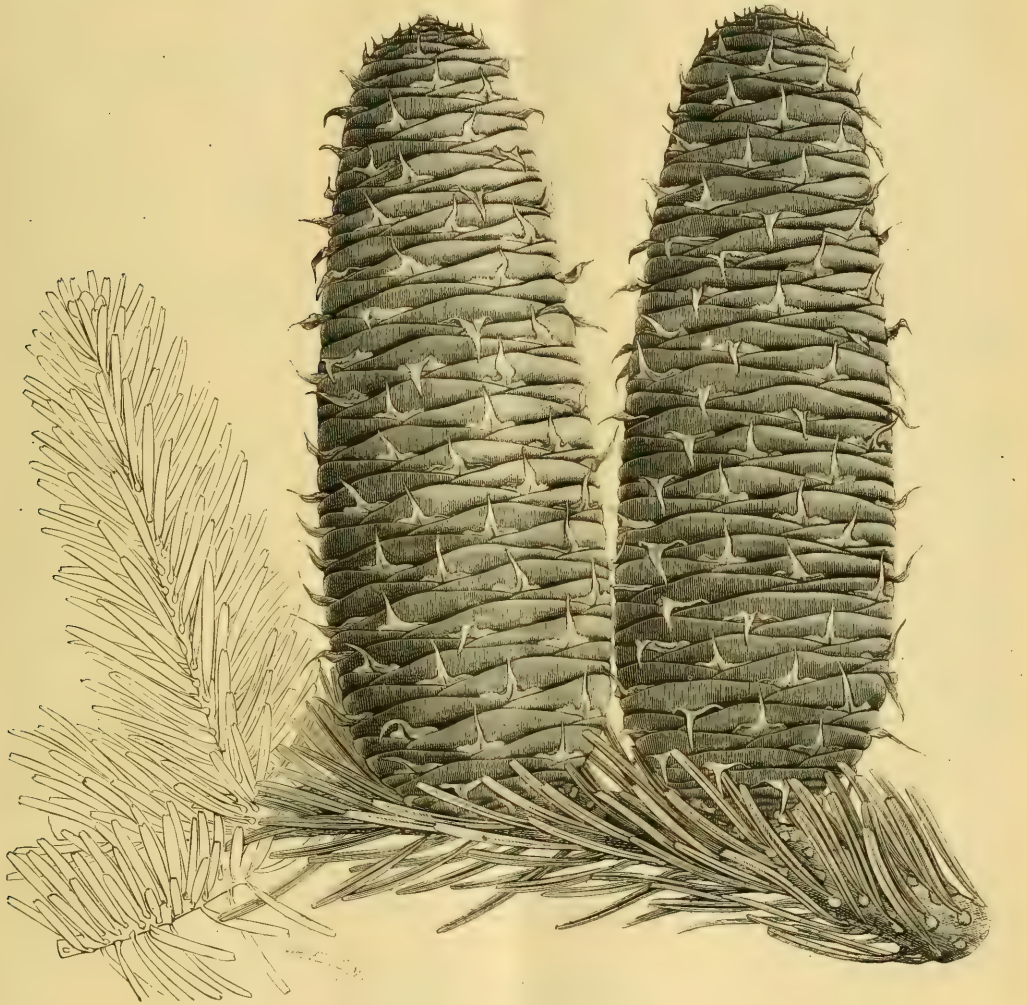


FIG. 30.—ABIES NORDMANNIANA. (SEE P. 142.)

The retiring members are G. T. CLARKE, F. DU CANE GODMAN, and Sir P. CUNLIFFE OWEN; whilst the following are recommended by the Council to fill up the vacancies:—SYDNEY COURTAULD, Esq., A. B. MITFORD, C.B., and Baron SCHROEDER.

—— A REMEDY FOR THE GOOSEBERRY AND CURRANT CATERPILLAR.—We read in *Der Praktische Baumzuchter* ("The Practical Fruit Grower"), a new work published at Stuttgart, that if 5 ozs. of alum be dissolved in boiling water, and this mixture afterwards mixed with cold water, so as to make twenty litres (about eighteen quarts), and the fluid be applied to the bushes when attacked, the caterpillar will entirely disappear. It is a good assistance also against the attacks of other species of caterpillar, the American blight, and aphides.

—— MONTREAL BOTANIC GARDEN.—A garden has been agitated for, says the *Gardeners' Monthly*, since 1863. Since Professor PENHALLOW has been Professor of Botany in the University the project has taken shape, and seems now entirely successful. It embraces 77 acres; the arboretum takes of this 40 acres; 5 acres will go for aquatics and similar plants. The plant-houses are to cover 216 feet by 90 feet. There will also be lecture rooms, library, and an economic museum. The city furnishes the ground, leases it to the Garden Association, and the citizens find the money. The Horticultural Society is its chief supporter. The Dominion Government, however, appropriated 10,000 dols. to put the garden in a good preliminary condition. The prospects at present indicate that this garden will be one of the most successful on the American continent.

—— THE LINNEAN SOCIETY OF LONDON.—A meeting will be held on Thursday, February 4, at 8 P.M., when papers will be read:—1. "On the Relation between the Bloom of Leaves and Distribution of Stomata," by FRANCIS DARWIN. 2. "On Slavina and Ophidonaris," by E. C. BOUSFIELD. 3. "The Probable Source of Cultivated True Limes," by Dr. E. BONAVIA. 4. "The Relative Length of the Segments of Chicks' Limbs during Development," by Professor R. J. ANDERSON.

—— PICEA EXCELSA MONSTROSA.—The grotesque element is allowable even in an æsthetic garden if employed in strictest moderation. The beauty of our Gothic cathedrals is not marred by the introduction here and there of grotesque details in themselves ugly, perhaps even repulsive. They serve as a foil to the surrounding beauty; they serve to dilute it, and prevent our being satiated by excess or want of variety; and lastly, they are often significant. On such grounds we can very readily condone the introduction of one of the ugliest trees in existence into our gardens. Its long weird branches, trailing along the ground like serpents, are particularly uncanny; the gaunt spectral aspect of its top is not reassuring in the twilight; nevertheless it has its uses even from an æsthetic point of view, and it is a thing of interest to the naturalist, that happy being who finds objects of admiration in things not appreciated by the profane. Take the tree in question. What interest there is in trying to make out the how and the why—in noting the singular correlations it presents—its scanty branches on the one hand, their inordinate length and vigour, and the astonishing size of the leaves on the other. It is quite conceivable that there are certain conditions for which this peculiarity is specially adapted—it would not be so much injured, for instance, by heavy snowfalls as the common form. The variety, or one or other modification of it, has long been in the country, but we do not remember ever to have seen the cone till the other day, when Mr. NICHOLSON forwarded us a specimen produced in the nursery of Messrs. LUCOMBE, PINCE & CO., of Exeter, and which is exactly that of the common Spruce. The rarity with which cones are produced may be correlated with the extraordinary development of a few branches and of the leaves.

—— SEED LIST OF THE CAMBRIDGE BOTANIC GARDEN.—We are glad to receive a copy of this list, drawn up in true academic form, as is the laudable custom of foreign botanic gardens—laudable because written in a language universally understood in botanical circles, from the arctic to the antarctic circle. But surely in so academic a production the printers should have followed suit, and given their names and addresses in the Latin style. But the printers, unlike the botanists, are not likely to have clients outside these islands.

—— FLOWER SHOW FIXTURES.—The annual exhibition of the Wiltshire Horticultural Society, of which Mr. WALTER H. WILLIAMS is the Hon. Sec., will take place at Salisbury on July 29. The Trowbridge Horticultural Society's annual show will be held on Wednesday, August 18. The Chiswick Horticultural Society have fixed upon July 15 as the date of their annual exhibition in the gardens of the Royal Horticultural Society, Turnham Green; and an autumn show of Chrysanthemums will be held on November 18.

—— ROYAL OXFORDSHIRE HORTICULTURAL SOCIETY.—The following are the prizes "open to all England" to be competed for at this Society's shows during the current year:—

June 2, —9 stove or greenhouse plants (in flower), 1st prize, £10: 2d, £8: 3d, £5.
,, 6 Cape Heaths, 1st, £4; 2d, £3; 3d, £2.
,, 12 Pelargoniums (not fancies), 1st, £4: 2d, £3.
,, 12 Pelargoniums (fancies), 1st, £4: 2d, £3.
,, 24 Roses, distinct (single trusses), 1st, £2; 2d, £1 10s.: 3d, £1.
,, 24 Roses, distinct (triplet trusses), 1st, £3: 2d, £2; 3d, £1.

Messrs. Webb & Son's special prizes are—Vegetables, collection of 6 dishes (distinct), 1st, £3 3s.; 2d, £2 2s.; 3d, £1 1s.; and 4th, 10s. 6d.

July 29.—Messrs. Sutton & Sons' special prizes for vegetables, consisting of collections of 6 dishes (distinct), 1st, £3 3s.; 2d, £2 2s; 3d, £1 1s.; and 4th, 10s. 6d.

—— DEVON AND EXETER HORTICULTURAL SOCIETY, 1886.—The dates fixed for the shows of this Society are:—Summer Show, August 20; and Autumn Show, November 12. We are informed that the trustees of the VEITCH Memorial Prize Fund have aollited a VEITCH Memorial Medal and a prize of £5 for competition at Exeter in 1886, the competition to be confined to the county of Devon; and the committee of the Society have resolved that the medal and prize shall be given for a collection of vegetables, to be competed for at their Summer Show, August 20. The collection must consist of twelve kinds of vegetables, exclusive of red salading; each dish to contain the same number of vegetables as is required in the classes for single dishes.

—— THE MISSOURI BOTANICAL GARDENS.—The *Gardeners' Monthly* states that the eminently public-spirited citizen of St. Louis, Mr. HENRY SHAW, who proposes to give his celebrated gardens to the city on his decease for the enjoyment and instruction of the people for ever, has not waited for the event of his departure—which all hope may be long postponed—to inaugurate his generous gift. He has already founded a school of botany, endowing it with real estate, which even now produces an income of over 5000 dol. a year. Professor WILLIAM TRELEASE, an eminent botanist among the younger class of men, has been placed in charge, and inaugurated it on November 6. It has been made a department of the Washington University. The whole movement so far seems to indicate a bright future, and must be highly gratifying to Mr. SHAW, the generous promoter of the measure. The ENGELMANN Herbarium and other famous material will, it is hoped, go to the charge of this new department of the University.

—— ROCKY MOUNTAIN BOTANY.—Messrs. IVISON, BLAKEMAN & TAYLOR, New York, have lately published COULTER'S *Manual of Rocky Mountain Botany*, which is notable in its line as being the only published authoritative description of the flora of that region. By the "Rocky Monntain Region" the author refers to the tract beginning with the western limit of the mountain system, and extending eastward across the plains to the prairies, and including Colorado, Wyoming, Montana, Western Dakota, Western Nebraska, and Western Kansas. The larger part of the contiguous floras is also described, embracing the western part of Indian Territory, North-western Texas, Northern New Mexico and Arizona, and Eastern Utah and Idaho.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—The annual meeting of this Society was held on the 25th inst., at the "Old Four Swans," Bishopgate Street, E.C., the President, E. SANDERSON, Esq., presiding. The report read by the Hon. Secretary, Mr. W. HOLMES, referred to the success of both exhibitions—that in November and the midwinter show in January; the latter especially having exceeded the expectations of its most sanguine promoters. It was stated that seventeen societies had become affiliated with the parent Society; and that the Medals and Certificates had given universal satisfaction. The balance-sheet showed that £213 16s. 6d. was paid in prizes at the November show, and £14 10s. at the January exhibition; the total expenditure for the year being £393 15s. 7d. There is a small deficit which will be met by a resort to the reserve fund. E. SANDERSON, Esq., was re-elected President; Mr. R. BALLANTINE, Vice-President; Mr. J. R. STARLING, as Treasurer; and Mr. WILLIAM HOLMES, as Secretary. The General Committee, numbering thirty-six members, was elected, and the appointment of a Floral Committee and judges referred to that body. The rules of the Society were carefully revised, and a new one was made to the effect that the subscribers of one guinea per annum and upwards should be termed Fellows of the Society. There are now upwards of 300 members of the Society, the minimum annual subscription being 5s. A suggestion was made that there should be an exhibition of early Chrysanthemums to precede the November exhibition by a few weeks, in order that the now numerous section of early flowering varieties should be adequately represented on the exhibition table. It was pointed out that this is a matter of increased expenditure which could be met only by a corresponding addition to the funds of the Society, and the matter was eventually referred to the General Committee. Several new members were nominated for election. Hearty votes of thanks were given to the President, and to Mr. W. HOLMES, the Secretary, for the admirable way in which the affairs of the Society had been managed.

—— KINGSTON AND SURBITON CHRYSANTHEMUM SOCIETY.—The committee of this Society met last Tuesday to consider the schedule of prizes for the next exhibition, to be held on November 9 and 10 next. It decided to offer another 25 guinea Challenge Cup for forty-eight cut blooms on the same conditions as the previous ones, with money prizes as follows:—1st prize, the Cup and £5; 2d prize, £4; 3d prize, £3; and the 4th prize, £2. And in addition to other extra money and special prizes, they offer a Silver Cup, value £5, for the best group of Chrysanthemum plants of 50 square feet, and also a Local Cup, valued £5, for twenty-four cut blooms, twelve incurved and twelve Japanese, open to subscribers in the Kingston Poor Law district.

—— KENNEDYA MARRYATTE.—Flowers of any kind are welcome at this season of the year, but those of this species are handsome at any time and apparently available at any time judging from a plant in the greenhouse at Kew, which has flowered more or less continuously for the past twelvemonths. Previous to that it was a small specimen, but on planting it out it has continued to increase in bulk and extend in length. At present it has passed up one rafter and down the opposite one, nearly completing the span of the structure, while branches a yard long hang down in richly flowered festoons. LINDLEY described the peduncles as four-flowered, and probably that would agree with wild specimens, but in the present instance two lateral branches are given off from the base of the primary peduncle, each bearing from two to four flowers, so that the whole inflorescence might contain twelve flowers. As the branches continue to extend, flowers are profusely produced in the axils of the leaves, and fruiting pods are also in a considerably advanced state. Some consider it a variety of K. prostrata, from which it differs greatly in the size of all its parts, especially in the leaves and in hairiness, being almost shaggy. It is figured in the *Botanical Register*, xxi., 1790, while K. prostrata is figured in LODDIGES' *Botanical Cabinet*, 1046, where it is said to be a short-lived greenhouse plant; and also in the *Botanical Magazine*, 270, under the name of Glycine coccinea.

—— THE PERCIVAL COLLECTION OF ORCHIDS.—This famous collection was on view at the nursery of the Liverpool Horticultural Co., Limited (J. COWAN, Manager), on Tuesday and Wednesday, January 26 and 27, when a large number of gentlemen and gardeners from many parts of the country had an opportunity of inspecting the collection. The plants were arranged in the various houses,

and with the aid of a descriptive catalogue each plant was soon found and examined by the various gentlemen. Special mention must be made of the Lælia anceps purpurata and elegans, which are very strong and full of growth; the Cattleyas also are fine, C. Trianæ, Mossiæ, and Percivalliana being represented by large numbers of grand specimens. The Odontoglossums, including O. crispum, O. vexillarium, O. Pescatorei, O. pulchellum, and O. citrosmum were also very fine; Cœlogynes, Cymbidiums, and Phalænopsids were represented by large plants and excellent variety. The collection will be on view till Tuesday next, February 2, after which date the orders will be executed in rotation.

—— MESSRS. JAMES CARTER & CO.'s PRIZES — At the shows of the Royal Horticultural Society of 1886 the following prizes will be given :—

May 25.—For the best brace of Carter's Model Cucumber, three prizes.
June 22.—For the best specimen of Carter's Bleuheim Orange Melon, three prizes.
,, For the best brace of Carter's Model Cucumber, three prizes.
July 13.—For the best fifty pods each of the following Peas:—Carter's Telephone, Carter's Stratagem, Carter's Pride of the Market, Carter's Telegraph, four prizes.
July 27.—For the best twelve pods of Carter's Leviathan Bean, three prizes.
,, For the best samples of Lettuces, comprising two specimens each of Carter's Giant White Cos, Carter's Longstander, and All the Year Round, three prizes.
,, For the best three specimens of Carter's Heartwell Early Marrow Cabbage, three prizes.
Sept. 7.—For the best dish, nine fruit, of Carter's Dedham Favourite or Carter's Perfection Tomato, three prizes.
Oct. 12.—For the best six Carter's Tennis-Ball Onion, three prizes.
,, For the best three Carter's Mont Blanc Cauliflower, three prizes.
,, For the best twelve pods Carter's Champion Runner Beans, three prizes.
Oct. 26.—For the best four dishes of Potatos, nine tubers each, to comprise Carter's Ashtop Fluke, Carter's Sakreta, Village Blacksmith, and Carter's Ceteway,o, four prizes.

—— GARDENING APPOINTMENT. — Mr. T. FLETCHER, late of the Royal Horticultural Society's Gardens, Chiswick, has been appointed Gardener to W. ABBOTT, Esq., The Abbey, Kensington.

NEW SOUTH WALES TIMBERS. — Probably no country in the world possesses finer or more durable hardwoods than New South Wales. Her Pines and Cedars, valuable though some of them may be, yield the palm to those of other lands; but her Ironbark and Blackbutts rank, for durability and strength, second to none on the globe. Singularly enough, all the principal hardwoods used in the colony are myrtaceous trees—that is, members of the great Myrtle family—which, according to Professor Balfour, is divided into five tribes, containing seventy-five known genera, and upwards of 1800 species. Members of this great family are natives chiefly of warm countries, as South America and the East Indies, although many are found in more temperate regions. Some of the genera, such as the Eucalypts, are peculiar to Australia, although they have been successfully transplanted in Europe and the East, and in the Campagna at Rome, on the borders of Portugal—where they have been planted by the *vignerons* for the making of casks—and even on many of the hill stations of the Punjaub and Madras the wandering Australian may recognise the tall rough stem, leek-green leaves, and strong perfume of the sylvan denizens of the sunny South. Eucalypts, which constitute at least three-fourths of New South Wales timber-producing trees, furnish us with the bulk of colonial hardwoods. Ironbark, Blackbutt, Blue-gum, Stringy-bark, swamp Mahogany, Tallow-wood, and Yarrah, all belong to the same remarkable genus, although they differ from one another in many ways, and in none more so than in their rate of growth, the Blue-gums and Blackbutts being very rapid growers, while the Ironbark and Box take a very much longer time to mature. The remainder of hardwoods are principally Angophoras, or "Apple-trees," most of which are subject to "gum-veins"; Tee-trees, Tristanias, and Syncarpias, better known as Turpentine-trees, but all members of the Myrtle family, and all growing in the open forest, and very rarely in the bush or the scrub. *Australian Paper.*

Notices of Books.

Physiological Botany. By George Lincoln Goodale. New York: Ivison & Co.

Asa Gray's *Botanical Text-Book*, of which six editions have now been issued, is so well known in this country for the clearness and breadth with which morphological details are treated in it that reference to it would be superfluous, were it not for the fact that its scope is now largely extended in accordance with the progress of the science and the requirements of the day. Structural and morphological botany are treated of in the first volume of the sixth edition by Dr. Gray himself; physiological botany, including the histology or minute structure of plants, is dealt with in the second volume, now before us; while a third, devoted to cryptogamous botany, is in preparation, by Dr. Farlow; the series being intended to be completed by a fourth, dealing with the natural orders of plants, which Dr. Gray "may rather hope than expect himself to draw up." This programme, according to which one modest octavo volume has extended already to two, with the prospect of two more, is an illustration of the progress of science, the continually accumulating information, and the necessity that has arisen for further differentiation and division of labour. At one time the Professor of Natural History was expected to teach all branches of knowledge relating to the structure, classification, and physiology of animals as well as of plants, together with geology and physical geography. Such a procedure is no longer possible to the conscientious teacher of anything beyond the rudiments of the subject. To deal adequately with the subject of natural history now requires the labours of specialists in each department; hence Dr. Gray has done wisely in securing the collaboration of his former pupils in the preparation of those portions of his book relating to departments with which he is less personally familiar, than with the morphology and affinities of flowering plants.

The beginning and the end of Dr. Goodale's book may be said, without detriment to the intermediate portions, to be the best. The introduction and the appendix are devoted to practical instruction in reference to what is to be seen by the student, and how he should work to enable him to do so. Formerly it was considered quite enough for the professor to convey to the pupil, by means of a lecture, the leading details of plant structure, but generally speaking, no means were afforded the pupil of seeing the things described for himself. The general institution of laboratory teaching has altered this, and even where the resources of laboratories are not available, much may be done by the pupil himself, by following the instructions and the course of observation laid down in the present volume, and in the excellent practical course of "Bower and Vines." Histological observation has now attained a high degree of perfection, and with a good average microscope, some little skill and unlimited patience, any student can make himself familiar with the internal conformation of plants. Their life history—the investigation of the operations, formations, contents, and permutations which go on in their elements is not so far advanced. Anatomists can tell us what is the fabric of the plant, chemists can tell us its chemical composition subsequent to its death, but much, very much remains to be learnt as to what takes place in individual cells, not at one time only, not in dead tissue, but in the living plant, at various stages of development, under various circumstances, and in the living organism. Dr. Goodale cites several simple experiments, for the most part not requiring costly or elaborate apparatus, which are calculated to throw light on these matters. Among them he might have included Sachs' very simple but very satisfactory methods of ascertaining the presence or absence of starch in the leaves under varied conditions, and Passerini's method of proving the exhalation of gases through the stomata. In the list of reagents for indicating the existence of protoplasm we miss the xantho-proteic reaction caused by the addition of nitric acid followed by ammonia.

In vegetable anatomy much confusion has arisen from the fact that observers are too prone to make use of new terms for old things, or slight modifications of old things. Histologists have not yet outgrown the reproach of want of method in their presentment of facts and of disregard of that law of priority which renders possible the due orderly arrangement of the names of plants. If histologists would adopt more fully the methods of the systematic botanists their work would gain in perspicuity and permanence. Dr. Goodale has reduced some of this redundant terminology, and leaves us in no doubt as to what he means by the "endoderm," "cambium," "meristem," "tracheids," which are only the ducts of our old text-books, but he might well have adopted Van Tieghem's epithet of "pericycle" in place of the "peripheral layer of the cylinder." The term "hypoderm," which applies only to a particular illustration of a general condition, might perhaps be avoided with advantage, as it causes confusion when it is applied to cells not immediately in the vicinity of the epiderm. The second part of Dr. Goodale's work is devoted to physiology proper, the influences of external agents—light, heat, &c.—on plants, and the operations which go on in the cells. In this section we find a brief summary of those observations on the continuity of protoplasm which we believe are destined to revolutionise so much of our present knowledge, or ignorance rather, and which have a most important practical bearing, and may throw light hereafter on certain mysteries connected with the process of grafting, the production of "sports," of hybrids and graft-hybrids. We find, too, in Dr. Goodale's pages an account of "water-culture" such as we do not remember to have seen before out of any special agricultural text-book. The publication of this useful summary immediately, makes us wish for more information as to the synthetic plan of ascertaining the necessities and superfluities of plants as practised by the application under known circumstances of definite quantities of various chemical substances. Referring to the transfer of water through the stem, Dr. Goodale adopts Sachs' view, that it passes up the cell walls—a view strongly opposed by Boehm and Vesque. The more recent observations as to the so-called carnivorous plants, the movements of plants, the division of the nucleus, the process of fertilisation are summarised. Apogamy is mentioned, but apospory finds no place.

We have endeavoured to give some indication of the scope and aim of the work; it remains to say that the scheme has been well carried out. Dr. Goodale's style is clear and to the point, without diffuseness on the one hand, or obscure brevity on the other. He may be congratulated on having produced one of the most useful summaries yet issued. The work will not take rank with Sachs or Van Tieghem, but it makes no pretensions to do so, and at the same time it is infinitely more agreeable to read, and much better suited, in our judgment, to the average student.

Hooker's Icones Plantarum.

The fifth volume of the third series of this publication is completed with the recent issue of the December number. It is devoted to the description and illustration of new and interesting plants in the Kew Herbarium. During the period of the elaboration of the *Genera Plantarum* by Mr. Bentham and Sir Joseph Hooker, this unpretending publication served as a means of illustrating numerous characteristic plants studied during the progress of the work. Similarly we find the present number contains illustrations of numerous species derived from recent acquisitions to the Herbarium from the Transvaal, Eastern Tropical Africa, and other localities whence collections have been recently received. It is interesting to note the existence of a new Anemone, A. Thomsoni, from Kilimanjaro, at a height of 9000 to 10,000 feet. This essentially temperate genus has not previously been noted in Tropical Africa.

ORCHID PRUNING.

(*Continued from p. 83.*)

IN endeavouring to put the pruning theory into practical form, I will first take in hand the well-known Calanthe vestita. Here we have roots, foliage, and bloom all produced at the same time as the growth and maturation of the bulb itself, in one season. The foliage, roots, and bloom all die off in the same season, and this individual bulb will never produce any of these again. Now my opinion is, that as the foliage and the roots both decay, as they naturally do at the end of the first season, they afford a proof that each has performed its allotted functions, and have left the bulb fully capable of perpetuating its kind. The whole of the energies of the plant stored up in it are now concentrated in the production of new bulbs, the work of the second season. When this has been accomplished, and the new bulb, or bulbs, have in their turn cast their

foliage and finished blooming, then the old, that is the two-year-old bulb, should be cut away. I have proved that the new growths are as strong and as free to flower without the aid of this old bulb as they are if this bulb is left on the plant. If, however, it should be allowed to remain, it may produce yet another growth, but this will be small compared with the first produced; I would, therefore, urge that for this reason also it should be removed, for a pot of crowded bulbs of unequal size and strength with but few spikes of bloom would not be regarded as an object of skilful cultivation; so it would be better to cut off the two-year-old bulbs and grow them by themselves, if they will grow. If they are exhausted, though they may appear sound, yet they are quite worthless. We see, then, that the roots and the foliage are of one year's duration only; also that the bloom is produced in that same year or not at all. In the second year the new growths are produced, and when these are thoroughly matured the old bulb should be removed. Now, I hold that all species of Orchids which agree in the manner of their growth with the Calanthes should have the two-year-old pseudobulbs removed.

Our next consideration will be of those Orchids which retain their foliage and roots for two years. And as a type of this class I will take Peristeria elata. In this plant we have roots, foliage, and bulb all starting and developing together. By the end of the first year the bulb will be in a mature state, and the foliage and roots should be in a healthy condition, though the plant will be in an inactive or resting state. The second year the new growth and the spikes of bloom will start simultaneously; the energies put forth by the bulb require that it should be provided with an abundant supply of food by means of roots and foliage, which, as a rule, remain at the source of the plant for nearly two years. At the end of this period the bulb will have produced all the bloom it is capable of producing, and will also have thrown out one or more new bulbs, but as it is only two years old, and the roots have scarcely ceased to perform their functions, it may be allowed to remain on the plant for another year, to be cut off at the end of the third year. This plant, like the Calanthe, may also break into new growths, which should be taken care of if stock is required. In this type we have then foliage and roots formed and remaining on the plant for two years, the bloom appearing the second year, or not at all. The third year the bulb should be removed. Again I say that all Orchids answering to this description should be thus treated. In general practice, however, I have as often removed the old bulb at two years old as I have at three, and the results have been highly satisfactory; but judgment must be exercised on the earlier pruning, whilst the three-year system of pruning is quite safe.

The next section for consideration is a large and varied one, including the Oncidiums, Odontoglossums, and other species. I take Odontoglossum vexillarium as a type of the short-bulbed species—growth of foliage, roots, and bulbs, proceeding nearly together, and with maturity, if the bulbs are strong, bloom will appear; new growth again follows, and foliage and roots remain for three years, when the bulbs may be removed; but in some cases the fourth year will be soon enough to cut them away. I have mentioned this species as a type of all in this section which have scarcely any rhizome connecting bulb to bulb. Those which have a long rhizome, as Oncidium flexuosum, throw the roots out of this part, but generally later; in some cases, therefore, the roots will be active long after the foliage has died away. Here, then, the bulb may be cut, but not the rhizome. There are some species in this rhizomed section of Orchids which may carry their foliage and roots as far as the fifth year, while some will cast their foliage at the close of the first. Some discrimination will have to be used to settle the point. Before proceeding to operate the following questions may be put, and Dendrobium excepted:—Has the bulb cast its foliage? Has it done flowering? Has it produced new growths or bulbs? Are its root dead? Then it might be removed, for it is of no more real value to the plant. I say real value. I know there is an apparent value attached to these old bulbs, but more on that subject further on. I think sufficient has now been said to convey an idea of the principle I act upon in this section, which I now leave as No. 3, and will pass on to No. 4 in a subsequent letter. *N. E. Blandford.*

(To be continued.)

THE BULB GARDEN.

NARCISSUS TRIANDRUS AND ITS VARIETIES.

THE varieties of Narcissus triandrus, which have segments reflexed like Cyclamens, are all natives of the Spanish peninsula; only one habitat outside this is known, Drénec, one of the Isles of Glénan off the south-western coast of Brittany, where at least one variety grows in abundance. They seem to be far commoner in Portugal and the north-western quarter of Spain than in the rest of the country which perhaps



FIG. 31.—NARCISSUS TRIANDRUS.

has been less searched, but I cannot find any authentic record of their occurrence either in Andalusia, or in the neighbourhood of the Pyrenees, or the east coast. In England they have been cultivated scantily and in an intermittent way from Parkinson's time; but on cold soils they soon die out, and are hardly likely to flourish permanently in the open air in ordinary English gardens. Within the last two years they have been imported by thousands from their native country, and last autumn were offered in several catalogues at a lower price than ever before. It may be interesting to some who are trying to grow them to learn what is already known about their natural history.

The name triandrus, given by Linnæus, though founded upon error, does not call for change; the error itself will serve to call attention to the remarkable difference in the length of the six filaments of the flower, three of the anthers being nearly sessile, and hidden within the tube. The Flemish botanist L'Ecluse, or Clusius, first brought these Spanish Narcisseæ into notice. He made a prolonged visit to Spain about the year 1560, for the purpose of collecting and studying plants. His resources and writings were supplemented by those of his contemporaries, Dodœns and Lobel, of whom the latter, as a Fleming, was a Spanish subject, and became botanist and physician to our James I.; he is, therefore, especially likely to have introduced many ornamental plants from Spain to England. Parkinson, who lived in the next generation to these three, frequently mentions them all. We may conclude that the intimate knowledge which he possessed of the Spanish Narcisseæ was in a great measure due to their resources. From Parkinson's time to the beginning of this century little progress seems to have been made in the study of these wild varieties of Narcissus; but about the year 1820 three English botanists took up the subject about the same time, and searched the botanical works of their predecessors and the gardens of their contemporaries to collect all the information they could.

These three, each of whom worked in rivalry of the others, were Salisbury, Haworth, and Herbert, Salisbury was first in the field, but very little that he wrote on this subject was published till 1866, thirty-seven years after his death. A careful comparison of the results of the labours of these botanists makes me regret that it is impossible to frame a consistent and concordant system of arrangement of the Narcisseæ out of the materials which they have bequeathed to us. Of the class to which N. triandrus belongs Salisbury makes one genus and five species; Haworth, prone to expansion and subdivision, three genera and nine species; and Herbert one genus and seven species. Amongst their names there is much cross-naming and confusion, but there are in all ten distinct specific names, most of which have been adopted by some Continental botanists. Nyman, in his *Conspectus of European Plants*, out of his forty-two species of Narcissus, enumerates six of these with reflexed flowers, for five of which he gives Haworth's names, the sixth being pallidulus of Graells.

We now turn gladly to the simple arrangement adopted by Mr. Baker in his review of the genus Narcissus. Adopting, as he does, the size of the crown as his chief character, he finds himself obliged to divide these reflexed-flowered subjects into two species, between which he places the line which separates the Magni-coronati from the Medio-coronati. This line may be thought by some too hard and fast, as an exact rule according to the length of the crown will perhaps separate plants of the same species or even out of the same seed-pod, but we are too thankful for any intelligible arrangement of Narcissus. Mr. Baker has done his best to adjust the confused synonyms given by his predecessors. He gives us

1. *N. calathinus*, a name given by Redouté to the large crowned form of triandrus already mentioned as found in the Isle of Drénec. The name is ambiguous, as having been given by Linnæus to a different Narcissus, a form of N. odorus. Salisbury and Herbert, who both of them studied carefully the herbarium and the writings of Linnæus, were convinced of this, as well as of the fact that Narcisseæ were not a strong point with Linnæus, much confusion being found in his characters of them. A long account, with three good figures of the Drénec Narcissus, may be found in Burbidge's *Monograph of the Narcissus*. This variety is most difficult to cultivate. M. Vilmorin, of Paris, informs me that in France gardeners have almost given up the attempt to grow it. It may, he says, be raised from seed, which begins to flower when the seedlings are two years old, but they will not last long. M. Blanchard tells me the same about the increase of the bulb, which is by seed only, and that even at Brest it requires protection from frost. I flowered a seedling in my greenhouse last year, and saw another at the Royal Horticultural show in April; both of these corresponded with Mr. Burbidge's one-flowered figures. It is thought by some to be identical with N. reflexus of Brotero, which occurs in the North of Portugal, and also in the Asturias, from both of which places I have received bulbs last summer.

2. *N. triandrus* of Linnæus.—This is described as white. It probably comes very near the last in colour and habit. I have given a tracing of it from *Bot. Mag.*, 48, which, as far as I can collect, comes nearer to the type than any other figure I have seen (fig. 31). Salisbury says that many bulbs of it were

imported in 1819 by a nurseryman at Turnham Green. They had snow-white flowers and a very long style. He does not say where they came from, but as he gives only three native places for the genus — Isles of Glénan, Galicia, and Oporto—it is probable that they came from the north-west of the Spanish peninsula. I received last spring from Oporto several boxes of flowers of this kind, most of which corresponded with this figure from the *Bot. Mag.*; they ranged from white to pale yellow, and the difference of length of the style was a remarkable feature. Mr. Baker includes under the typical name N. pallidulus of Graells, bulbs of which were collected last spring by Mr. G. Maw in the mountains to the north of Madrid.

3. *Var. pulchellus.*—It is generally agreed that this name belongs to the variety which is commonest in cultivation, being the most easily grown. It is figured well in Burbidge's *Monograph*, also in Sweet, ser. ii., t. 99; and *Bot. Mag.*, t. 1262. It has the crown of a lighter colour than the divisions of the perianth—a rare character in the Narcisseæ. Salisbury says that he formerly cultivated this variety (in the open air?) very successfully at Chapel Allerton in Yorkshire, a few miles north of Leeds, that the one or two miserable flowers depicted in *Bot. Mag.*, t. 1262, give so poor an idea of it as to induce him to give a figure of one of his own growing. Unfortunately, these drawings of Salisbury were never published, but I believe were presented many years after his death to the British Museum. He adds that these same bulbs quite failed, when he transferred them "to the manured soil near London."

4. *Var. cernuus* (distinct, of course, from Ajax cernuus).—Mr. Baker describes this as a pale yellow flower, with the crown rather darker than the divisions; he identifies it with the figures in *Bot. Mag.* 48, which I have here given as triandrus of Linnæus. I shall say more about this presently.

5. *Var. concolor*, referred to Sweet., ser. ii., t. 113.—This figure was from a plant growing in the Chiswick Botanic Gardens about the year 1830. We find no record of its habitat, and I have not seen it in cultivation, but my excellent correspondent in North Portugal, Mr. Alfred Tait, tells me that he finds flowers answering to this description growing amongst the commoner type close to Oporto. He has sent me bulbs, but I am afraid they will not flower this year.

6. *Var. nutans.*—Mr. Baker tells us little of this, but refers it to N. trilobus of *Bot. Mag.*, t. 945. The name nutans is Haworth's, who owned the (unique?) specimen from which the figure was taken: but we find nothing anywhere of its history. Salisbury calls the same plant N. effusus, but says that it has certainly nothing to do with N. trilobus of Linnæus, as stated in *Bot. Mag.* The figure differs in the structure of the flowers from others of the class; the filaments are more nearly of equal length, showing all the anthers above the mouth of the tube, and the style is very long and stout with a conspicuous stigma. The crown is broad and short, and the perianths hardly reflexed. I should have taken it for a hybrid form. Mr. Tait tells me that in the Geraz Mountains, 50 miles north of Oporto, where N. triandrus was flowering abundantly last May in company with N. corbularia var. nivalis; he found some curious reflexed flowers of a very rich yellow, apparently intermediate between N. triandrus and N. corbularia; from his description they were not unlike the figure here referred to.

The other tracing here given (fig. 32) is an exact reproduction in outline of N. cernuus, taken from Willkomm's *Illustrations of Spanish Plants*, published in 1885. Strange to say, he refers to N. cernuus the figure in *Bot. Mag.*, 48, agreeing in this with Mr. Baker. He has given us, he says, "a good and exact figure of N. cernuus, although it is figured in the *Bot. Mag.*, that book being so rare and so costly." Now, all botanists who know Willkomm's *Illustrations* will feel sure that when he gives "a good and exact figure" it may be trusted; but it is hard to believe that the two figures which accompany these notes are of the same variety of the same species. The size, the colour, the outline of the crown, the length of the style and filaments, the presence or absence of the cernuous direction of the flower, and the monophyllous character—which latter Willkomm mentions—all point to different plants. It is true that amongst the flowers sent to me from Oporto the filaments protrude far in some and not at all in others; and as for these bulbs bearing one leaf I know that in the case of N. corbularia var. monophyllus the one-leaf character at once disappears in cultivation, 95 per cent. of my plants of it having two or more leaves to each scape.

As Willkomm's work is too little known in this country I will conclude these notes with a short extract from it about N. triandrus:—"N. cernuus," he says, "is common in the province of Leon, in Spain, and in Northern Portugal. It differs from the N. triandrus of Linnæus, which has flowers as large as those of N. poeticus, and a pure white perianth, the segments being ovate-oblong, and much twisted. M. Planellas says that this true triandrus is abundant in the open hills of Galicia. Linnæus names the Pyrenees as its habitat, whilst Asso gives mountains in the south of Aragon. But the flora of Aragon differs so widely from that of Galicia, that I venture to predict that Asso's plant will be found to be distinct from the others; so I advise that a fresh search be made for it. The Narcissus found by the



FIG. 32.—NARCISSUS CERNUUS

late M. Durieu in the Asturias, and distributed under the name triandrus, is not the triandrus of Linnæus, but N. pallidulus of Graells, a species resembling cernuus, more than it resembles triandrus, but easily distinguished from it by its shorter and larger cupped crown, and by its ovate and twisted perianth segments." It will be seen from the above notes that even the botanists who are best informed on the subject are by no means conclusive or consistent with one another as to the varieties of triandrus. Further research may perhaps enable us to find intermediate forms, linking all the varieties together. *C. Wolley Dod, Edge Hall, Malpas.*

NARCISSUS JUNCIFOLIUS.

Professor Willkomm describes this as native in the South of Spain, in mountainous districts, with N. Jonquilla. It is a small species, with ovoid scaly bulbs, linear leaves, 1—3 flowered scapes, perianth ½—¾ inch across, segments ovate-acute, yellow cup, undulate, orange, rather shorter than the segments. *Ill. Flor. Hisp.*, t. 94.

LEUCOIUM HERNANDEZII.

Professor Willkomm, in his *Illustrations Floræ Hispaniæ*, t. 93A, gives a coloured figure of this elegant little plant, which differs from L. æstivum by its smaller flowers, never deflexed, by the elongated ovary, and the form of the style. Nevertheless, Dr. Willkomm believes it to be only a geographical variety of L. æstivum.

LEUCOIUM TRICHOPHYLLUM VAR. GRANDIFLORUM.

This is a very pretty form of L. trichophyllum figured by Professor Willkomm in his *Illustrations Floræ Hispaniæ* t. 93, than which it is more robust. It, however, grows near Cadiz in company with the type, where also numerous intermediate forms may be seen.

HOME CORRESPONDENCE.

An Orchid Society.—At present there seem but a very few who have stated their ideas in the leading papers on horticulture, in favour or otherwise, on this subject. I am afraid the British public, as a rule, does not like to reply in a paper, but would rather do so *viva voce*. Is it to be a passing glimmer for us Orchid growers, and to fall through for want of support? I have heard from a member of the Royal Horticultural Society's Floral Committee, who says: "Good may come . . . from ideas clearly stated." I am ready to forward this society to the utmost, and am much surprised to see no letter from a single one of nearly ninety Orchid men (commercial and private) that I could enumerate. Are we to wait and hear what is to be said at the Royal Horticultural Society's dinner and not do anything till then?—or are we to wait till too late in 1886 for the Society to do anything this year? We have an Orchid-growing member to a large extent in the new Secretary of the Royal Horticultural Society, viz., W. Lee, Esq., and between the President and him we may, of course, expect a good deal for our hobbies. I have offered pecuniary assistance to sound the Orchid-growing community, as referred to in my former letter on p. 85, and am prepared to do so yet, unless the Royal Horticultural Society takes upon itself the formation of the society; but I think now a certain sum should be got together as a kind of "preliminary expenses." I cannot but feel sorry that the response to so good a letter as Mr. Burbidge's, on p. 56, should be, as it is, practically *nil*, as yet. Let us hope there is a large mass of support lying dormant. I cannot rest quiet while I think we have such a chance as we now have for our special society and so few appear to care whether it lives or dies. May we not be told publicly what is to be done by the Royal Horticultural Society in anticipation of the dinner, as there are a great many of us who will not be present thereat? All supporters should speak out. *De B. Crawshay.*

Pelargonium Souvenir de Charles Turner.—The origin of this variety of Ivy-leaved Pelargonium is the result of a cross between Comte Horace de Choiseul, the parent plant, and Masterpiece, a single variety, the pollen plant. I have a batch of seedlings, all of the first merit, raised from the same parents; some are self-coloured, others have beautiful markings on the upper petals. The habit of the whole of the seedlings is very compact and strong; some are single-flowered, and I have measured some blooms that were 2½ inches across, that were grown in small 48-pots. *R. Owen.*

Poinsettias Dropping their Bracts.—I have read with much interest your correspondents' answers to the question—"Why do Poinsettias drop their bracts?" I have found in my experience that the bracts will fall when they are root-bound. My practice has been to cut them back after flowering within two or three eyes of the old wood, then pot them, keep them cool and dry until they begin to grow, when water is given, sparingly at first, increasing it with the growth of the plants. As the days begin to lengthen give more water and light. After all danger of frost outside, bring them out, and plunge them in the full sun; syringe overhead occasionally, and repot whenever the roots touch the sides of the pot; they should be watered often, and a steady growth kept up. Before cool nights in September set in they

should be brought indoors, and placed on the benches of the intermediate-house, pursuing substantially the same treatment; by the end of the year the bracts will be in splendid form and colour. I think manure-water is of no benefit, as I find they grow rampantly enough with ordinary garden loam. Being Mexican plants, they thrive under the treatment indicated. *C. E. H., Springfield, Illinois, January 6.*

"The Treasures of the Snow."—I have before me a series of lithographs of flowers from the arctic regions from paintings by Madame Ebba de Ramsay. The flowers were collected during the various Swedish expeditions to discover the north-eastern passage through Behrings Sound, to make known the arctic regions, and to reach the North Pole, between the years 1858 and 1880. About sixty distinct plants have been painted, and the first series of eight have been published, they are:—Carex gloriosa, Wnbg.; C. lagopina, M. Fries; Polemonium pulchellum, Roth.; Saxifraga nivalis, Wnbg.; S. cæspitosa, Wnbg.; S. oppositifolia, Wnbg.; Potentilla pulchella, R. Br.; Taraxacum phymatocarpum, Vahl. The object of this lady in publishing the plates is to devote the profits to mission work at Wilhelmsro, Sweden; she has also presented a number of sets in aid of the "Mission to the Kabyles" in North Africa. I can truly say the pictures are not only interesting, but beautifully executed. If any reader feels inclined to aid in a good work they can do so by purchasing a set of the "Treasures of the Snow," from my old friend, Mr. E. H. Glenny, Linton Road, Barking, Essex, who is Hon. Secretary to the Mission, and who will send them, free by post, on payment of 5*s*. *J. Douglas, Great Gearies, Ilford.*

Bougainvilleas and Bignonia venusta.—In your issue of January 2, p. 19, mention is made of Mr. Paul, Osborne Villa, Bowdon, Cheshire, having successfully flowered Bougainvillea speciosa. I should feel obliged to Mr. Paul if he could give a short account in the *Gardeners' Chronicle* of his treatment of the above species, as we have a plant here which has been planted out six years. It has always grown very freely making a number of shoots 14 feet in length. I have tried it with and without shade, but I have not yet been favoured with a single bract. In the same house is a plant of Bougainvillea glabra which has been continually in bloom since the first week in June up to this date. On December 17 I cut a good basketful for room decorations, where it lasted fourteen days, and was very much appreciated by the ladies during the Christmas festivities. Bignonia venusta has also flowered freely in the same house for the first time, having been planted four years. We find this a great addition for supplying cut flowers at this time of year. *Thomas Weaver, Oakly Hall Gardens, Basingstoke.* [The flowers of this plant are very grateful at this time of the year, and the rich orange-scarlet flowers were in this case well developed. ED.]

Outdoor Fruit Growing: Proposed Society in South Lancashire.—At the great show in November last of Chrysanthemums and fruit held in St. James' Hall, Manchester, there was not a single exhibit of hardy fruit placed upon the tables which had been grown in the neighbourhood of Manchester. This is a startling statement, and a sad reflection on the society organising the show, or on the gardeners and amateurs of this district. In whatever direction we go from Manchester, we find old orchards with the trees grubbed up or gone to decay. In a great many instances the fences are pulled down, and where there once were orchards the land is open, and cattle may be seen grazing beneath isolated, worn-out, and worthless kinds of Apple and Pear trees. It once was a pleasure and delight to visit Stretford, Urmston, Flixton, Carrington, Ashton, and the adjacent villages when the fruit trees were in bloom, and again when fruit hung on the branches in abundance. Would it not be a great pleasure and delight to again see not only the old orchards resuscitated, but a large number of new ones planted? Is there less need for fruit than there was? Does the present generation turn its back upon fruit? The thousands of tons of fruit imported from other countries tell us the taste is growing and not diminishing, and, from a national point of view, it is our imperative duty to make the best of circumstances. Thousands of tons of fruit ought to be grown within a radius of 20 or 30 miles round Manchester. I fancy I hear some one say, "You cannot grow fruit in this district." In reply, I say it has been done, and in a few instances is now being done; and if the same amount of attention were given to fruit-growing which is now given to milk-producing, we should have abundance of fruit. At the exhibition held in London in 1883, 336 varieties of Apples were exhibited from Cheshire alone. This is undoubted proof that fruit can be grown, and if a judicious selection of varieties suited to our northern home were planted, I feel certain it can be grown to profit. Let any one doubting this ask the Carrington grower whether the cultivation of the Grenadier Apple has not paid him, and well, too. A few friends met together the other night, and decided to establish a society in Manchester whose labours should extend some twenty or thirty miles around the city, for the purpose of disseminating a knowledge of the mode of culture in all its branches, and aiding the growers in the selection of varieties most suited to the diversities of soil, situation, and the climatic condition of the district. I shall be glad to hear from any person who may wish to help us in the formation and carrying out of such a society. Its objects and aims are good, and we solicit the co-operation of all lovers of the garden to give us their hearty support. *James Turner, in "Manchester City News."*

Charcoal for Orchids.—I see in the *Gardeners' Chronicle* for January 16, p. 78, that Mr. Bradshaw, in his article, strongly recommends charcoal to be used in potting Orchids. I think Mr. Bradshaw must have been using a much better quality for the purpose than it has been our lot to get, if he finds it such a good thing for the plants. I have lost all faith in it now, and have done without it for the last two years, and we are working it out of all plants as their turn comes round for potting. I thought I had given it a fair trial; as we had plenty, it was often used as drainage, without any crocks, so as to make large specimens lighter to handle, also mixed with the potting material. Peat charcoal we have also used plenty of, mixing it with the sphagnum for Aërides, Vandas, &c.; but with everything after about twelve months it has turned sour, especially so with East Indian and cool Orchids. It has kept better with Lælias and Cattleyas: I attribute this to the former having more water. Then again as to burnt ballast. I have found the plants that were drained with this material, to keep sweet for a long time, not that we use any of this, but I have noticed plants that have come from a nursery, and if the ballast is in good sized lumps Cattleya roots will go down about it and keep very healthy. Respecting charcoal, my advice has been of late, do not spend one penny on this to pot Orchids; but if I see plants doing better with charcoal I shall soon give it another trial. *C. Woolford, Downside, Leatherhead.*

The Daffodil.—As Mr. Miles, in your issue of January 2, p. 22, has again brought this interesting plant under the notice of your readers, I would like, with your indulgence, to notice one or two of his remarks, and also suggest a few points to your readers who are interested in this plant to take notice of during the coming season. Like Mr. Miles, I think it is very important to know that the Pseudo-Narcissus in the neighbourhood of Naples is oftener found in a wild state with double than with singla flowers. I would like very much to know what form these doubles take—is it telemonius, or any of the other forms of large strong double Daffodils?—or is it the double Pseudo-Narcissus, with bulb, grass and flower of the Pseudo-Narcissus habit, as shown at the Daffodil Conference last April? Out of all the correspondence which has appeared in your columns during the past few years on this subject of doubling, I have always failed to understand what form the doubles have taken; being engaged in this inquiry I am very anxious that others likewise engaged would let us know the forms they take in their hands. It has always seemed strange to me that out of all the millions of blooms of the Pseudo-Narcissus to be seen in our markets from France and the South of England, I have never seen, nor known any one else who has seen, a double Pseudo-Narcissus bloom; I have also inquired of those who gather bulbs and blooms in the South of England if they ever found the double Pseudo in the wild fields where they are found, but the answer is always "No." It would therefore be satisfactory if your readers who are interested, and who reside in districts where the Pseudo grows wild, if they would keep a strict watch during the coming season for any double flowers of the Pseudo-Narcissi. My experience in the matter has not extended over more than six years, but short as it has been, it has not been uninteresting. I started with 10,000 bulbs from Sussex; these I planted at the bottom of a wall in a strong clay, and, as I thought, they all flowered the first year—all single and very poor blooms. Year by year they have increased in number, and enormously improved in quality, and during the last two years a very considerable number of doubles have appeared, of which I sent samples of plants in flower to two of your leading authorities in London. As my Narcissi are entirely grown for cut flowers, I am glad to say I have been more fortunate than the growers Mr. Miles mentions, who had only two or three blooms off hundreds of bulbs, as last year I pulled from three to six from what was one bulb six years ago. Perhaps Daffodils are like Potatos—delight in a change; and the change is considerable from the chalk of Sussex to the red soil of East Lothian. *George Sinclair, Florist, East Linton.*

Cestrum (Habrothamnus) elegans.—So much has been written from time to time respecting this ornamental greenhouse plant that there seems very little left to say about it; nevertheless I am tempted to tell you of a fine specimen that came under my notice a few days since. It is thriving in a tub, and occupying a central position in Mrs. Rowe's conservatory at Lafronda, Exeter, where the gardener, Mr. Baker, has treated it as a shrub, and the appearance of the plant is like a huge fountain, the graceful spreading branches reaching to the height of 10 feet, whilst its many shoots are weighed down on every side with dense terminal cymes of purplish-red flowers. This specimen is 12 feet wide, and forms a brilliant canopy to the miscellaneous plants beneath. On the same day I saw two other specimens of the same variety at Streatham Hall, Exeter (Mrs. Thornton West's beautiful home), in the large Camellia-house; but these were growing as climbers, and were trained from the floor to the roof on wire trellises much in the form of two monster fans. Mr. Franklin, the head gardener there, speaks highly of this useful plant as a winter bloomer, and I quite agreed with him that its cultivation ought to be more general for that purpose. *W. N.*

White Gros Colmar Grape.—A few days since, through the courtesy of Mr. J. Roberts, of Charleville Forest Gardens, Tullamore, I had an opportunity given me of pronouncing an opinion upon the above Grape, which was raised at the above far-famed Grape-growing establishment by Mr. Roberts, whose name in connection with Charleville Gardens, and the annual production of first-rate Grapes has become a household word in the horticultural world. It is the result of a cross between the Gros Colmar and the Duke of Buccleuch; the former being the parent plant fertilised with pollen from the latter. The berries of the new-comer, in point of size and shape, are the same as Gros Colmar, while the colour is that of the Duke. The flavour is rich and pleasant, partaking somewhat of that of both parents, and is quite distinct from that of any other Grape with which I am acquainted. If all the berries composing the individual bunches indicate such keeping properties as those received do, the white Gros Colmar will prove a decided acquisition to the list of late white Grapes already in cultivation. Mr. Roberts says it is, like the Gros Colmar, a very strong grower, and produces large thick leaves, and that he intends growing it in a better position in his vineries this season. *H. W. Ward.*

Iris reticulata var. sophenensis.—This choice introduction of Professor Foster's, now flowering in the Cambridge Botanic Garden, where it opened about the 17th inst., has not only the merit of being the earliest flower of the year, but that also of possessing considerable interest and beauty. It is further decidedly distinct, as shown at once by the absence of leaves, while those of its congeners are above ground, without the accompaniment of flowers, and as shown also by dwarf habit and spreading flowers of reddish-purple colour. The ruddiness of their general appearance was at first the most noticeable feature, and it is, perhaps, all the more striking on account of the deep steel-blue which takes part in the coloration, illuminating, as it were, the duller reddish-purple colour which predominates. In colour,

briefly stated, the falls are reddish-purple, with a median ridge of yellow not so bright as in the type, while the styles are of the beautiful blue above referred to, except that it changes to reddish-purple along the thin sides and at the top. Description, however, is unnecessary, as Professor Foster has already so fully given the characteristics of his novelty. That it increases freely is fortunate, because when seen in mass the conbined effect of the flowers in their distinct form and colour will probably be more striking than at present might seem possible, and it is undoubtedly a good acquisition, though not the finest of its group. No protection whatever was given to this plant in the Cambridge Botanic Garden until it became necessary to protect the flower; so that from the test of recent weather it must be very hardy. Surpassed as Iris histrio now seems to be in point of earliness, it is not very far behind, having opened not more than two or three days later. *R. Irwin Lynch.*

The Seville Longpod Bean.—I assume that this Bean was introduced to England by Messrs. Vilmorin-Andrieux & Co. of Paris; if so, this must have taken place nearly thirty years ago, and yet it was comparatively unknown up to within the last six or seven years. As far back as 1860, Messrs. Drummond & Son, of Stirling, sent to London some very fine specimens of it, but it did not appear to have taken with the London seedsmen—certainly not to anything like the extent to which it has become recognised in the present day. It would be interesting to know what was its origin. In its habit of growth it approximates to the Dwarf Fan section, but then its lengthy pod points to an altogether distinct parentage. It has become the exhibition Longpod Bean *par excellence*, it is early, dwarf, and reliable, but is distinctly not a heavy cropper; and notwithstanding that the Early Mazagan Bean is so persistently represented as being an early variety, it is days behind both the Seville and the Early Longpod, and inferior to both in quality. There are not nearly so many Mazagan Beans sown as there used to be, which is one proof that it is not so highly esteemed by gardeners as is supposed. There is one Bean that deserves to be much more widely grown, viz., Beck's Dwarf Green Gem. This originated as a sport from the Dwarf White Fan; it is early, very prolific, and of the highest quality, and yet it is not nearly so much grown as it deserves to be. Is it because there exists a prejudice against green Beans? That need not exist, but it does evidently exist, to the prejudice of an excellent variety. This, and the Seville Early Longpod can be sown for early crops, and be followed by any good Longpod of the Johnson's wonderful type, and a fine type of the Windsor Bean for the main crop. *R. D.*

Exhibitors of Thirty Years Ago.—In your issue of January 2 mention is made of the death of Mr. William Cole, and of his father, whose names were well known at the metropolitan exhibitions associated with Mr. Baines and others. I believe this is a mistake, as Mr. Baines was not a contemporary exhibitor of Mr. Cole, he having come to London with his exhibits fully ten years after Mr. Cole left for Manchester. [It should have been Barnes.] I knew Mr. W. Cole personally, and many of his contemporaries as exhibitors, viz., Stanley, of Sidcup; Malyon, of Lee; Barnes, of Bromley fame; Hunt, of Hayes; May, of Beckenham; Ayres, of Blackheath; Epps, of Maidstone; and Cole—which represented the Kentish fire of those days. Then there was the Surrey side, headed by Green, of Cheam; Carson, of Nonsuch Park; Taylor and Rosher, of Streatham; George Clarke, of Shirley Park; Banham, of Monk's Orchard; B. Peed and S. Smith, of Norwood; Laybank, of the same locality; and the Mays, of Ealing; W. Speed, of Edmonton, bringing up the rear, with many others now no more. What an array of Auld Lang Syne this retrospect awakens: what grand plant growers they were many of them; let it be but known that a plant had beauty and was difficult to grow, or "miffy," as was then the term, that was the plant most sought after—their honest pride being to produce such as no one else could do. In my mind's eye I can see Mr. Cole, senior, staging those glorious Dartford plants, he steaming with perspiration, and eyeing the while keenly his opponent's group. Mr. Barnes was another characteristic figure. When, on one occasion, Her Majesty admired one of his plants at Chiswick, it was suggested to him by a friend to present the plant to Her Majesty; he promptly replied in a style that will not soon be forgotten. What colour those Kentish men invariably obtained in their plants! Hunt's Leschenaultias have never been surpassed, and a Boronia serrulata shown by him was a thing of beauty long to be remembered. It is a pity we have no more lasting memoir of these fine old gardeners than is preserved in the journals of their time, for they deserve to be brought before the view of the present generation of gardeners. I think their zeal in horticultural pursuits might be with advantage brought forward by the Press, to the undoubted benefit of the craft. My intrusion upon your time and attention can only be excused by my love and admiration—I had almost said reverence—for them. My young days were spent with some of them, especially with Mr. Taylor, for whose memory I entertain the highest respect; he died at Shrubland Park, as gardener to Sir W. Middleton, twenty years ago. *J. Peed, Mitcham Road, Streatham.*

FORESTRY.

PRUNING.

THE question is frequently asked, Do you approve or disapprove of pruning? The question thus put is unfair, and would therefore elicit an unfair answer. Principles for pruning may be laid down, but rules cannot be given without incurring the risk of doing more harm than good. That certain operations of pruning can be done with good effect there ought to be no doubt or hesitation, but that much mischievous and injurious pruning is done daily is equally certain, and to be lamented. It gladdens the eye and rejoices the heart of every good forester to see right and proper pruning done, and it correspondingly distresses him to see what he is doomed to witness every day in the malpractice of the art. Cutting off a branch is a very simple and unimportant act in itself, but it may be a grand and successful stroke or a deadly and disastrous one. The leading principle to be observed is never to cut off a branch from a tree unless absolutely necessary — necessary in a sense akin to that of the amputating of a limb from the human body. One of the causes of improper pruning being so common is on account of the fallacious belief that if one branch or limb is cut off, the sap which formerly flowed into it will, after the amputation is done simply change its current and flow into the adjoining branch, and thereby give to the one what was taken from the other. In the case of a tree growing up with a forked or double stem, one of them is cut away, for the simple reason that, if allowed to grow in that form, the future tree would be less than half the value it would otherwise be with a single stem or trunk.

This, however, is not generally regarded as the only object gained by cutting away the twin stem, for it is the popular belief, that if the twin stems are each annually gaining 2 inches in girth, if one of the two is cut away, the one left will not, as formerly, grow only at the rate of 4 inches annually. This theory, though not unlikely, is a false one, for it will be found by any one who may choose to examine the structure of the wood years after the operation has taken place, that the layers or zones in the stem had not increased as anticipated, but in all likelihood had rather decreased. Some sections of wood in our possession, cut for the purpose of examining their structures, show one general though not uniform result varying in certain particulars. Some of them show a considerable falling off in the thickness of the layers, beginning with the first season's growth, in others the decrease is not visible till the second year, but in all the sections the third year's layer is somewhat thinner than the one produced during the year in which the operation was made.

How and by what means, then, is the stem ever to be increased in thickness if it thus decreases as above described? It increases by a new and different process of growth altogether, in the following manner. Soon after the stems have been separated the bark of the remaining one begins to show little risings here and there which in due time produce buds, these again form small twigs, which ultimately form branches and limbs. It is from this new set of spray and branches that the stem growth begins to increase—from no other source and from no other cause. Now, if we thoroughly understand this principle of physiology, it will help us greatly in regard to pruning, and keep us out of many errors commonly fallen into. The result of pruning is to create rather than develope: to form a new series of growths rather than increase and extend the old ones. When any branch is cut off, the result is, that an embryo bud in its neighbourhood is thereby so far influenced by the operation that it developes into a new and distinct branch, and starts growth, as it were, on its own account, rather than by contributing to the growth of the branch from which it takes its rise. I saw the other day an example of what I have been trying to describe. It was a Sycamore shoot of underwood of about 1¼ inch in diameter from which a branch had been lopped off in the ordinary work of heading back game covert. At the cut part a young shoot had started, and at four years' growth had become thicker than the original stem of ten or twelve years' growth from which it sprung. *C. Y. Michie, Cullen House, Banffshire.*

THE PEAR CONGRESS.

AMONGST the gardeners who visited the exhibition of Pears recently held at Chiswick (and surely there were many who availed themselves of the privilege), there were few who could take even a cursory view without being interested and instructed thereby; not that there was anything particularly sensational, either in size or quality, amongst the exhibits, nor were there finer or more beautiful examples than are frequently seen at the best fruit shows either in the metropolis or in the provinces, but the quantity was simply enormous, and the varieties were so numerous that had not the arrangement and the classification been almost perfect, the mind as well as the vision would have been more than bewildered.

The arrangement of the different collections from the respective counties in juxtaposition afforded ample facilities for making easy comparison, and the trouble the committee had taken to name the unnamed, as well as to rectify the misnamed varieties, was of much practical value; not that in every instance the method was perfectly clear to the ordinary visitor, although it might have been to the professional one, an instance of which occurred in my hearing. A young lady intensely interested in Pears, with eyeglass in hand, read out aloud D. "cretaceum," but I presume, not feeling quite certain of the accuracy of the name, or of the correctness of her Latin grammar, she passed on to D. caudatum, when she exclaimed to her companion, "Dear, do Pears have—? I see no tails. What can it mean?" On being gently told that the labels had by some misfortune been overturned, and that the true name was written in pencil on the other side, her countenance as well as her eyeglass immediately fell; and I verily believe her day's pleasure was marred, and that she fervently wished herself at home again. Had the names been legibly written on plain white cards such a catastrophe would not have occurred.

Although there were some splendid examples from France and the Channel Islands, as well as a few from the most favoured Home Counties, which could not fail to arrest the attention of even the most cursory observer, still, that which impressed the visitor most, perhaps, was the enormous quantity of second, third, and even fourth rate specimens which comprised many of the collections, and in some of them scarcely a presentable dish was to be found. It was of course well understood that the desire of the committee was not so much to obtain perfect specimens as to secure numerous varieties; but even after making due allowance for this fact, the exhibition, taken as a whole, showed most conclusively that either our methods of Pear culture, or our climate, or both, are far from being perfect. Not only were the majority of the fruits deficient in size, but they were also very defective in clearness of skin, colour, and that general finish which constitutes a good Pear. As to flavour, there were half-a-dozen gentlemen doing their utmost for an hour to determine this delicate matter, but their palates as well as their stomachs must have been sorely tried, and quite unequal to the prodigious undertaking, notwithstanding they persevered gallantly in their task, with the laudable intent, no doubt, of satisfying the relentless demands of science.

While observing their persistent attacks on the luscious fruit, I wondered if they were proving the merits of the newer sorts only, or whether they were also endeavouring to determine the comparative

merits of special varieties as grown on different stocks and cultivated in the orchard-house, on the open wall, and in the open garden, and if so, whether in the report which we hope soon to see this desirable information will be imparted. This and similar details which might at such exhibitions as these be ascertained with comparative ease, would be invaluable for our future guidance.

There are some excellent yet tender varieties which, even when grown in the South of England, simply cumber the ground, unless they have the suitable protection either of an orchard-house or of a glass coping, but when grown under this friendly protection they are of all Pears the most valuable.

If such be the case in the South, how much greater the necessity for such protection in the North of England, and how very valuable would be any such information as before indicated.

It is generally thought that even a south wall is too good for even the best varieties of Pears, but the late Mr. Rivers was not of this opinion, but strongly advocated orchard-house culture for the late kinds; and I have a strong suspicion that a few of the very best specimens exhibited at the Congress were so grown.

That nearly all the varieties require protection from bad weather during the spring and early summer months is incontestable, and that a prolonged fine autumn is also advantageous for the ripening process is equally certain; and yet when we remember how very seldom it is that we are favoured with either mild springs or fine autumns it need be no cause for surprise that we so seldom see perfect English grown Pears in quantity either in the market, the exhibition, or on the dessert table.

The finest fruit I have seen during the last three years has been grown on the south side of a factory wall, the wall itself being about 30 feet high, and where the trees are not only sheltered by the wide eaves of the roof, but where they are also benefited to a considerable extent by the heat absorbed by the brickwork from the interior of the building, which is invariably maintained at a high temperature. The sorts comprise Pitmaston Duchess, Marie Louise, Glou Morçeau, Gansell's Bergamot, Josephine de Malines, Van Mons' Léon le Clerc, Passe Colmar, Beurré. Diel, Easter Beurré, Knight's Monarch, Winter Nelis, Chaumontel, and Beurré Rance. These trees have never been frozen since they have been planted in this position ten years ago; the foliage is remarkably fine, the young growth healthy and always ripened to the tips, the bark of stems and branches is exceedingly bright, and the fruit is equal in size, colour, and general quality to the best I saw at the Congress from the Channel Islands.

If I may venture to express an opinion after perusing my notes, made at the Congress, on the respective collections, I should say that in the best southern, midland, and western counties an average of eighteen varieties is the greatest number that can be depended on for satisfactory results when planted in the open garden or against an unprotected wall; while in the less favoured counties the number does not exceed twelve, and in the worst eastern and northern counties the average is reduced to six. As but few of the best late varieties are included in this estimate it is not at all surprising that the importation of late Pears continues to be so enormous and profitable.

But as the full report of the Congress will soon be published we shall no doubt then receive such valuable tabulated and other information on all details connected with the Pear as will be of immense value to future planters. *T. Challis.*

PLANT PORTRAITS.

ARENARIA BALEARICA, *Garden*, January 16, 1886.

CERCOCARPUS BETULIFOLIUS, *Garten Zeitung*, November, 1885.

FERONIA ELEPHANTUM, *Gartenflora*, t. 1206.

LÆLIA PINELLA, L. PRÆSTANS, *Revue de l'Horticulture Belge.*

NYMPHÆA SPHÆROCARPA VAR. ROSEA, *Illustrirte Monatshefte*, January, 1886.

OPHIOPOGON SPICATUM FOL. VAR.—Leaves linear, green with narrow white stripes. *Revue de l'Horticulture Belge*, December, 1885.

SPIRÆA BRACHYATA, *Deutsche Garten Zeitung*, January, 1886.

TRITELEIA UNIFLORA, *Garden*, December 5, 1885.

COLONIAL NOTES.

FRUIT DISEASES IN NEW ZEALAND.

THE following interesting and important extracts are taken from a report by Professor Kirk to the Minister of Lands, regarding the fruit blights and diseases of fruit trees in New Zealand:—

The Professor says, concerning prevention and remedy, that in former years fruit cultivation was carried on under easy conditions; few insects had been introduced, and indigenous kinds had not discovered the more enticing food-supply afforded by introduced fruit trees. All this is changed; a tree is no sooner planted than it is in danger of being attacked, and requires to be frequently inspected in order that noxious insects and fungi may be destroyed on their first appearance. The intending fruit grower should consider this risk before planting. Unless he determines beforehand that his trees shall be kept clean at any cost his anticipations of profit will be disappointed, and his orchards will be a source of infection for the whole country side.

As a general rule the old method of growing tall orchard trees, with large spreading heads, will be found to place fruit growers in New Zealand at a disadvantage when compared with the plan of growing dwarf trees occupying a smaller space. These have the advantage of being more easily sheltered from the high winds which visit most parts of the colony during the flowering season, and in exposed situations often cause a serious diminution in the crop. An advantage of still greater moment is found in the increased facilities afforded for detecting the first appearance of noxious insects, and for the application of measures to insure their prompt extirpation. It is difficult, if not impossible, to keep large-headed orchard trees free from insect pests; it is comparatively easy to keep trees 8 feet or 10 feet high in a clean condition, whatever mode of growth may be adopted.

The difficulty of keeping free-growing varieties of Apple worked on blight-proof stocks in a dwarf condition may be obviated by double-grafting, the stock to be first worked well above the ground with the "Paradise," and that in its turn with the variety required for permanent fruiting.

Unless grown in the pyramidal form, fruit trees should, as a general rule, be kept open in the centre, so as to admit the greatest possible amount of light and air. Insects increase most rapidly in proportion as they find shelter and protection on the trees which they infest.

In old neglected Apple orchards, where the branches are allowed to become interlaced, and almost shut out the light of day, patches of American blight may be seen with the cottony outgrowth 3 inches in length. When shelter is abundant the natural enemies of the insect have less chance of attacking it.

Prunings and thinnings from affected trees should be promptly destroyed; insects and fungi are often established in new localities by neglect of this simple precaution.

Moss and lichen should not be allowed to grow on the trunks and branches; grass and weeds should be eradicated from about the roots. No useless growth should be permitted, and everything calculated to afford needless shelter to insects should be removed.

The results of the application of insecticides should be carefully watched, and the treatment promptly repeated if found necessary. In the majority of cases insects may be extirpated with but little trouble on their first appearance, but if they are allowed to increase until the entire orchard is affected their extirpation will involve a large expenditure of time and labour. Constant watchfulness against insect pests, and promptitude in meeting their attack, will be found golden means for fruit growers in New Zealand.

It seems advisable to offer a few general remarks upon the remedies applicable to the chief classes of noxious insects, referring for fuller particulars of treatment to the detailed account given under each species.

Scale.—No insects are more easily destroyed than the Apple scale and its allies with horny shields; the castor-oil mixture, recommended under Apple scale, has never failed when properly applied. It is inexpensive, easily applied, and harmless to vegetation. It should be used during the winter or early spring months, before the commencement of growth, and should be applied with a light hand; in excessive quantities it tends to retard growth, but does no permanent harm. In all respects I prefer castor-oil to kerosene as an insecticide; it is equally destructive to insect life and does not injure the plant, as is often the case with kerosene. For those who prefer kerosene emulsions I would recommend 1 lb. of soft soap, dissolved in a gallon of boiling water, with the addition of a pint of kerosene. [A wineglassful is sufficient. ED.] Insecticides consisting chiefly of oils should always be applied lightly, as for the most part they cause injury to the superficial tissue of the plant. Mr. Weisenhavern, Mr. Budden, Mr. Hale, and other fruit growers, informed me that hundreds of fruit trees had been recently killed in and about Nelson by the use of kerosene, or kerosene and linseed-oil, to destroy scale.

White Scale.—Syringing, or spraying with a garden-engine, with a solution of caustic potash, 1 oz. to a gallon of water, is most effective; or the castor-oil mixture will be found excellent. Emulsions of turpentine and milk, or soapsuds applied with the syringe, would be of high value. "Concentrated lye" is strongly recommended by American cultivators as a remedy for scale. Its cost here would be 6*d.* or 7*d.* per pound, wholesale. It is applied with a syringe or garden-engine, in the proportion of 1 lb. of lye to a gallon of water; stronger solutions are injurious to the tree. It is said to contain about 8 per cent. of caustic potash, the remainder consisting of carbonate of soda, with a small percentage of caustic soda. I am satisfied that equally good results may be obtained with caustic potash alone, in the proportion of 1½ oz. to a gallon of water, at a cost o 1*d*, or 1½*d.* at most.

Leaf-fungi.—I believe solutions of permanganate of potash would be found effective with nearly all fungoid pests attacking the leaves. I hope to carry out a series of experiments in this direction during the coming spring. Dusting the leaves affected with fungi with sublimed sulphur, or with Goodhue's mixture, will be found productive of good results.

Root-fungus.—In addition to tar-water, I have to suggest the following experiments with a view of eradicating this pest:—1. Top-dressing of lime, at the rate of 12 bushels to the acre, to be dug in and well mixed with the soil. 2. The same, with the addition of 1 lb. of sulphur to each bushel of lime. 3. Top-dressing of soot, at the rate of 10 bushels to the acre. 4. Top-dressing of salt, at the rate of 3 cwt. to the acre, applied in the autumn. Mr. Goodhue's mixture applied in the dry state is destructive to the Chermes infesting Pines, and to many other insects, as well as to the black blight of the Lemon. If prepared for market, and placed before the public in a convenient form, it would doubtless meet with ready sale, as it is an insecticide of considerable value and easy of application.

With one important exception—the use of blight-resisting stocks for the Apple—the cultivation of plants possessing properties which render them distasteful, or even poisonous, to certain insects, has not received the attention it deserves, although it opens a field rich with promise. A few instances may be mentioned here. The common garden Nasturtium, planted amongst Apples, and allowed to ascend their trunks, is a preservative against American blight; white Mustard sown amongst Turnips protects them from the attacks of wire-worm; the beetle of the grass-grub, under certain conditions, feeds on the Castor-oil plant with suicidal results; the Cabbage aphis is repelled by the Tomato; Isatis tinctoria, the ancient Woad, protects root crops from attacks of the larvæ of various beetles; and it is stated that the common Flax (Linum usitatissimum) grown amongst Potatos will avert the attacks of the Colarado beetle. Facts of this kind demonstrate one class of the advantages that might be obtained from an experimental garden under competent supervision.

Referring to the American blight on the Apple tree, Professor Kirk remarks that some years ago attention was drawn to the fact that certain varieties of the Apple exhibited almost complete immunity from the attacks of woolly aphis, and that their roots were invariably exempt. This blight-resisting power was most strikingly exhibited by the Winter Majetin and Northern Spy, which has led to these varieties, with some others, being generally adopted as stocks for other kinds with the best results. Apples worked on these stocks are never attacked at the roots, and the branches suffer but lightly when compared with

trees worked on the Crab or on ordinary seedling stocks.

CANTUA DEPENDENS.—Walking one day in our Domain Park with the Superintendent, I espied in the distance, on one of the borders, a lovely floricultural object, which turned out to be my old obstinate friend, Cantua dependens. Many and many a time I tried to flower it when in England, and never succeeded; but here it was with its rosy-pink bell-shaped flowers in all its glory, with its branches drooping with the weight of its flowers, as its specific name implies, and, in consequence, hiding its charms; and here it had been planted without any protection for five years, the position being a dry, warm border. I went on my way murmuring that it was one of the many pets I had been too kind to when in England. *T. Smith, Timaru, N.Z.*

Reports of Societies.

MASSACHUSETTS HORTICULTURAL:

Boston, Jan. 2.

THE first meeting of the Society for this year was held to-day, the retiring President, John B. Moore, in the chair, who delivered his farewell address.

He congratulated the Society on the successful year just past. Among the causes of this prosperity he mentioned the lectures, essays and discussions conducted by the Society, which have awakened new interest and new ideas, as was shown by the exhibitions during the year. He also mentioned the prudence of awarding 1800 dol. in additional premiums over the previous year. President-elect Moore then introduced Dr. H. P. Walcot, the President-elect who then delivered his first annual address as President. He first spoke in touching words of those who had died during the past year—P. B. Hovey, who joined in 1829, and was Vice-President for several years, and member of many other important societies; Charles O. Whittemore, who presented the statues that surmount the front of the Hall, and was liberal with his advice and means towards furthering the objects of the Society; and the speaker referred also to Hervey Davis, to Henry A. Breed, one of the founders and the oldest living member of the Society, whose presence was a source of gratification to all, and to the Hon. M. P. Wilder, whom thus he addressed:—"Venerable leader of us all—old only by written records, young in your enthusiasm for our captivating art—long may you be spared to us and to this world of flowers and of fruits." The President next urged the importance of bestowing the great prizes upon specimens rather than upon miscellaneous collections of cut flowers. He spoke of the finances of the Society, which were in excellent condition, thanks to the committee of that department; the Fruit Committee has been instrumental in creating an increased interest in their culture; and the visit of the American Forestry Congress to Boston, he believed, had been productive of much good. He urged a change in the arrangement of the Society's building on account of the growth of the library. The great value of this collection of books is recognised, and it is admitted to be the best in the country, being rich not only in books of scientific and literary value, but in all that can be found of a practical character. The President, in conclusion, said that he approached the duties of the highest office in the Society with diffidence, knowing how much will be expected of him who follows the many men who have filled the place, but he would do all in his power to protect and advance the interests of the Society. The appropriations of prizes for the ensuing year are as follows, viz.:—For prizes for plants and flowers, 2800 dol.; fruits, 1700 dol.; vegetables, 1000 dol.; gardens, 300 dol. Total for prizes for the year 1886, 5800 dol.

Obituary.

MR. JOHN SCOTT.—With regret we have to record the death of the well-known pomologist, nurseryman, and seedsman, Mr. John Scott, of Merriott, Somerset, who passed away on Friday, the 22d inst., at the advanced age of seventy-nine, of inflammation of the lungs. The deceased gentleman had a life-long experience of horticulture, having begun his work when about twelve years of age by gathering mosses and lichens from his native mountains in Perthshire—a work he used often to say he delighted in. His earlier days were spent with one of Britain's most eminent horticulturists, the famous McIntosh, but in after-life he was some years in the Jardin des Plantes, Paris. He also held good places both in nurseries and gardens in England, the last of which was with Sir John Guest, of Canford, Dorset. From here he went to Merriott, some five-and-thirty years since, when it may be said his great labour commenced. He has greatly extended the nurseries to meet the requirements of "hobbies" he loved so well, viz., pomology and Conifers, and in which he was extremely well versed. At great labour and expense he ransacked the nurseries of Great Britain, the Continent, and America, and brought together one of the largest collections of fruit—certainly the largest of Pears—in the United Kingdom. After years of labour in comparing and describing the different varieties, he produced the first edition of the celebrated *Orchardist*. This was quickly followed by a second and much larger edition, in which is found an astonishing number of fruits described. He has modestly carried on a good work, and has endeavoured, to the best of his ability, to render to pomology some tribute, so that it may not be said he lived in vain. Coniferæ, forest trees, and ornamental shrubs—all have a home at Merriott, and well have they repaid the labour bestowed on them! Although during the last few years, owing to ill-health and age, he has not taken a very active part in the management, yet he remained in harness almost to his death. As an employer of labour he was of the first rank, considerate, kind, liberal, and forgiving, and extremely pleased to instruct all who sought him for information, from his foreman to his crock-boy. In the domestic circle he was ever a most affectionate husband, and his home was one of bright happiness—always glad to entertain a friend, who found in him a well instructed, learned, shrewd, and witty man on many subjects apart from horticulture. He was a life-long abstainer, and liked to see all about him the same, although never using authority to make them. He leaves a widow, and a host of friends, to mourn his loss.

—— PROFESSOR CHARLES E. HAMLIN, of the Harvard Museum of Natural History, died at his residence in Cambridge recently of pneumonia. He was a native of Augusta, Me., and was about sixty years of age. He was graduated from Waterville College, now Colby University, when about twenty-three years of age. Since that time he has devoted himself to teaching, giving his attention chiefly to the natural sciences. He was Professor of Natural Sciences in Waterville until about fifteen years ago, when he was called to the Harvard Museum of Natural History, where he has since remained. In this interesting department he was one of the best informed men in the country. Three years ago he came to Europe to examine a collection of specimens for Harvard, and made a successful tour.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 27, 1885.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.					Hygrometrical Deductions from Glaisher's Tables 7th Edition.		WIND.		RAINFALL.
	Mean Reading Reduced to 32° Fahr.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure. Mean from Average of 50 years.	Dew Point.	Degree of Humidity. Sat. = 100	Average Direction.		
Jan.	In.	In.	°	°	°	°	°	°				In.
21	29.18	—0.57	34.5	28.0	6.5	31.3	—6.0	29.9	94	N.E.: E.NE.		0.10
22	29.37	—0.38	33.4	27.5	5.9	30.7	—6.7	27.0	83	E. N.E.		0.07
23	29.24	—0.51	35.5	31.0	4.5	33.0	—4.5	31.8	96	N.NW.		0.08
24	29.31	—0.44	38.2	29.8	8.4	32.0	—5.7	29.0	88	E:S.E.		0.16
25	29.15	—0.60	40.0	26.3	13.7	34.6	—3.2	34.1	98	E.S.E.		0.26
26	29.41	—0.35	42.2	33.0	9.2	37.3	—0.6	32.5	83	S.S.E.: E.S.E.		0.00
27	29.67	—0.09	40.0	33.0	7.0	36.8	—1.3	34.8	92	S.E.: E.S.E.		0.00
Mean	29.33	—0.47	37.8	29.8	8.0	33.7	—4.0	31.3	91	Variable.		0.67

Jan. 21.—Snow from early morning till 11 A.M., to the depth of 1.8 inch; dull day.
— 22.—Slight fall of snow in early morning; dull day.
— 23.—Snow fell in early morning to the depth of 2.3 inches.
— 24.—Snow from early morning till 11 A.M.; sunshine at times in afternoon.
— 25.—Very dull, thick fog all morning; rain at about 11.45 P.M.
— 26.—Very fine and bright at times during the day; fine night.
— 27.—Dull in early morning: fine bright day and night.

LONDON: *Atmospheric Pressure.*—During the week ending January 23, the reading of the barometer at the level of the sea decreased from 29.68 inches at the beginning of the week to 29.04 inches by 9 A.M. on the 18th, increased to 29.61 inches by 5 P.M. on the 20th, decreased to 29.34 inches by 9 A.M. on the 21st, increased to 29.55 inches by 9 A.M., decreased to 29.52 inches by 1 P.M., and increased to 29.60 inches by 5 P.M. on the 22d, and was 29.42 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.40 inches, being 0.39 inch lower than last week, and 0.52 inch lower than the average of the week.

Temperature.—The highest temperature in the shade in the week was 41°.2, on the 17th; on the 20th the highest temperature was 32°. The mean of the seven high day temperatures was 35°.4.

The lowest temperature was 22°, on the 19th and 20th; on the 18th the lowest temperature was 32°. The mean of the seven low night temperatures was 27°.8.

The greatest range of temperature in one day was 13°.5, on the 19th; the smallest, on the 18th, was 3°.5. The mean of the seven daily ranges was 7°.6.

The mean temperatures were, on the 17th, 36°.6; on the 18th, 33°.5; on the 19th, 28°.9; on the 20th, 27°.8; on the 21st, 31°.3; on the 22d, 30°.7; and on the 23d, 33°; and these were all below their averages by 0°.2, 3°.4, 8°.1, 8°.4, 6°, 6°.7, and 4°.5 respectively.

The mean temperature of the week was 31°.7, being 4° lower than last week, and 5°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 64° on the 17th. The mean of the seven readings was 47°.2.

The lowest reading of a minimum thermometer placed on grass was 22°.9, on the 28th. The mean of the seven readings was 26°.5.

Rain.—Snow fell on three days, and the amount of rain and melted snow was 0.25 inch.

ENGLAND: *Temperature.*—During the week ending January 23, the highest temperatures were 49°, at Truro, 47°.1 at Plymouth, 45°.6 at Bradford; the highest at Sheffield and Hull was 39°, at Liverpool 39°.1. The general mean was 42°.1.

The lowest temperatures were 12° at Hull, 17° at Sheffield, 19° at Leeds; the lowest at Liverpool was 25°.2, at Bristol 24°.5, at Brighton 24°. The general mean was 21°.2.

The greatest ranges were 29° at Truro, 27° at Hull, 24°.3 at Plymouth; the least ranges were 13°.9 at Liverpool, 15°.7 at Nottingham, 17° at Preston. The general mean was 20° 9.

The mean of the seven high day temperatures was highest at Truro 41°.6, at Plymouth 40°.3, at Brighton 38°.1; and was lowest at Sheffield 34°.7, at Blackheath and Wolverhampton 35°.4 The general mean was 37°.

The mean of the seven low night temperatures was highest at Truro, 29°.9, at Liverpool 29°.4, at Bristol 29°.2; and was lowest at Wolverhampton, 25°, at Hull 25°.1, at Sheffield 26°.5. The general mean was 27°.9.

The mean daily range was greatest at Plymouth, 13°.1, at Truro 11°.7, at Brighton 11°.5; and was least at Liverpool 6°.5, at Newcastle 7°.3, at Blackheath and Preston 7°.6. The general mean was 9°.1.

The mean temperature was highest at Truro, 35°.5, at Plymouth 33°.5, at Sunderland 33°.3; and was lowest at Hull, 29°.4, at Wolverhampton 29°.9, at Sheffield 30°.4. The general mean was 32°.2.

Rain.—The largest falls were 1.61 inch at Truro, 1.35 inch at Brighton and Hull. The smallest fall was 0.48 inch at Wolverhampton, 0.59 inch at Preston, 0.68 inch at Cambridge. The general mean was 0.92 inch.

SCOTLAND: *Temperature.*—During the week ending January 23, the highest temperature was 40°.7, at Aberdeen; at Edinburgh and Dundee, 37°.7. The general mean was 38°.7.

The lowest temperature in the week was 6°, at Perth; at Greenock the lowest was 23°. The general mean was 14°.9.

The mean temperature was highest at Greenock, 32°.6; and lowest at Perth, 27°.6. The general mean was 30°.7.

Rain.—The largest fall was 1.39 inches, at Edinburgh; the smallest fall was 0.26 inch, at Aberdeen. The general mean was 0.66 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON." GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

BEECH TREE: *J. Hearnen.* The only way to prevent further damage would be to cut down the tree, and either burn it entirely, or detach the bark, burning that, and treating the wood to a high temperature, or to washings of strong carbolic solution. The species of aphis will infect other trees if it be left undisturbed. The insects, by eating away the inner layer, commit great ravages, for which there is no cure.

BOOKS: *H. M.* We know of no books dealing on each subject separately, but we think you will get all the information you want in *The Ladies' Companion to the Flower Garden*, by Mrs. Loudon, published by Messrs. Bradbury, Agnew & Co., Bouverie Street, London, E.C.

CAMELLIA LEAVES: *F. S.* These have been "scorched" when wet; perhaps some of the glass in your house is of bad quality.

COLOURING FLOWERS: *G. H. S.* You will find what you require in Mr. F. W. Burbidge's book, *The Propagation and Improvement of Plants*, published by W. Blackwood & Sons, Edinburgh and Lond n.

NAMES OF PLANTS: *J. R. Pearson & Sons.* Cœlogyne testacea.—*J. Norris.* 1, Dracæna var.; 2, Adiantum hispidulum; 3, Selaginella Mertensii; 4, Davallia dissecta; 5, Adiantum Capillus-Veneris var. Moritzianum; 6, A. cuneatum; 7, A. Capillus-Ve neris var.; 8, Selaginella denticulata; 9, S. d. var. aurea; 10, Sibthorpia europæa"; 11, Salvia Gesneriflora; 12, Drynaria Billardieri; 13, Polypodium angustifolium; 14, Saxifraga sarmentosa; 15, Adiantum formosum; 16, A. decorum; 17, Davallia canariensis; 18, Cheilanthes fragrans. We would remind our correspondent that our rule is to name only six plants at a time, but in this case eighteen were sent, causing us an expenditure of time, trouble and expense which is not just to ourselves or our other friends.—*J. P.* Acacia dealbata, Asplenium adiantum nigrum.

PLANTS DOING BADLY IN THE WINDOW OF A ROOM: *F. T.* The plate-glass of the window is not to blame for the plants growing so unsatisfactorily, but the want of air and the ungenial surroundings of a room; at least for subjects such as you mention. Those might grow fairly in the summer time, but are not adapted for such a position in the winter. Choose plants with hardy foliage, as Yuccas in variety, Aspidistra lurida, Ficus elastica, F. australis, Myrtles, Eugenias, Oranges, Lemons, Palms, viz., Livistona borbonica, Chamærops in variety; Dracæna australis; Acacia, with hard leaves, as longifolia and armata; Epiphyllum, and other Cacti; Hoya carnosa. Any plants grown for their blooms, excepting Tulips, Crocuses, and Hyacinths, will most likely drop their buds in the dry air of a room, and are, therefore, useless for the purpose. Ferns and mosses will do under bell-glasses and in glass cases.

SHRUB: *G. Burgess.* Probably Hippophæa salicifolia, the Himalayan form of H. rhamnoides, which has larger leaves, and is a stronger and more robust grower than the British type.

STRATAGEM PEA: *W. M. B.* We cannot interfere in the matter; you should send your inquiry to the firm in question.

TEMPERATURE FOR MUSHROOM-HOUSE: *Fungus.* The place should be kept at about 58°, and if it should not rise to a higher grade than 60°, no harm will result. Mushrooms grown in high temperatures are deficient in substance or weight, are usually long-stalked, and the beds become soon exhausted. Mushrooms will grow at a temperature of 50° to 55°, and bear well, but the produce comes on slowly, and is very good in quality.

*** All communications intended for publication should be addressed to the "*Editor*," and not to the Publisher, or to any member of the staff personally. The Editor would also be obliged by such communications being *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

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CATALOGUES RECEIVED.

W. B. HARTLAND, 24, Patrick Street, Cork—Year-book of Seeds.

CHAS. SHARPE & CO., Sleaford, Lincolnshire—Seed List.

H. CANNELL & SONS, Swanley, Kent—Floral Guide.

E. J. JARMAN, Chard, Somersetshire—Kitchen and Flower Garden Seeds.

C. POCOCK, Wincanton, Somerset—Kitchen Gardens, Farm, and Flower Seeds.

LIVERPOOL HORTICULTURAL SOCIETY (J. COWAN), Liverpool—Vegetable and Flower Seeds.

THOS. DAVIES & CO., Wavertree Nursery, near Liverpool—Kitchen Garden and Flower Seeds.

W. THOMPSON, Ipswich—Supplement to Flower Seed Catalogue.

THOS. IMRIE & SONS, 137, High Street, Ayr—Vegetable and Flower Seeds.

CLARK, BROTHERS & CO., 65, Scotch Street, Carlisle—Garden Seeds.

FISHER, SON & SIBRAY, 4, Market Street, Sheffield—Kitchen Garden and Flower Seeds.

W. BULL, 536, King's Road, Chelsea, S.W.—Flower and Vegetable Seeds.

BEN. REID & CO., Aberdeen—Spring Catalogue.

W. RUMSEY, Waltham Cross—Garden and Farm Seeds.

HOWDEN & CO., Muirtown, Inverness, N.B.—Vegetable and Flower Seeds.

HOGG & WOOD, Coldstream-on-Tweed—Novelties and Seeds.

COMMUNICATIONS RECEIVED.—Dr. L. Jusco.—Marshall, Bros. & Co.—W. Coomber.—M. and M.—W. K.—A. S. W.—R. W. A.—A. B.—J. J. W.—J. M.—R. D., next week.—N. E. B.—T. B.—J. F.—A. H.—W. D.—F. A. P.—Camjee—W. N. (with thanks).

Markets.

COVENT GARDEN, January 28.

THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.

MARKET quiet, with little alteration. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0	3 0	Lemons, per case	8 0	10 0
— Canadian, barrl.	10 0	14 0	Pine-apples, Eng., lb.	1 0	..
Grapes, per lb.	1 6	4 6	— St. Michael, each	2 6	8 0
Kent Cobs, 100 lb.	.. 30	0 ..	Pears, per dozen	.. 1 0	2 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mushrooms, punnet	1 0	1 6
Asparagus, Eng., 100	9 0	..	Mustard and Cress, do.	0 4	..
— French, bundle	18 0	25 0	Onions, per bushel	4 0	..
Beans, Kidney, lb.	2 0	..	Parsley, per bunch	2 0	3 0
Beet, red, per dozen	1 0	2 0	Parsnips, per dozen	1 0	..
Broccoli Sprts., bush.	3 0	..	Potatos, per cwt	.. 4 0	5 0
Capsicums, per doz.	0 6	..	,, kidney, per cwt	4 0	5 0
Carrots, per bunch	0 6	..	Salsafy, per bundle	0 9	..
Cauliflowers, per doz.	2 0	3 0	Savoys, per dozen	.. 2 0	..
Celeriac, per root	.. 0	3 ..	Scorzonera, p. bundle	1 0	..
Celery, per bundle	1 6	2 0	Seakale, punnet	.. 2 6	..
Coleworts, doz. bunch	4 0	6 0	Shallots, per pound	.. 0	3 .. 0 9
Cucumbers, each	1 0	1 6	Spinach, per bushel	4 0	6 0
Endive, per dozen	1 0	2 0	Sprouts, per pound	0 3	..
Herbs, per bunch	.. 0	2 ..	Sprue, bundle	.. 1 0	..
Leeks, per bunch	0 3	0 4	Tomatos, per lb.	.. 1 0	1 6
Lettuce, per dozen	1 0	1 6	Turnips, bunch	.. 0 6	..
Mint, green, bunch	1 6	..			

POTATOS.—Magnum Bonums, bad trade, 50s. to 80s.; Regents, 60s. to 80s. per ton; German Reds, 2s. to 2s. 6d. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0	Ferns, in variety, per dozen	.. 4 0	18 0
Arbo. vitæ (golden), per dozen	.. 6 0	18 0	Foliage Plants, various, each	.. 2 0	10 0
— (common), dozen	6 0	12 0	Hyacinths, per doz.	6 0	9 0
Arum Lilies, dozen	12 0	18 0	Lilias in clumps, or pots, per dozen	18 0	30 0
Azaleas, per doz.	24 0	42 0	Marguerite Daisy, per dozen	.. 8 0	12 0
Begonias, per dozen	6 0	12 0	Myrtles, per dozen	6 0	12 0
Bouvardia, doz	12 0	18 0	Palms in var., each	2 6	21 0
Cineraria, per doz.	10 0	12 0	Pelargoniums, scarlet, per dozen	.. 6 0	9 0
Cyclamen, per doz.	12 0	24 0	Poinsettia, per dozen	.. 12 0	18 0
Cyperus, per dozen	4 0	12 0	Primulas, single, 12 pots	.. 4 0	6 0
Daffodils, per dozen	9 0	12 0	Solanum, per dozen	8 0	12 0
Dracæna terminalis, per dozen	.. 30	60 0	Tulips, 12 pots	.. 6 0	9 0
— viridis, per doz.	12 0	24 0			
Erica, various, doz.	12 0	24 0			
Euonymus, in var., per dozen	.. 6 0	18 0			
Evergreens, in var., per dozen	.. 6 0	24 0			
Ficus elastica, each	1 6	7 0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Abutilon, 12 bunches	2 0	4 0	Lily-of-the-Valley, 12 sprays	.. 0 9	1 6
Acacia (Mimosa), Fr., per bunch	.. 0 6	1 0	Marguerites, 12 bun.	4 0	8 0
Arum Lilies, 12 blms.	4 0	9 0	Pelargoniums, per 12 trusses	.. 1 0	1 6
Azalea, 12 sprays	.. 1 0	1 6	— scarlet, 12 trusses	0 9	1 0
Bouvardias, per bun.	0 6	1 0	Poinsettia, 12 blms.	4 0	8 0
Camellias, 12 blms.	2 0	4 0	Primula, dble., bun.	1 0	1 6
Carnations, 12 blms.	1 0	3 0	— single, per bunch	0 6	..
Chrysanth., 12 blms.	2 0	4 0	Roses (indoor), doz.	3 0	9 0
— 12 bunches	.. 9 0	18 0	— Tea, French, doz.	0 9	1 6
Cyclamen, doz. blms.	0 4	0 6	— red, French, doz.	2 0	4 0
Daffodils, per bunch	1 0	2 0	Snowdrops, bunch	0 6	1 0
Epiphyllum, 12 blms.	0 6	1 0	Tropæolum, 12 bun.	2 0	3 0
Eucharis, per dozen	4 0	6 0	Tuberoses, 12 blms.	2 0	3 0
Gardenias, 12 blooms	2 0	3 0	Tulips, doz. blooms	0 9	1 0
Hyacinths, Rom., 12 sprays	.. 0 9	1 6	Violets, 12 bunches	1 0	1 6
— red, 12 blooms	1 0	2 0	— Czar, Fr., bunch	1 0	2 0
Lilac, French, bunch	2 0	7 0	— Parme, French, per bunch	.. 4 0	6 0
Lilium longiflorum, 12 blooms	.. 9 0	12 0			

SEEDS.

LONDON: *Jan. 27.*—The seed market to-day was thinly attended, and but little business was done. As regards values, no change of importance can be noted. Heavy exports of Clover seed continue to be made from the Continent to America. Remarkably low rates prevail for Trefoil this season. The tendency in grass seeds is against holders. New Zealand Cocksfoot is this season a short crop. For Canary and Hemp seed the sale is small. For feeding Linseed more money is demanded. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

MARK LANE: *Jan. 25.*—The market opened firmer to-day for Wheat and flour, and some business was done at rates that were hardly obtainable last week, but the buying was upon a very small scale, and the closing result was not so good as was expected. There was not much doing in Barley, but prices were fully supported. Beans and Peas were unchanged in value. For Oats the trade was very dull, and prices in some instances were 3*d.* lower on the week.

Jan. 27.—The trade for Wheat was very dull and lifeless, but without pressure to sell, and rates were nominally unaltered. Barley was quiet. The trade in Oats was slow, and Beans and Peas quiet and unchanged.

Average prices of corn for the week ending Jan. 23: —Wheat, 29*s.* 9*d.*; Barley, 29*s.* 7*d.*; Oats, 18*s.* 7*d.* For the corresponding period last year:—Wheat, 34*s.* 11*d.*; Barley, 32*s.* 5*d.*; Oats, 20*s.* 4*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Jan. 27.*—Average supplies of fruit and vegetables. Prices fair, trade good. Quotations:—Apples, 2*s.* to 4*s.* per sieve; Savoys, 3*s.* 6*d.* to 7*s.* 6*d.* per tally; Cauliflowers, 5*s.* to 10*s.* do.; Beetroots, 3*s.* to 3*s.* 6*d.* do.; Spinach, 2*s.* 6*d.* to 3*s.* per sieve; Brussels Sprouts, 3*s.* 6*d.* to 4*s.* 6*d.* do.; Celery, 4*s.* to 9*s.* per dozen bundles; bunch greens, 3*s.* to 4*s.* do.; Turnips, 2*s.* 6*d.* to 3*s.* 6*d.* do.; Carrots, 2*s.* to 2*s.* 6*d.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Onions, 5*s.* to 5*s.* 6*d.* per cwt.; white Turnips, 30*s.* to 60*s.* per ton; Swede do., 22*s.* 6*d.* to 27*s.* 6*d.* do.; Carrots, 30*s.* to 50*s.* do.; Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD: *Jan. 27.*—Supplies good, also attendance of buyers; fair trade done at the following prices: —Cabbage, Drumhead, 6*s.* to 8*s.* per tally; Savoys, 8*s.* to 10*s.* do.; greens, bunch, 2*s.* 6*d.* per dozen; Sprouts, 3*s.* to 4*s.* per sieve; Mangels, 21*s.* to 22*s.* per ton; Swedes, 23*s.* to 25*s.* do.; Carrots, cattle feeding, 20*s.* to 30*s.* do.; do. household, 33*s.* to 40*s.* do.; Turnips, 60*s.* do.; Onions, 75*s.* to 85*s.* do.; Horseradish, 10*d.* to 1*s.* per bundle; Apples, 2*s.* 6*d.* to 4*s.* per bushel; Celery, 12*s.* to 15*s.* per dozen; Rhubarb, 8*s.* per dozen.

POTATOS.

BOROUGH AND SPITALFIELDS: *Jan. 26.*—Best samples were in fair demand, but trade in general was slow. Quotations:—Regents, 60*s.* to 120*s.*; Magnum Bonums, 50*s.* to 100*s.*; and Champions, 50*s.* to 70*s.* per ton.

COLUMBIA (East London): *Jan. 27.*—Trade a little better than last week, good samples selling freely. Quotations:—Champions, 50*s.* to 60*s.*; Regents, 60*s.* to 65*s.*; Victorias, 50*s.* to 65*s.*; and Magnums, 50*s.* to 80*s.* per ton.

STRATFORD: *Jan. 27.*—Magnums, 50*s.* to 75*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 40 bags from Hamburg, 60 bags 40 sacks from Boulogne, 25 barrels from New York, and 103 cases from Malta.

HAY.

WHITECHAPEL: *Jan. 26.*—Trade was exceedingly dull, with a decidedly drooping tendency all round. Supplies large. Quotations: — Clover, prime, 90*s.* to 105*s.*; inferior, 70*s.* to 88*s.*; hay, prime, 70*s.* to 92*s.*; inferior, 50*s.* to 68*s.*; and straw, 28*s.* to 38*s.* per load.

Jan. 28.—A large supply was on sale. There was a very dull trade at late rates.

CUMBERLAND (Regent's Park): *Jan. 26.*—A fair supply, but dull trade, especially for Clover, and best quoted, 90*s.* to 105*s.*; seconds, 70*s.* to 90*s.*; hay, best, 75*s.* to 90*s.*; seconds, 60*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Jan. 27.*—Quotations:—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 36*s.* per load.

Government Stock.—On Monday Consols closed at 99⅛ to 99⅛, and on Tuesday at 100 to 100⅛ for both delivery and the account. Wednesday's final figures were 99⅛ to 100 for delivery, and 99⅛ to 100⅛ for the account. The concluding quotations on Thursday were 101⅛ to 101¼ for both transactions.

THE

GARDENERS' CHRONICLE

(Established 1841)

CONTAINS ARTICLES ON ALL DEPARTMENTS OF

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REPORTS OF EXHIBITIONS,

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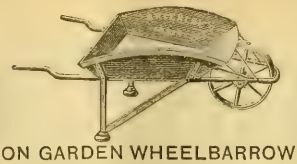
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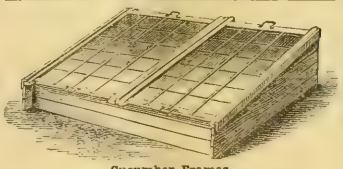


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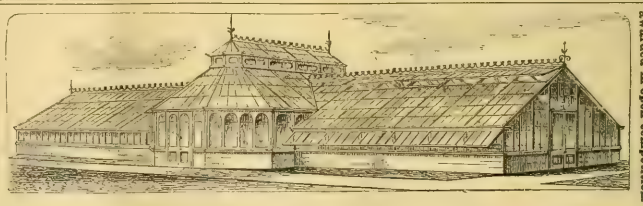
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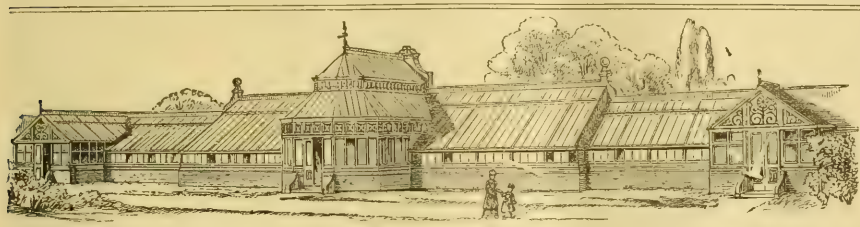
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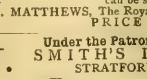
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TELEGRAMS.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE!—COMMITTEE MEETINGS. Fruit and Floral, at 11 A.M., in the Conservatory; SCIENTIFIC, at 1 P.M., in the Lindley Library, on TUESDAY NEXT, February 9.
ANNUAL GENERAL MEETING at 3 P.M., in the Conservatory.
At this Meeting Candidates for Fellowship will be elected.
The President, Council, and Fellows will dine together at the Criterion at 6.30 P.M. the same evening.
N.B.—Exhibitors' Entrance, east side of Royal Albert Hall.

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MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 8, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7087)

PLANTS from GHENT, ROSES, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, February 10, at half-past 12 o'Clock precisely, a consignment of choice named CAMELLIAS and AZALEA INDICA, Hybrid RHODODENDRONS, DRACÆNAS, Specimen PALMS, AZALEA MOLLIS, PÆONIES, SPIRÆAS, and other PLANTS, from Ghent; also first-class Standard and Dwarf ROSES, including all the leading varieties; also FORCER PLANTS of sorts, LILIUMS, TUBEROSES, GLADIOLI, &c.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next.

SPECIAL SALES of ORCHIDS in FLOWER.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, February 10 and 11, at half-past 12 o'Clock precisely each day, a fine COLLECTION of ORCHIDS in FLOWER, including Cattleya Trianæ, many fine varieties, C. velutina, C. Mendelii, C. Percivaliana, Dendrobium Ainsworthii, D. Wardianum, Cypripedium Maulei, Calanthe Stevensii, Odontoglossum Alexandræ and O. Pescatorei, Lælia anceps Percivaliana and L. superba, Cœlogyne cristata (Cowarii variety), &c.; also a few single seedling CAMELLIAS in bloom.

On view mornings of Sale, and Catalogues had.

Wednesday and Thursday Next.

The SECOND PORTION of the VALUABLE COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will include in his SALES by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, February 10 and 11, the Second Portion of the above Collection, comprising splendid varieties of CATTLEYA TRIANÆ, including EBORASCENSIS, DELICATA, and others. Also C. GASKELLIANA, C. WARNERI, C. PERCIVALLIANA, C. MOSSIÆ, C. MENDELII, LÆLIA ANCEPS ALBA, DENDROBIUM NOBILE KUCKERIANUM, fine types of ODONTOGLOSSUM ALEXANDRÆ and O. VEXILLARIUM, &c., the majority of which are in flower or bud.

On view mornings of Sale, and Catalogues had.

Wednesday Next.

4000 LILIUM AURATUM.

15,000 Seeds of LIVISTONA SINENSIS (Latania borbonica).

MESSRS. PROTHEROE AND MORRIS will include the above in their SALE, at their Central Sale Rooms, on WEDNESDAY NEXT, February 10.

On view morning of Sale, and Catalogues had.

Wednesday Next.

4000 splendid Bulbs of LILIUM AURATUM, and numerous and distinct varieties of IRIS, from JAPAN; LILIUMS and CALOCHORTI from California; 15,000 Seeds of LIVISTONA SINENSIS (Latania borbonica) from Brazil; 400 Standard and other Roses, from an English Nursery; CAMELLIAS and AZALEAS (fine plants), PALMS, &c., from Belgium; Fruit Trees, 300 CARNATIONS and PICOTEES, and a general assortment of hardy English-grown LILIES and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, February 10, at half past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

BY ORDER OF THE EXECUTORS

Leytonstone and Wanstead, Essex.

IMPORTANT UNRESERVED SALE of valuable NURSERY STOCK, extending over several acres of ground, the whole having been carefully prepared for removal.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the American Nurseries (adjoining Leytonstone Railway Station), and the Wanstead Nursery, Wanstead Flats (about a mile from Leytonstone and Forest Gate Stations), on WEDNESDAY, February 10, and two following days, at 12 o'Clock precisely each day, without reserve, a large portion of the remarkably well-grown NURSERY STOCK, consisting of a splendid variety of Conifers and Evergreen Shrubs adapted for immediate effective planting, ranging in height from 2 to 10 feet; 10,000 Ornamental and Forest Trees in variety, 5000 very fine Limes, 8 to 15 feet; Deciduous Shrubs, selected Fruit Trees, beautifully grown trees, many with large fruiting heads, and in all the leading sorts of Apples, Pears, Plums, Cherries, Peaches, &c.; hardy American Plants, including a large selection of Rhododendrons from the noted collection of named and hybrid varieties; 1000 Standard, Dwarf, and Climbing Roses of all the finest named sorts, and an assortment of CAMELLIAS, AZALEAS, and other GREENHOUSE PLANTS.

The stock may now be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C., and Leytonstone, E.

Friday Next.

CATTLEYA TRIANÆ, from a New District.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on FRIDAY NEXT, February 12, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA TRIANÆ, from a new district, and very distinct in appearance; also extra fine CATTLEYA MOSSIÆ, together with a splendid importation of ODONTOGLOSSUM ALEXANDRÆ, and many other rare and valuable ORCHIDS.

A very fine lot of ORCHIDS in flower from a well known private collection, including Dendrobium nobile elegans, D. Hillii, D. Ainsworthii, Cattleya Trianæ virginalis, Phaius tuberculosus, and others.

Also a Collection of new DISAS and other TERRESTRIAL ORCHIDS from Table Mountain.

Flowering Orchids.

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SPECIAL SALE of the above will take place on TUESDAY, February 23, for which they will be glad to RECEIVE NOTICE OF ENTRIES as early as possible.

IN LIQUIDATION.

Hereford.—Cranston's Nurseries, King's Acre.

GREAT UNRESERVED SALE of the First Portion of the valuable NURSERY STOCK, by order of the Liquidator of Cranston's Nursery and Seed Co. (Limited).

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises so widely known as Cranston's Nurseries, King's Acre, Hereford, on TUESDAY and WEDNESDAY, February 23 and 24, at 12 o'Clock precisely each day, without reserve, the First Portion of the extensive and valuable NURSERY STOCK, which is in fine condition for removal, comprising a great variety of splendid Specimen Conifers, Portugal Laurels, Common and other Laurels, in large quantities; 3000 Standard Apples and Pears, in all the leading sorts; Gooseberries, Currants; 5000 Standard Ornamental Trees, including fine Thorns, Limes, and Purple Beech; 100,000 Larch and Scotch Firs, 3 to 5 feet; Ash, Willows, Deciduous and Flowering Shrubs, and quantities of other stock too numerous to mention in an advertisement.

May now be viewed. Catalogues may be had on the Premises; or of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C.; and Leytonstone.

N.B. Forcer Sales will take place during the year, which will be duly announced.

Forthcoming Sales of Nursery Stock.

IMPORTANT to NOBLEMEN, GENTLEMEN, LANDSCAPE GARDENERS, BUILDERS, and OTHERS engaged in Planting.

MESSRS. PROTHEROE AND MORRIS beg to announce their further SALES (in addition to those advertised above), which will take place as follows:—

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TUESDAY and WEDNESDAY, March 2 and 3, at the NURSERIES, TRINITY ROAD, WANDSWORTH COMMON.

THURSDAY and FRIDAY, March 4 and 5, at the NURSERIES, KINGSTON HILL, by order of Messrs. T. Jackson & Son.

Catalogues can be had of the Auctioneers, 67 and 68, Cheapside, London, E.C.

Valuable Collection of Orchids on Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the CATALOGUE and valuable COLLECTION of ORCHIDS formed by the late R. P. Percival, Esq., of Birkdale, Southport, is now ready, and will be sent post-free on application.

The Collection includes magnificent specimens of all the leading varieties of ORCHIDS, and many new and rare varieties.

The Vineyard, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

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CARTERS'
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Important Testimony.
"Carters' Blenheim Orange is distinct in flavour, different in appearance, and superior in quality to any of the hosts of Melons now before the public."
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Comprising DECIDUOUS and EVERGREEN SHRUBS, FOREST TREES, ROSES and FRUIT TREES, have succeeded in getting an extension of time for clearing their Kingston Hill Nurseries till Lady Day, by which time everything must be cleared; prices are consequently greatly reduced, and no reasonable offer refused.
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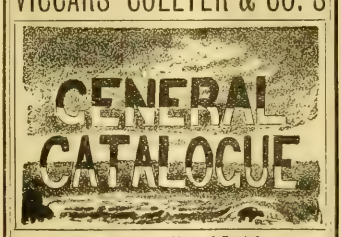
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MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 8, at half-past 12 o'Clock precisely.
On view morning of Sale, and Catalogues had.

SEASON 1886.

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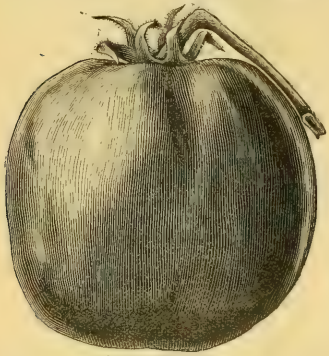
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First-class Certificate Botanical Gardens, Manchester, May, 1885. This new Melon was raised br Mr. W. Speed, The Gardens, Penrhyn Castle. "A grand Early Melon, of strong constitution and most prolific."



Per packet, 2s.

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One of the best varieties ever offered.



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Per packet, 1s.

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CARTERS' NEW PEAS.

CARTERS' STRATAGEM.
CARTERS' TELEPHONE.
CARTERS' PRIDE of the MARKET.

HAVING PROVED at our Experimental Grounds that SPURIOUS VARIETIES of these splendid Peas have been in some instances sold last year under the above names, and being determined that the character of these magnificent Peas shall be protected, we take this opportunity to Caution the Public against purchasing from irresponsible sources.

The following Seed Houses have purchased the above New Peas from Messrs. Carter this season:—

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Ashelford, G., Cowbridge.
Ashford, J. B., Birmingham.
Austin & McAslan, Glasgow
Bailhache, P., Jersey.
Ball, G., Southport.
Barlow, J., Newport.
Barr & Son, Covent Garden.
Batt am, E. H., Merthyr.
Baynham, J., Hereford.
Bell, T., Wigan.
Bickley, E. K., Ellesmere.
Birkenhead, W. & J., Sale.
Blundell, J., Dulwich.
Boyd, I. & G., Limerick.
Brotherton, W., Leeds
Burrows, W., Bedhampton.
Busby & Co., Weymouth.
Butcher, J. W., Stratford.
Cann, R., Wareham.
Castle, Mrs., Wantage.
Cave, E., Newport.
Clague, J., Douglas.
Clare, A., Bristol.
Clare & Son, Cheltenham.
Clark Bros. & Co., Carlisle.
Clark & Co., North Shields.
Clarke, H., & Son, London.
Collins, F., Liverpool.
Cook, H., Woodhouse.
Cooling & Son, Bath.
Cooper, C., Plymouth.
Crombie, J., Elgin-Furness.
Crosland, B., Sheffield.
Curd, W., Croydon.
Davidson, J. A., Irvine.
Dean, C. G., Chesham.
Dickie, Fowlds & Co., Kilmarnock.
Dickson & Robinson, Manchester.
Dickson & Turnbull, Perth.
Dickson, J., & Son, Chester.
Dodgson, F. W., Ramsey.
Downie, J., Edinburgh.
Edmondson Bros., Dublin.
Ellis, A., Cardiff.
Erwin, W., Ballymena.
Evans, C. G., Cheddar.
Fillery & Co., Crawley.
Frier, J., Galashiels.
Garrett, C., Glastonbury.
Glaisyer, E., Leighton.
Grant, J., Boston.
Green, I., Tutbury.
Gresswell, A., Landport.
Groves, J., Leyton.
Groves, T., Shrewsbury.
Hanham, A., Briton Ferry.
Harris, R., Stoke.
Hewitt & Co., Birmingham.
Hicks, T. C., Liskeard.
Hibbert, J. Cardiff.
Hinxman, S., Woking.
Hubert, F. J., Guernsey.
Irvine, C., Jedburgh.
James, J., Ryde.
Johnson, W., Burton.
Johnson & Bullen, Ashby.
Jones & Son, Shrewsbury.
Kirkwood, W., Blairgowrie.
Knight, J. E., Wolverhampton
Laird & Son, Edinburgh.
Le Cornu J., & Son, Jersey.
Le Cornu, P., & Son, Jersey.
Lockett, W., Dorchester.
Macaulay, W., Selkirk.
Macfee, J., Paisley.
Mackereth, Exors. of H. W., Ulverston.
Mackie & Co., Inverurie.
Maller, J., Tottenham.
Martin, A. S., Cottingham.
Martin, W., Hull.
Matthews & Son, Stoke.
McDougall, D., Dalton.
McEwen, D., Norwich.
Mellish & Son, Headingly.
Meredith, J., Warringt n.
Metcalf, J., Hartlepool.
Middlehurst, H. J., Liverpool.
Miller, G., Andover.
Morrison, T., Swansea.
Morton, T. B., Darlington.
Naylor, G., Epworth.
Newbrook, H., Madeley.
Nurton & Co., Penarth.
Orr & Son, Belfast.
Orr, W. R., Strabane.
Parsons, E., Bristol.
Parsons, J. H., Guernsey.
Paull, J., & Co., Martock.
Payne, W. P., Bath.
Phillips, R., Amersham.
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Samson, W., & Co., Kilmarnock
Sander & Co., St. Alban's.
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Slade, J., Tenbury.
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Stamper, R., Hull.
Stanway, W. H., Kington.
Taylor, J., Bristol.
Thomson, R. B., & Co, Glasgow.
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Towell, S. E., Hampton.
Vick, W. F., Birmingham.
Waite Bros., Berwick.
Ward & Co., Bristol,
Watson, W. J., Newcastle.
Webber, J. H., Tiverton.
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For Present Planting in Frames and Pots.

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8d. per Pound (7 lb. Carriage Paid).

Victor is the perfection of Potatos for Frame Cultivation,

New Potatos fit for use having been produced by it in six weeks from date of planting.

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The Best for Exhibition and Profit.

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One of the finest main crop varieties in existence. It attains a height of 3 feet, and commences podding close to the ground.

From Mr. W. IGGULDEN, *Gardener to the* Right Hon. the Earl of Cork.—"Your New Pea,' Chancellor,' proved very prolific and good in quality. It produced an abundance of broad pods, well filled with sweet and tender Peas—decidedly a profitable sort for any garden."

In Sealed Packets, 3s. per Pint.

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This splendid new variety is the result of a cross between William Tillery and Colston Bassett. The fruit is of medium size, oval shape, finely netted, and of exceedingly handsome appearance.

The flesh is of pale-green colour, very firm, juicy, and of the most delicious flavour.

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New Broccoli. WEBBS' MAY QUEEN.

This handsome new Broccoli, which has stood the severest winters without protection, is doubtless the finest late variety yet introduced. It is of dwarf and distinct habit of growth, the heads are thoroughly protected, beautifully white and compact, and unsurpassed for size and quality.

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Very robust in habit of growth and the plants are exceedingly prolific, setting their fruit at every joint. It is flattish-round in shape, perfectly smooth, of rich deep red colour and the most delicious flavour; and being large and handsome, it is of great value for the exhibition table.

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VEGETABLES and FLOWERS.

A VALUABLE NEW
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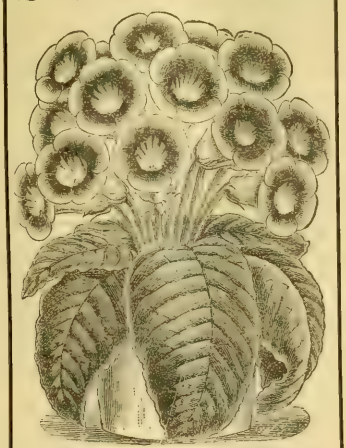
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Remarkably early; turns in and becomes fit for table quicker than almost any other. Dwarf and compact in habit, with few outer leaves. Flavour delicious.

Per Packet, 1s., post-free.

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The Royal Horticultural Society's Silver-Gilt Banksian Medal was awarded to Sutton & Sons for a Collection of Sutton's Prize Gloxinias, July 28, 1885.

SUTTON & SONS, Reading, Berks.



THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 6, 1886.

KEW AND ITS WORK.*

WHEN our friends come to visit us at Kew it is usually in May, June, or July, when the days are long and the garden in its full perfection; but, as this is the busiest time of the year, I am afraid that the questions they ask are liable to be answered very briefly and incompletely, and if it is a matter where figures are involved, it is both difficult to remember them on the spur of the moment, and difficult for the memory, even when they are told correctly, not to mix them up together. I propose therefore to occupy my allotted hour this evening in attempting, in the comparative leisure of mid-winter, to answer more fully and precisely than is possible in conversation, a few of the principal questions about Kew, which are asked most frequently by those who wish to form a full and intelligent idea of the plan and purposes of the institution.

THE GENERAL PLAN OF THE KEW ESTABLISHMENT.

The aim of a national botanic garden is to illustrate as fully as possible the plants and their products, in the first place, of the country to which it belongs, and subserviently to this the plants of other parts of the world. First of all we possess the means of distinguishing from each other, and identifying the separate individual kinds of plants, and based upon this follows the investigation of the different points of interest connected with their life-history and various economic uses for food or clothing, or in medicine and the arts. It is quite safe to say that none but a very limited number of specialists have any idea of the enormous number of different kinds of plants there are in the world. A very moderate estimate, founded on the figures as they stand in Bentham and Hooker's *Genera Plantarum*, for the flowering plants alone, leaving out of account the Ferns, and all the lower orders of Cryptogamia, is 200 natural orders, 10,000 genera, and 100,000 species. Although the possessions of Britain occupy only about one-sixth part of the world, yet they lie so far apart from each other and under so many different conditions of latitude and longitude and climate, that they produce nearly one-half of the whole total number of the plants that are known. In Europe, in an area of under 4,000,000 square miles, there are about 10,000 species of plants known. Take 1500 species as an estimate for the British Isles, and add as many more for Gibraltar, Malta, and Cyprus, and this gives us 3000 species. For India, where we have every range of climate from equatorial heat to perpetual snow, an estimate of 15,000 species is not excessive. For Cape Colony and our tropical possessions in Africa, including Mauritius and the Seychelles, say 10,000 species. For Australia, New Zealand, and Fiji, another 10,000 may safely be added. For the British pos-

* A lecture delivered by J. G. Baker, F.L.S., F.R.S., at the Friends' Meeting House at Westminster, January 26, 1886

sessions in North America we may safely say 3000 species, nearly all of which are amongst the 13,000 which make up the flora of the United States. For the British West Indies and Guiana 5000 will not be over the mark; or, to take the British possessions by continents, Europe, 3000 species; Asia, 15,000; Africa, 10,000; Australia and Polynesia, 10,000; and America, 8000. These numbers add up to 46,000, and in this estimate there will not be a large number of plants counted twice over. Amongst the many excellent things planned by Sir Wm. Hooker was a series of *Floras* classifying and defining the plants of all the British possessions upon one uniform system. Of these the volumes for Australia, New Zealand, Hong Kong, the West Indies, and Mauritius, are finished; that for India, the most extensive of all, for which Sir J. D. Hooker himself undertook the onerous task of editorship, is far advanced; those for the Cape and Tropical Africa are about half finished, whilst the plants of Fiji and the British possessions in North America are fully dealt with in another form, and those of Guiana have been to a considerable extent included in the great *Flora* of Brazil, which has been brought out at the expense of the Brazilian Government.

The objects, as I have already indicated them, of a national botanic garden, are at Kew, as at all other fully-equipped establishments of the same kind, carried out by three different departments, as follows:—

1. The garden, in which a selection of the most interesting plants is cultivated.

2. The herbarium and library, in which dried specimens of as many different kinds of plants as possible are gathered together, named, and arranged for ready reference in company with a collection of botanical books and drawings.

3. The museums, in which the economic uses in the different kinds of plants are illustrated.

During the last ten years these three main essential departments have been supplemented through private liberality with an art gallery and physiological laboratory.

In the first place, I will say a few words about the details of these three departments.

The Garden

covers an area of 325 acres, and the grounds of the Queen's Cottage, to which the public are not admitted, occupy twenty-six acres more. Whilst a portion of the property was in the hands of Sir Henry, afterwards Lord Capel in the time of Charles II., the garden was already one of the best in the country. Kew House and the surrounding grounds were rented in a long lease by Frederic, Prince of Wales, in 1730, and they were purchased by his son George III., a short time after he came to the throne in 1760. Prince Frederic died in 1751, and his widow, the Princess Augusta, who was a daughter of the Duke of Saxe Gotha, still continued to reside at Kew, and may be looked upon as the real originator of the botanic garden. Her principal adviser, the Earl of Bute, who was Prime Minister for a year in the early part of the reign of George III., was an enthusiastic botanist. He spent £10,000 in printing an elaborate botanical work in nine volumes, of which only twelve copies were struck off.

During the middle generation of the eighteenth century the writings of Linnæus gave an enormous impulse to the popularity of botany. The first edition of his *Species Plantarum*, in which the binomial Latin names of plants were first given to them, was issued in 1753. For garden plants they were first popularised in England in the eighth edition of the *Gardeners' Dictionary* of Philip Miller, of Chelsea, published in 1768. In the same year a catalogue of the plants then cultivated in Kew Gardens was published by Sir John Hill. It includes fifty Ferns, between 500 and 600 trees and shrubs, and several thousand herbaceous plants. For a long time during the reign of George III. and his successors the garden was managed by the two Aitons, father and son. The elder Aiton was born in 1731, came to England in 1754, entered the service of the Princess Dowager of Wales at Kew in 1759, and died in 1793. With the aid of Dr. Solander he published in 1789 a book called *Hortus Kewensis*, containing descriptive characters of all the plants (5600 in number) then cultivated in the garden. In 1810 a second edition was published by his son, for the botany of which he was indebted to Dryander and Robert Brown. This contains descriptions of between 9000 and 10,000 species.

During the reigns of George IV. and William IV. the garden was very much neglected. In 1840 it was first opened to the public, and was placed under the superintendence of Sir Wm. Hooker. At that time the garden only occupied an area of 11 acres. Within a few years it was extended by successive additions till it reached the 75 acres which is still enclosed within a wire fence. In 1847 the 250 acres of what was called the pleasure-ground were added, and were planted as an arboretum or classified collection of trees. During the twenty-five years of the directorship of Sir Wm. Hooker the museum and herbarium departments were started and organised upon their present footing, and the Palm-house, the large temperate-house, and the large museum were built—the former at a cost of £30,000. Sir Wm. Hooker died in 1865, and was succeded by his son, Sir J. D. Hooker, who for several years had filled the post of Assistant-Director. A very short time ago, after forty-eight years of public service in one form or other, Sir J. D. Hooker resigned the official directorship, and has been succeeded by Mr. W. T. Thiselton Dyer. The principal additions that have been made during the twenty years of Sir Joseph Hooker's directorship have been the new herbarium, the picture gallery, the laboratory, the long T-shaped house with varying temperatures in the centre of the garden, the rockery, and the enlargement of the two museums.

The only old buildings which still remain from the days of George III. are the Pagoda, which was built by Sir Wm. Chambers about 1750; the King's Orangery, now used as a museum for large specimens of wood; the old Palm-house near the great gate, now used for Tree Ferns and Aroids; and the various temples and ruins of the style in which our grandfathers delighted. The annual number of visitors, which was under 10,000 in 1841, has now risen to over 1,000,000. On the summer Bank Holidays the number has lately varied from 50,000 to 95,000. Exclusive of Bank Holidays the number of those who visit the garden on Sunday is about as great as on all the other days of the week put together.

Since the institution was reoganised under Sir W. Hooker, it has always been kept in view, as one of its chief objects, that it should be made as useful as possible to the colonies, and from year to year a large proportion of the time and thought of the Director and Assistant-Director have been absorbed by their colonial correspondence, and in questioning and answering the questions of their colonial visitors.

Statistics of Plants as Classified according to their Cultural Requirements.

If we classify plants according to the garden treatment they require they fall into four main groups. The intertropical zone includes a land area of 40,000,000 square miles, and the total number of characteristically tropical plants known to science may be roughly estimated at 40,000 or 50,000. These are provided for at Kew in the Palm-house, the tropical Fern-house, the Aroid-house near the main gates, the central portion of the new range, and various small propagating houses which are not opened to the public. Of course the expense incurred in cultivating in the English climate any plant of this group is considerable, so that a careful selection from the 40,000 or 50,000 species has to be made. The second group of plants consists of those that can bear the English summer, but need protection during winter. These are provided for at Kew in the temperate-house, the succulent-house, the cool Fern-house, and the cooler parts of the new range. To this group belong the members of the three rich floras of the south temperate zone, where the height of summer corresponds with the depth of our north temperate winter. To this group belong about 30,000 species, or about a third of the known plants. Next come the hardy plants. The north temperate zone occupies about one-third of the earth's surface, and its plants number 20,000 species. Of these at Kew the classified collection of the herbaceous types is contained in what is called the herbaceous ground, which is situated north of the Cumberland Gate. Here are grown about 2000 perennials and 1000 annuals, arranged under their natural orders. The classified collection of shrubs and trees is scattered over the different parts of what was formerly called the pleasure ground. For the special growth of alpine plants two rockeries have lately been laid out. The total flora of the arctic zone does not reach 1000 species, and the plants which are confined to the higher levels of the mountains of the north temperate zone may possibly be twice as numerous, in all 3000 species, of what gardeners' call "alpines," *i. e.*, plants specially adapted to a cold, damp climate, with a short summer. If we attempt to classify the plants of the British possessions under these four climate groups the results will be something like this:—

Tropical plants	18,000 species.
Half-hardy	18,000 ,,
Hardy	8,000 ,,
Alpines	2,000 ,,
	46,000 ,,

(*To be continued.*)

New Garden Plants.

CYPRIPEDIUM LEEANUM SUPERBUM, *n. var., hyb. Angl., Hort. Veitch.*

I HAVE just received two grand flowers of this phenomenal beauty, from Mr. Harry Veitch. They surpass not only every Leeanum I ever saw, but they may even be regarded as superior to Cypridedium Spicerianum by those who do not like the colours contrasting in the vivid manner they do in parrots. The dorsal sepal is exceedingly large and showy, with numerous radiating rows of purple lines; the green at base is copious and shining. I learn from Mr. Harry Veitch that the flowers come from Baron von Schrœder, The Dell, near Windsor. *H. G. Rchb. f.*

PRIMULA REEDI, *Ducie, n. sp.*

This is a new species found in the mountains of Kumaun, of which seeds have been sent over by Dr. Duthie of the Saharanpur Botanic Garden, and which have been distributed to some of the leading Primula growers, so far as the small supply allowed.

Leaves ovate, lanceolate, clothed with a silky pubescence; scape erect and firm, 2 to 4 inches long, flowers 2 to 3, in umbels, large, drooping; calyx, broad, snowy white inside, teeth triangular, acute; corolla about 1 inch across, cream coloured, its tube exceeding the calyx, and nearly white at the base; capsule globose. The species was discovered by Dr. Duthie, and originally described by him in the last report of the Saharanpur Botanic Garden.

GRAPE GROS GUILLAUME.

THE illustration on p. 169 (fig. 33) gives a good idea of the very large bunch of this variety exhibited by Mr. McKenna, gardener to the Chief Secretary, Phœnix Park, Dublin, at the show of the Royal Horticultural Society of Ireland, on November 19, 1885. This bunch of 20 lb., and two others, weighing respectively, 13 and 11 lb., were the produce of two-year-old canes. The report of the show states that "the largest bunch was the best finished of the three, indeed we can only say we never saw a better finished or more perfect bunch of this, or any other variety. The Society's Silver Medal was recommended by the judges to be awarded." This round black Grape is only of second quality, excepting when thoroughly ripened; it is of handsome appearance on account of the large size of the bunch, and will keep till March. The Vine is a strong grower, and rather uncertain as to fruiting, some canes cropping abundantly and others scarcely at all. The flesh is tender and juicy, but possesses usually but little flavour. It is better known in gardens as Black Barbarossa, and was brought out about twenty-five years ago by Messrs. Butcher, of Stratford-on-Avon. By being grafted on the Black Hamburgh some very remarkable examples have been produced. The largest bunch was likewise grown in Ireland, by Mr. Roberts, gardener at Charleville Forest, who exhibited one in 1877 weighing 23 lb. 5 oz. Mr. McKenna states that his Vines originated from those at this place.

DISEASES OF THE ROSE.

The first of the diseases of which M. de Thümen speaks is the most common and well known of the three; it is a mould which is caused by the rapid development of a mildew similar to that which affects the Vine; only, in order to be fully efficacious, the precautions which the learned German prescribes as the result of his own experience must be carefully followed. The flowers of sulphur must be employed not once, only, but several times in the course of the summer. The application of the sulphur must be made on a fine clear day; when there is every appearance of the fine weather lasting; then the work should be begun early in the morning, in order that the sulphur may be subjected to the rays of the sun for as long a time as possible. Under these conditions M. de Thümen says that he perfectly cured, last year, some infected Rose trees which subsequently flowered finely.

The second disease of Roses to which this observer alludes, is not so well known as the first mentioned, nevertheless for several years it has very frequently been seen in gardens. The German gardeners call it brand (burning), a vague term which is applied in Germany to many diseases of vegetables. It is caused by a little parasitical fungus, Asteroma radiosum. This parasite causes specks of a dark greenish-brown on the upper surface of the Rose leaves, which are often not more than a millimetre in diameter; but which sometimes cover the whole of it attacks the flowers are either malformed or entirely abortive. All the varieties are not equally liable to this disease, but certain varieties are attacked with it every year. Happily, sulphur is an excellent remedy for mildew in Roses as well as for Oïdium on the Vine; only, in order to be fully efficacious, the



Fig. 33.—Black Grape, Gros Guillaume (weight, 20 lb.). (see p. 168.)

the Vine; this external growth is known to botanists by the name of Oïdium leucoconium in the early stages of its development, and under that of Sphærotheca pannosa when it has attained its mature condition. It is known that this parasite covers the Roses with a white film, amid which specks and spots of a brown colour subsequently appear. This Cryptogam spreads and propagates very rapidly and its mischievous results are only too well known. On the shrubs which

the leaf. Soon after the appearance of these spots the leaves fall, being in some cases still green, while in others they have become more or less yellow. Asteroma, not being confined to the surface of leaves as the mildew is, but thrusting its filaments through their tissues, the war against this parasite becomes therefore very difficult. The great attention paid to this by the well-known Berlin naturalist, Professor B. Frank, has disclosed the fact that this fungus produces a great number of excessively tiny reproductive organs; that is to say, the spores, which are dispersed and spread by the rain and dew. This water, bearing the spores, trickles down the leaf-stalk to the base of the leaves, where it deposits them on the bud which is formed there, therefore the shoot springing from this bud is necessarily tainted with the disease, with the germs of which it was early infected. Whether the plants thus infested with the parasite are placed in another garden, or whether buds from the diseased plants are budded on healthy stocks the disease will assuredly be propagated. Thus convinced of the impossibility of dealing with the parasite, which grows chiefly in the interior, by any external remedy, M. Frank sees no other alternative but not to make any use of the gardens thus infected, but this would be a great barrier to trade. M. Thümen, on the other hand, recommends a solution of salycylic acid, which kills the spores of the parasite. In many cases he advises that the plants or grafts sent out from the nursery in which this fungus exists should be plunged for an hour in a solution of salycylic acid. The infected leaves should be burnt immediately, and the bushes should be syringed with salycylic acid in early spring.

The third disease of Roses is of less consequence. It is due to a parasitical fungus, Cæoma miniatum (Phragmidium subcorticium), which rarely appears on the leaves, but more frequently on the leaf-stalk, flower-stalk, calyx, or flower. It forms cushion-like projections of an orange-red colour (Æcidium). The disease is usually not very fatal, but where it becomes so it is better to burn the infected plants. *Abstract from an article in the "Wiener Illustrirte Garten Zeitung."*

Orchid Notes and Gleanings.

NOTES FROM MESSRS H. LOW & CO.'S NURSERY.

Dendrobium Lowii.—This distinct and handsome species is now in flower at this nursery. It is a remarkable species, and is not so well known as it ought to be. Probably its cultural requirements are not generally understood. It has been cultivated in this country for a quarter of a century, having been first flowered by Messrs. Low, and exhibited by them at a meeting of the Floral Committee of the Royal Horticultural Society in 1861. It was well described by Dr. Lindley in *Gardeners' Chronicle*, November 30, 1861. The yellow flowers have the lip marked with Roman-red veins, and have a long red fringe. The plants are growing in pots in sphagnum and peat near the glass in the warmest house. It is also well adapted for basket culture.

D. luteolum is also in flower, and is another introduction of the Clapton firm. The flowers are of a paler yellow than the last named. This species was first described by Mr. Bateman in *Gardeners' Chronicle*, 1864, p. 269, and there is also a very handsome plate of it in *Bot. Mag.*, 5441, showing sixteen flowers on one spike. The flowers have a few red lines at the base of the lip. This is a useful winter flowering species, and seems to grow freely.

D. aduncum is also in flower with D. Fytchianum. The first named is a very pretty species, with small rosy-tinted flowers. There is a characteristic plate of it with four spikes of flowers from an old stem in the *Bot. Reg.* 1846, pl. 15. It was first flowered by Messrs. Loddiges, at Hackney, in July, 1842, and described by Dr. Lindley. It is one of Dr. Wallich's discoveries. The flowers are rather peculiar from the long spur-shaped lip.

D. vexatile is a very rare species, and a pretty little thing in its way, and quite distinct. The plant is small, so are the flowers; the sepals and petals are creamy-white; the base of the lip is marked with rosy lines. There is but one small plant in the nursery, and perhaps but one more in the country. Being small it is best to grow it in Teak baskets or in pans, and near the glass.

Mormodes Wendlandi, which was in flower, is a distinct and striking species, and in the peculiar way in which the spikes issue from the large pseudobulbs; as many as seven could be counted pushing out from one bulb. The flowers, which are of a large size, have narrow reddish-brown sepals; eleven of them were counted on one stout spike about 18 inches long.

Aërides marginatum, which I had not seen before, was also in flower, though the spikes were not fully developed. It is a distinct species, but the flowers are not very striking, being greenish-yellow, and drooping in habit.

The Odontoglossum houses are crammed full of the more popular species—O. crispum in many fine forms. The pretty little O. Oerstedii is well in flower, some handsome specimens being loaded with its pure white flowers, which are also sweetly scented.

The Phalænopsis-houses here, always interesting, are usually crowded with flowers of commoner as well as choice varieties. P. Sanderiana seems now to be very plentiful, and not only so, but it is second to none when seen in its best form and well grown. There were many flowers opening, but few were expanded, as the recent dense fogs had been fatal to them. P. Stuartiana was flowering more freely than any of the others. P. Mariæ was represented by a considerable number of healthy established plants. This species, discovered by Mr. Burbidge when travelling in the Eastern Archipelago for Messrs. Veitch, has been hitherto a very scarce plant. It is well figured in the *Orchid Album*, pl. 80, vol. ii. The flowers are of small size, pure white and thickly covered with brownish blotches, and a magenta coloured lip. Orchid fanciers will be glad to know that it grows quite freely, and is not scarce. *J. D.*

DENDROBIUM KINGIANUM VAR. PALLIDUM.

The typical form of this Dendrobe has a cheerful aspect in spite of its comparatively small purplish flowers. The present variety, of which there is a fine piece on a block suspended near the glass in the cool division of the Orchid-house at Kew, differs in having pure white flowers, excepting a medium yellow ridge and a few faint violet or lilac stripes on the labellum. The peduncles are terminal from between the two to four evergreen leaves that surmount the pseudobulb, and bear from three to eleven flowers each. The unexpanded flowers resemble a flock of birds perched on the twigs, and in this condition the spur-like gibbosity of the lateral petals is uppermost. As they develope, however, and begin to expand it is curious to observe how the position of the flower becomes reversed so as to bring the labellum to the lower side. Like the specific form it is of easy cultivation, and the duration of the flowers is worthy of consideration in a collection of any extent, where if suspended near the glass, the space it would occupy would never be missed. The species is figured in the *Botanical Magazine*, t. 4527.

VANDA ROXBURGHII VAR. RUBRA.

In the *Illustration Horticole*, at t. 579, is given a representation of this fine variety, in which the perianth segments are brown, spotted with yellow on the upper surface, whitish and unspotted beneath. The lip is red. It flowered recently in the establishment of the Compagnie Continentale at Ghent.

ANGRÆCUM SESQUIPEDALE.

It is generally supposed that this most curious Orchid will not thrive and flower unless subjected to very strong heat. We have three plants that have been growing in the Cattleya-house for the past two years, the temperature of which ranges from 50° to 55° at night, with a rise of 10° by day in winter. They are in perfect health, and are pushing spikes. Two of them are spring flowering; the largest plant of the two has seven pairs of leaves, and is 9 inches high, and is pushing two spikes. The other plant has three pairs of leaves, is 5 inches high, and has one spike. The third plant is the winter flowering variety, and has four pairs of leaves; it has just perfected a very fine flower, the tail of which was just 12 inches long—nothing wonderful, of course, but, considering the temperature, it is very good. The plants have been growing on the north side of the house, and are about 5 feet from the glass. It must not be supposed that we recommend cool treatment for these plants; the object of writing this note being to show what can be done by those who do not possess a stove or East India house. We find imported plants conform to this kind of treatment more readily than established plants, especially if the latter have been grown very hot. *S. C.*

—— I noticed recently a fine plant of this at Fergusliе garden, near Paisley; it has five growths from 2 to 3 feet high, well furnished with healthy leaves. Mr. Donald, the gardener there, has been very successful in flowering it this year, as at the time of my visit it had thirteen spikes bearing thirty-six flowers, twenty-four of which were fully expanded—a quantity of flowers not often seen on this plant. *A. I.*

SALE OF PRODUCE FROM PRIVATE GARDENS.

THE sale of surplus produce from private gardens is a proceeding that has recently come in for a good deal of notice in the gardening papers, and, as might have been expected, the views of those who have written on the subject are as wide as the poles asunder. A few who have expressed themselves on the matter have done so in terms that exhibit more acerbity than ability to take a common-sense view of a question that requires to be looked at from different points of view. Those who possess large establishments, including large gardens, have been sneered at, and taunted with turning market gardeners, and of setting up in competition with those who have a living to make out of the fruit, flowers, and vegetables they cultivate. This line of expression may seem the right course, and be congenial with the sentiments of those who like to indulge in railing at everything that does not fall in with their views; but the course is too one-sided to have weight with those who are disposed to look dispassionately at the subject. To do this it is well to clear the ground of prejudice and misrepresentation. The whole matter resolves itself into a simple question of the right of those who, no matter what their position, may feel disposed to sell the surplus produce of their gardens to do so; or, for the matter of that, to grow as much as they can, with the object of selling it. I should suppose that no one in his senses would attempt to dispute this right. For they might just as well question the right of the owner of a large estate, who farms some of his land himself, to sell the corn he grows or the animals he fattens, on the plea that in so doing he is competing with the tenant-farmer, who has a living to make out of the land he pays rates and taxes for.

Human nature is fortunately so constituted that there is always a disposition to lean towards the weaker side, and on that account there are few who will not sympathise with those who, to some extent, may suffer through the practice that has gradually come about of selling garden produce from private places. But in this feeling in favour of the ordinary market grower there is another class of individuals to be considered, and these much the most numerous—the public, who have to buy all that they require in the shape of the commodities in question. The greater the competition the cheaper the article, whatever it may happen to be. So far to meet those who insinuate, even if they hesitate to openly express themselves against the right of private individuals to sell garden produce.

TAXATION.

Another objection, and a more reasonable one, urged against the advantage that the owner of a large private garden has over those who grow exclusively for sale is, that the former either pays no rates at all, or less in proportion than the market gardener. This is simply a question for the parochial authorities in each neighbourhood to deal with, which, like other inequalities, should, and no doubt will, be redressed. The chief reasons why the gardens and grounds attached to many of the large places have hitherto paid comparatively little in the shape of rates is obvious; the assessors show that far from being a source of profit, they usually entailed a considerable outlay in excess of the absolute return they gave.

REDUCED VALUE OF PRODUCE.

The cause that has brought about an outcry for gardens such as those in question being rerated to meet the altered state of matters is not likely to last long if the prices that fruit, flowers, and vegetables, except the commonest kinds of the latter, fetch either in London or elsewhere continue. The earliest Grapes used to make from 15*s.* to 25*s.* per

pound, in some cases more; now 7*s.* or 8*s.* would be nearer the mark for those ripe in April. Good Black Hamburghs, even in the most plentiful time of the season, made 4*s.* or 5*s.* per pound, now fruit of the same quality may be had for from 1*s.* to 1*s.* 6*d.*, Muscats of good quality from September up to the end of October made 7*s.* or 8*s.*, in December and in January 15*s.* to 18*s.*, now the growers have to be content with about 3*s.* during the earlier time named, and something like one-third of the figure given above at the end and beginning of the year. I have paid 20*s.* per pound to the grower for late black Grapes in February, and have known considerably more than this realised later on; but the price of late black Grapes has been steadily coming down for some years, until this winter the growers of good average fruit have had to take 2*s.* or 2*s.* 6*d.* per pound. In the third week in January, the top price for the best black Grapes in the leading London shops was 4*s.* 6*d.* a pound, and plenty just as good, but smaller in the berry, were 3*s.* 6*d.* English Pines now realise only a fifth or sixth of the amount they used to sell for. The earliest forced Strawberries used to be worth 2*s.* 6*d.* to 3*s.* an ounce, last spring that much per pound was nearer the figure. Early Peaches and Nectarines, though not quite so much fallen in value as compared with the fruits previously named, do not fetch more than a third of the prices that ruled a few years back. Cucumbers were amongst the things that used always to sell well: such as were about 12 inches long readily made 2*s.* 6*d.* and 3*s.* each at the beginning of the year, and kept dear onwards till May; now they do not bring more than from 9*d.* to 1*s.* 6*d.*

Cut Flowers.

If the grower turns to cut flowers, he finds that his chance of realising profitable prices are no better than with fruit. White Camellias were lately selling at 2*s.* per dozen that not many years ago would have made 6*s.* The prospect which growers of this favourite white flower look forward to may be understood from the fact that at a recent sale of an extraordinary lot of Camellias, offered by a market grower, grand plants that ten or twelve years ago cost from £20 to £25 each were sold for £2. Roses from Nice at 6*d.* to 1*s.* a dozen keep the home growers' Roses, which are cultivated at a heavy cost for fuel and labour, under glass, at a price that will not pay. All through this winter, and at the present time, button-holes by the thousand are sold in the streets, consisting of a full-sized fresh Safrano bud, with Roman Hyacinth round it, and backed with Adiantum, for a penny. White Narcissus from the same source at 6*d.* a bunch of a dozen or fifteen spikes, to be followed by a bunch of the Daffodil family, now so much in fashion, from the Channel Islands, keep home grown flowers of all kinds down to zero all through the spring. Then there are Pelargoniums at 6*d.* to 9*d.* per dozen trusses; in fact, one might go on through the whole range of the kinds of flower most in demand with the same result in the depression of prices, which now rule so low that it is only through the attention of the grower being concentrated on a limited number of things grown in vast quantities in cheap houses—but which are perfect for the purposes of cultivation—combined with a thorough knowledge of the treatment required, that enables the professional grower nowadays to have anything left after the cost of production is covered. It not unusually happens, that after all that is possible has been done, and the stock of a particular plant or flower is got through, the amount realised leaves little or nothing. For two or three seasons back thousands of Primulas and Cinerarias have been sold at prices so low that, after the pots, the soil, the fuel, and the labour were paid for, there could be nothing left as interest on capital; whilst pot Hyacinths in many cases did not bring more than the price paid for the bulbs. The picture is not by any means roseate, nor is it in the least overdrawn, but the reverse.

The Reason Why.

There are several causes that have brought about the existing state of matters. The tempting prices that good fruit and flowers for a long time made, with a continual increase in the demand, caused many of the then existing growers largely to increase their glass accommodation. Numbers of others, new at the business, rushed into it; around London for ten or a dozen miles houses were built by the acre. The French, Italians, and Jersey growers gradually found that their cheap land, cheap labour, and sunny climate more than counterbalanced the disadvantages of distance; the carrying service, which quickly and carefully brings their produce here, seconds their efforts, doing the work for a fourth of the cost that the English companies charge. Then came the depression in trade and agriculture, which tightened the purse-strings of those who were the best buyers of choice flowers and fruit, and in the case of many of those who grew their own, has turned them to growing for sale. I think that any one who has a knowledge of the cost of growing flowers and fruit in a private garden, where necessarily the hands employed to do the work have their daily attention divided between fifty or a hundred different things, each requiring something or other different in their treatment, will also know that this circumstance is against the work being got through expeditiously, or in a way that is calculated to insure the best cultivation in any of the things dealt with, so as to admit of their competing successfully with the market growers' productions. Then, again, in a private place much labour is expended in keeping up a trim appearance in the houses where the flowers and fruit are grown; with the market grower nothing of this is attempted, and in his case there is the further advantage that the houses are constructed so as to be best suited to the things he grows—an advantage which the gardener in a private place rarely has at command, much oftener having to make shift with structures that preclude the possibility of the things grown being produced at a price that can leave a profit under the existing competition. In addition to the disadvantages named, there is another: unless the gardener happens to be able to send to the salesman employed a regular supply through the season of anything he has to sell, and that of first-rate quality, it is not in the nature of things that his produce will make as high a price, even if it is as good, as that of the professional grower whose productions the salesman can depend upon being always ready at the exact time there is a demand for them, and which consequently whenever the market is overstocked it is only reasonable to expect will be sold before the goods that come from a less certain source. This is only fair, and is what takes place in the sale of any commodity that has to go through the hands of an agent, and against it no reasonable person could complain. At the present time not only is the surplus from a great number of private gardens sold, but large quantities are grown in these establishments purposely for sale. How long this will continue under present prices, with an all but certain prospect of their coming lower and remaining so, depends upon how long those whom it concerns go on without calculating what the things they sell have cost in production. That much that is so sold does not cover the cost of fuel and material, without leaving anything for labour or for interest on the money expended in the construction of the houses wherein the produce is grown, is clear to any one practically acquainted with the subject.

Soft Fruit.

Respecting soft hardy fruits, which are always looked upon as safe from competition with foreign produce, still the prospect is not more encouraging; with them production has gone on increasing until the supply is greater than the demand; late Strawberries, for instance. Last season scores of tons of fine Kent fruit were sold in Manchester, Liverpool, and other large towns, at from 10*d.* to 1*s.* per peck basket of 12 or 14 lb.; this fruit cost 5*d.* per peck for gathering, which, when added to the charges for carriage and sale commission, left the grower minus for labour, rent, and taxes, to say nothing about interest on capital.

Garden Accounts.

In these straitened times it would seem that there are many owners of large gardens who look upon them as costing much more than they give a return for. The majority of gardeners do not do justice to the gardens they have to manage, or to themselves, in not keeping an exact account of the value of everything that is produced. For the mutual satisfaction of the employer and of the employed, this is necessary as well in places where nothing is sold as where part of what is grown is thus disposed of. In some places this is done so far as regards fruit and vegetables, but often nothing is put down for cut flowers and plants used for indoor decoration, or for bedding plants that are annually propagated and grown on for the flower garden, all of which require to be taken into account if a fair estimate of the return given by the garden for the cost incurred in its maintenance is to be arrived at. In a place I could name, where eight or ten men are employed, the owner insists on this being done. Everything that the garden produces in every shape, including bedding plants, is booked by the gardener at a fair value, such as they would have cost if bought in. Due allowance should also be made for the work done in the pleasure grounds, &c. This is no less fair and necessary, to arrive at a correct estimate of the return given for what is spent, than are the other matters I have instanced. But I would not stop at any guesswork in the matter. In ordinary business works, where the hands are paid by the day, every man's time, even to the hour, is set down against the job or jobs he is engaged on. Without this there would be no means of arriving at the profit or loss on the respective work done; and to arrive correctly at how much of the labour employed in any garden should be chargeable to such work as mowing, sweeping, rolling, hoeing, and weeding in the pleasure grounds, from which there is no return except the requisite appearance, it is necessary to keep a clear account of the labour. Those who have been accustomed to a slipshod sort of garden management may object to the work entailed in keeping an account of everything in the way suggested; but when done systematically it gives little trouble—so little that it is not worth taking into account in comparison with the satisfactory position in which it places the gardener who has charge of a well managed place. There are few things better calculated to make those who spend money feel satisfied than to be in a position to know that they get an adequate return for their expenditure. That owners of gardens often do this without being in a position that enables them to see that it is so, may be set down as a certainty. Gardeners who have a right perception of what they owe to themselves as well as their employers will only be following a reasonable course in keeping a full and correct account of everything bearing on the working of the place they have charge of. *T. B.*

ORCHID PRUNING.

(*Continued from p.* 148.)

I NOW take into consideration the Cattleyas, Lælias, and others which, like them, do not throw out roots immediately from the pseudobulb. In sections 1 and 2 the roots are produced in a mass from the base of a pseudobulb. These, as we have seen, may be removed from the plant at an early period. Orchids classed by me in section 3 are possessed of a rhizome, though in some cases this is very short, whence roots proceed, as well as from the base of the pseudobulb itself. In this large section the pseudobulbs are necessary, as a rule, to the well-being of the plant for a longer period, varying from three to five years, as I have shown; in section 4 the whole of the roots are produced from the rhizome, and the bulb (to leave out the prefix) rises upon a sort of short neck, so to speak, in many instances, but never throws out roots from its base, like those in the other sections. There is one very important fact that should be studied in this section, viz., the time when the new growths produce roots. In many instances the new bulb is fully developed, becomes thoroughly matured, and also flowers, before a single root is to be seen on the rhizome from which it springs. During this time the bulb is sustained by supplies afforded by the roots of the preceding growths. It will be seen then, that the back bulbs are of vital importance until roots have been produced by the rhizome. This generally occurs in the second year, just before the new growths appear. In cases where this method of growth occurs the bulb is one year older than its roots; but at the age of three or four years those which produced roots the first year, and those which did so the second, are alike—both have bloomed, both have healthy foliage and roots. The roots, however, in one case will die away a year earlier than those of the other.

It will sometimes happen that fresh roots break from comparatively old rhizomes; in this case new vigour will be thrown into the plant. Bearing these facts in mind the cultivator needs to be very cautious in pruning off back growths of Cattleyas and Lælias. But here again the foliage will be a pretty sure guide,

as it will naturally fade and die of old age, at from the fifth to the eighth year, according to the species, at which period the bulb may be removed. But no injury would be done to the plant if both bulb and leaf were cut away when the latter began to change colour.

So far as I am aware, all the Orchids that may be included with the Cattleyas produce their bloom either in the first or second year. They also form their new growths the second, third, or fourth year; but as a rule the strongest are the earliest. Though an older bulb may break if left on the plant it seldom does so; but as long as it retains its foliage in a healthy condition, and has roots attached to its rhizome, it is of great value in sustaining the plant and building up the newly formed growths. The roots are the first to decay, followed by the leaves. The bulb will then be unable to send to the front any more supplies and therefore ought to be removed. It will now be seen that I lay special stress on leaves and roots, and justly so, as these are of vital importance to the plant. A knowledge of their manner of their growth and of their duration must be acquired before the art of pruning can be safely practised. This leads me up to the points which, above all others, will be questioned, namely, the utility of the bulbs, after leaves and roots have died away naturally, in imparting strength to the growing parts of the plants.

My opinion is that the bulbs are of no value whatever for this purpose, after they have attained the age beforementioned. But for increasing stock they are in some instances of use. It will have been observed that the whole of the species which must be classed in one or other of the sections already mentioned, produce their bloom either in the first or the second year, or not at all. This is not the case in the next section —that of Dendrobiums—which will receive notice in the next and concluding paper.

Another great section may well be allowed to remain unnoticed at present. It includes what are usually called the "Indian Orchids," Vandasand all of like growth; also the Cypripediums, and any other of similar growth. No Orchid lover will be likely to attempt any pruning with these, as there is nothing about them to invite the use of the knife, except to the propagator; or, perhaps, once in a lifetime, some tall or sparsely foliaged plants may require to be lowered in their pots, so as to be of a more pleasing appearance. *N. Blandford.*

ON THE CULTIVATION OF BROMELIADS.

THESE interesting plants are not so much grown by us as is the case in other countries, and that not by reason of there being any particular difficulty in their culture, but from a prevalent belief in their want of beauty and general adaptability to our methods of decoration; nevertheless many of the species vie with the brightest of our stove and greenhouse plants. The Tillandsias, probably the best known here, and, of which good examples are here and there to be met with, are T. Lindeni (vera), with rose coloured bracts and flowers of the most beautiful blue colour, and T. Lindeni Regeliana, which has a narrower spathe than the vera variety. These two are usually found to do fairly well in a pot in Orchid compost. The epiphytal species, such as T. argentea, with elegant recurved leaves covered with small hairs, and having a silvery frosted appearance; T. pulchella, a winter bloomer, having an erect scape longer than the leaves, and large bright red bracts which disclose white flowers when they expand; T. recurvifolia, a dwarf-tufted glaucous-leaved species, with bright rosy-pink bracts and white flowers, likewise a flowerer in the winter; T. stricta, another winter bloomer, has leaves about 6 inches long and half an inch in breadth; the spathe is about 9 inches long, furnished with white bracts tinted with rose-colour, the corolla being rich violet on first opening, changing to cherry-red with age. T. xiphioides is a rather insignificant looking plant, but it is sometimes grown for its deliciously scented white flowers.

M. Ortgies, of Zurich, an enthusiastic grower of these plants, gives the *Gartenflora* for January the following details, which may be of interest to would-be cultivators in this country. Alluding to a plant of the so-called rootless Tillandsias, Phytorrhiza Durati, which he had grown for thirty years, and which was no larger now than then, he remarked that it had never flowered, and had never made an offset, and during this long period no roots had been produced, although the same number of fresh leaves appeared as the old ones dried off, so long as it remained suspended close to the roof in an Orchid-house with a bit of wire; but so soon as it had been fastened to a little piece of board it began to gain strength visibly, and pushed out a few of its thin hard rootlets. It was always regarded as an interesting puzzle, and he was desirous of seeing to what age it would exist without roots, and with only a syringing once daily. This treatment did not kill the plant, which is now securely rooted to its board, and is growing stronger, being apparently just in its element.

Professor Pfitzer has discovered that in Tillandsias the leaf-scales perform the part of feeding organs, and that the roots primarily serve as means of attachment. The leaf-scales imbibe water copiously, and impart it to the leaf-cells, and so furnish nourishment to the plant.

Whilst agreeing with this view M. Ortgies believes that although roots are few and small they yet serve the purposes of nourishment to a greater degree than Professor Pfitzer supposes, citing the plant which had not grown during thirty years, but which immediately showed signs of vigour on being fastened to a board. He says that the culture is of the simplest character, the plants being fastened on a block or board, and suspended on the sunny side of a warm Orchid-house near the glass. They should be syringed once daily, and the best time is in the morning hours. In rainy or cloudy weather it is sufficient to syringe them once in two days. The Tillandsias seldom succeed when potted, blocks suiting them better. In more northerly climates than Switzerland the plants would probably require less syringing than once daily, and in our well-furnished houses, with ample means of maintaining a moist condition of the air, it might be entirely dispensed with during the true winter months. *X.*



THE BULB GARDEN.

LEUCOJUM HERNANDEZII.

IN your last number (p. 149) you state that Professor Wilkomm, in his *Illustrationes Floræ Hispaniæ*, gives a coloured figure of this plant, and that he believes it to be only a geographical variety of L. æstivum. If your readers will refer to the *Gardeners' Chronicle*, March 15, 1884, p. 341, they will find all the varieties of the Leucojum there described, and of L. Hernandezianum I stated that I had not been able to find any illustration. I visited Kew for this object, and it was then a puzzle to Mr. Baker, who encouraged me to try to solve it.

Mr. Tyerman visited my garden in 1883, when the Leucojums were in flower, and he then pointed out that we had abundance of L. Hernandezianum, and very few of the true L. æstivum, and this turned out to be the case.

To settle the question I corresponded with botanists in Minorca, and obtained bulbs from the mountain in which it was originally found by Dr. Hernandez, and when these bloomed at Brockhurst I communicated the results again to your columns (see *Gardeners' Chronicle* for June 6, 1885, p. 741). It turned out that L. Hernandezianum was the same as L. pulchellum, and it exactly confirmed the opinion of Mr. Tyerman.

There is a great difference between this plant and L. æstivum. Mr. Pöe, of Riverston, visited Brockhurst last summer, when the Leucojums were in flower, and he will bear me out in this statement. I had hundreds of L. Hernandezii pulchellum then in bloom, and a few large clumps of L. æstivum. Mr. Pöe had none of pulchellum at Riverston, and so we exchanged a hundred bulbs to mutual advantage. L. æstivum is an Austrian plant, and there is a full-sized plate of it in Jacquin's *Flora Austriaca*, vol. iii., pl. 263, which places it beyond dispute. L. pulchellum is figured in Salisbury's *Paradisus*, pl. 74, and in Loddiges' *Cabinet*, 1478. The two plants differ in root, scape, flowers, and habit. It would be well if the two were figured side by side, as there is the greatest difficulty in persuading florists that there are two varieties. The same may be said of the two spring Snowflakes, L. vernum and L. carpaticum, which are different plants in every way. *W. Brockbank, Brockhurst, Didsbury, Jan.* 30.

HARD POTTING FOR LILIES.

Your correspondent "B. W.'s" inquiry reminds me of a fact connected with a batch of Lilium auratum which I purchased at an auction mart last spring, to which I had intended to refer, as the facts bear on the culture of this Lily, and offering points of difference from ordinary practice very materially. The bulbs were rather below medium size, and the season rather late. Knowing that Lilies in their native habitats are generally met with growing in firm ground, often as plants in possession of knoll or boulder-protected space, added to the fact that Lilium candidum succeeds best in poor, stony, unworked ground, I undertook the following experiment:—Choosing 48-sized pots, placing one neat crock only in the bottom of each, then a little moss over it, I half filled the pot with yellow loam of a sandy nature, and rammed it down very hard. Upon this the bulbs were placed, filling up with the soil around and over the bulbs, and ramming down as tightly as possible. These bulbs produced spikes 4 to 5 feet high, with from three to seven blooms upon a plant, the size of the blooms being all that could be desired. The plants looked singular in their small pots—so small, in fact, that I had a difficulty, even when staked upright, to keep them from falling over. When it was requisite to carry them into the dwelling-house this was invariably done by taking hold of the stems; indeed, so firmly rooted had they become that it was possible to twirl them about overhead. I have just examined some of these same bulbs stored away in their pots upon the greenhouse shelf, and on turning the balls out of the pots find they contain a mass of roots, which are in some instances in active growth. They will be reshifted into 32-sized pots, using precisely similar soil made very firm. My past experience, and, I think, that of others, is that these Lilies when potted in good rich soil with what is known as moderate firmness, did not—at least in the earlier stages—equal the success of the above-mentioned practice. *William Earley, Ilford.*

DOUBLE PSEUDO-NARCISSUS.

In last week's *Gardeners' Chronicle* Mr. Sinclair is under the impression that the double Pseudo-Narcissus is not gathered direct from its wild habitat. I have gathered it myself from five different places in Devon—from three old orchards and from two hedges. I refer to the small wild form—I never found the larger doubles amongst the small kind. The doubles are principally those with double trumpets, seldom full doubles—twice I have found two double flowers on one stem. Both single and double thrive well if transplanted into grass land; both resent garden soil. It would be to beg the question if I asserted that a single Daffodil never becomes double in cultivation; but my belief is that those which appear to do so are those only which have before been double, and which, after deterioration, once again under favourable conditions resume their double form. *T. H. Archer-Hind, South Devon, Feb.* 1.

FRITILLARIA HISPANICA, *Boissier.*

A native of hilly districts in southern, eastern, and central Spain. From the small globose bulb rises a single stem about a foot in height, with scattered linear-lanceolate leaves, diminishing in size from below upwards, the lowest 3 inches long, ¼ inch wide. The flower is solitary, terminal, nodding, 1½ inch long, with purplish-brown oblong segments, with a central yellowish stripe; the inner surface is chequered with darker spots. It is figured in Willkomm's *Illustrationes Floræ Hispaniæ*, t. xcv. A, (1886).

FRITILLARIA LUSITANICA, *Wickstræm.*

A small species, with linear glaucous leaves, solitary, nodding, bell-shaped flower, about an inch long, with oblong, apiculate, dark brown segments, the inner surface of which is dotted with brown spots. It grows among Heaths in south-west Portugal, and is figured in the last part of Willkomm's *Illustrationes Floræ Hispaniæ*, t. xcv. B, (1886).

GEOGRAPHICAL EDUCATION.

The following abstract is taken from an address on the scientific aspects of geographical education delivered by Professor H. N. Moseley, F.R.S., at the last meeting, at the rooms of the Geographical Exhibition. Sir Joseph Hooker occupied the chair. Mr. Moseley observed that to the naturalist knowledge of physical geography was becoming more and more essential. The geographical distribution of plants and animals was one of the most important and fascinating of all the branches of his subject, and presented an immense field for research full of problems of the utmost interest. A knowledge of physical geography was indispensable for the study of zoology, botany, astronomy, and meteorology. But far more important was the question whether physical geography should not form part of every liberal education as the only true basis on which could be founded a knowledge of what was termed political geography. Political geography might be regarded as dealing with the geographical distribution of mankind. Various features of importance, such as boundaries, lines of migration and commerce, as well as cities and battlefields were determined by physical conditions and the conformation of the earth's surface. The vast importance of physical geography was evident from Buckle's masterly exposition of the subject. The influence which the geographical distribution of cereals had had in the development of civilisation could hardly be over-estimated. Not only was this subject excellent for teaching purposes, but it was especially adapted for examination. It was generally conceded that the teaching of geography was in this country in a very unsatisfactory condition. It was most remarkable, considering the world-wide possessions of England, that such a condition of things should prevail; the fact that English publishers did not find it pay to issue first-rate maps and works on physical geography equivalent to those published in Germany affording a striking proof of the correctness of the assertion. This society had long held the opinion that the recognition of geography at the Universities was the one great important step by which the teaching of this neglected subject could be adequately promoted. Various efforts had been made since the year 1871 to induce the Universities to appoint professors of the subject and otherwise promote its teaching, but with little or no effect. Physical geography, he maintained, should be separated from geology. The former was a subject far more necessary and suitable for general educational purposes than geology, taken as a whole; and while attracting far more students, would act as a lever for promoting the study of other branches of science, and certainly of geology itself. In conclusion, he asked if there could be the slightest doubt that the establishment of such a system of teaching geography as had been adopted in Germany would not be of the utmost advantage to this country, and to the cause of education generally, in advancing all branches of natural science. The adoption of such a system, however, would only be a question of time, as England would not be forever content to lag behind in the study of geography. [The importance of the study of physical geography to gardeners is obvious. Ed.]

THE EFFECTS OF IRRITATION OF PLANTS.

M. Pfeffer has been conducting experiments to determine the manner in which the tendrils of Sycios are irritated as a result of contact. He finds that when the tendrils are touched with water, mercury, or oil no effect is produced. Drops may be allowed to fall on them, or a spray of liquid thrown from a fine glass tube without result; a jet of mercury powerful enough to bruise the tissues produced no effect, but if a solid body as finely divided as possible (clay, for instance) be suspended in the liquid, the tendril is immediately irritated, and bends. But, curiously, a very plastic and non-adhesive solid body, such as a thick solution of gelatine (14 per cent.) is quite powerless.

For the experiment a glass rod is dipped into this elastic jelly, and the sensitive tendril may be struck and rubbed with it without causing any curvature. This is no longer the case when the gelatine has become dry on the surface—we shall see why soon, when we come to sprinkling with very fine sand. More solid gelatine (25 per cent.) has the same effect. As to smooth or rough solid bodies, they produce no irritation when they are pressed uniformly along the tendril, but the least shock, the least friction, suffices to produce it. This experiment has been tried with a glass thread, a rusty needle, and a strip of Tripoli paper. Lard, although so much more fluid than gelatine at a very slightly higher temperature, acts very well, no doubt on account of the crystals of glycerides which it contains. Evidently irritation is only produced by a mechanical action, which is not uniformly spread over the parts touched; in other words, in all cases which properly transfer our sense of touch and give place to a sensation of roughness. This explains why gelatine does not produce any effect: this body when it does not adhere, *i.e.*, when wet, shapes itself to the surface of the tendril; when it has dried to the surface it adheres, and when it is withdrawn produces an irritation, because the prominent parts of the epidermis adhere more strongly than the others. *Annales Agronomiques.*

MILDEW OF CUCUMBERS:

Polyactis vulgaris.

Inquiries are often made for the name of the mildew so frequently seen on decaying Cucumbers,

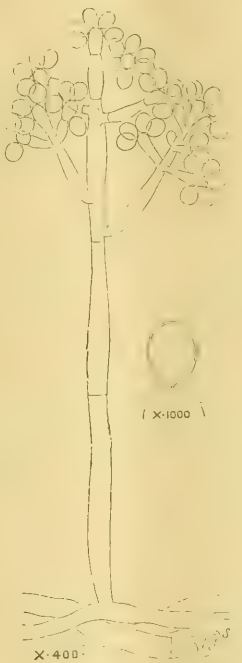


Fig. 34.—A common fungus of cucumber: polyactis vulgaris.

Melons, Gourds, &c. In bad cases the fruits appear to be covered with hoar frost; the fungus which sets up this appearance, and which appears to show a decided preference for Cucurbitaceous fruits, is Polyactis vulgaris, Lk. The name, which means many rays, possibly bears reference to the branching stem of the fungus, as seen under the microscope. Polyactis cannot grow upon sound Cucumbers; it can only grow upon already diseased and softened examples. There is generally a second or even third fungus inside the Cucumber, which sets up disease, whilst the Polyactis grows outside, and helps to hasten the putrefaction it cannot itself start. A thick, even growth of Polyactis vulgaris, Lk., as seen under the microscope, is a beautiful sight. It resembles a miniature forest of white, many-branched trees, all the branches and branchlets of which are laden with oval, almost spherical, glassy-looking fruits. The illustration, drawn from Nature (fig. 34), shows, enlarged 400 diameters, a single fruiting thread of this fungus—one tree from a dense forest—bearing its numerous spores or conidia. The mycelium is thick, jointed, and generally superficial; the stems are also jointed. The rounded enlarged extremities of the branchlets are furnished with extremely minute, almost invisible spicules or spore-supporters; three of these are seen on the right-hand of the illustration, and upon one of the spicules a spore or conidium is seen balanced. The spores, which are full of protoplasm, increase considerably in size if placed in water, and soon germinate. The least touch or breath sets the spores free in the air, so that in a microscopical examination one has to be very careful not to disturb the natural growth of the fungus. The fumes of sulphur will keep this Polyactis in check, but it unfortunately happens that the real causes (for there are several) of the mischief reside inside the Cucumber, and so are out of reach.

The mildew of living Cucumber and Melon leaves is Oidium Balsamii, Mont., a different fungus from the one before us. With our present knowledge no remedy for the diseases of Cucumbers and Melons is certainly known. Diseased examples should be destroyed. *W. G. Smith, Dunstable.*

The Apiary.

PASTURAGE FOR BEES.

In many parts of our country it is not only quite unnecessary to plant anything at all for bees, but many more bees could be kept in most places than is at present the case. There are, in fact, very few places where bees could not get enough for themselves; and the Rev. J. G. Wood, who is an authority in natural history, guarantees to keep a hive of bees on the top of the cross of St. Paul's Cathedral. But as the object of keeping bees is to take their surplus honey, it is sometimes very useful to plant for them. No very hard and fast rules can be laid down which would apply to all parts, but the following will not, I think, fail to give satisfaction. In the neighbourhood of your hives plant as many Crocuses and Snowdrops as you possibly can, especially the former; but the latter are not to be ignored, except they can be found wild in the neighbourhood. In most places wild flowers will carry your bees on till fruits blossom. These will occupy all their time while they last, but after they fail there is generally a dearth till the appearance of Clover. To fill this gap there is nothing better than Limnanthes Douglasii. This is a beautiful hardy annual plant, and will grow anywhere. It can be sown so as to have a continual succession as long as required. Moreover, it will sow itself. By no means despise the Wallflower. Mr. Simmons, of Rottingdean, says that half an acre of this flower will keep a large number of hives in pollen and honey. When Clover comes in the bees will hie to the fields, and the honey to be got from that is difficult to surpass. Borage is a most useful plant for bees, but some great authorities have recently differed on that point. The fact seems to be that Borage fails to give honey now and then, but this may be said of other flowers. There is also an American tree, the Linden, or Baswood, which yields a large quantity of honey. I have only named a few of the more important honey plants; their name is legion; and many of the larger seed-houses supply a variety of seeds of plants that are adapted to our climate. *Agnes.*

ORCHIDS FOR AMATEURS.

(*Continued from p. 107.*)

Brassavola or Brasavola.—A genus named after a Venetian botanist, Antonio Musa Brasavola or Brassavola.

Cultivation.—These Orchids are remarkable for their fleshy habit and large fragrant blossoms. In cultivation they need plenty of sun and air, and they succeed best on blocks or in baskets. Perhaps the best method is to establish them on a block and afterwards to place the block in a basket with some charcoal and sphagnum. It is said to be difficult to flower Brassavolas; this is probably the result of improper treatment. The structure of these plants, and their thick fleshy leaves, indicate that they should receive the same treatment as other succulent plants. The best authorities agree that no water should be given during their period of rest.

B. Digbyana, a native of Honduras. The pseudo-bulbs are narrow and spindle-shaped, ringed and wollen at their joints, grooved and terminated by a single fleshy glaucous leaf. The flower is terminal, 6 inches in diameter, with narrow sepals and petals of a pale green colour. The labellum is enormous, snow-white, and fringed with a broad irregular fringe an inch deep, formed by its deeply cut margin. It has well been said to be the "most startling of all known Orchids." The flower is deliciously fragrant, and its odour has been compared to that of the Tuberose.

B. glauca.—A species about half the size of the last; the bulbs are sheathed with brown scales, the flowers 3 inches across, the lip is without fringes, and is coloured yellow at its base. It flowers from January to March.

The remaining species of Brassavola have cylindrical leaves grooved along their upper surface. The best of these is, perhaps—

B. Gibbsiana, as it is very floriferous, and bears three large flowers on each peduncle. The flowers are white, spotted with chocolate-brown; the labellum is ovate, pointed, and rolled into the form of a cornet.

B. lineata and *B. acaulis*, both from Central America, belong to the same section, and have been too much neglected of late by Orchid growers; an importation would, I am sure, be appreciated. The flowers of the former are very remarkable; they are 5 inches across, with light green petals and sepals, and a large cordate lip, which is snow-white. The lip is not unlike that of Tricopilia in form. *B. T. L.*

(*To be continued.*)

THE SEED TRADE.

PEAS.—I have just had cause to refer to a catalogue of garden Peas published in 1817—a catalogue that must be regarded as one of the most reliable and exhaustive of that period, and I find that it gives the names of twenty-three varieties of garden Peas. Excepting that the blue and white Prussian Peas are grown still for field culture, no other of these twenty-three varieties will now be cultivated. In a catalogue published in 1842, by "James Carter, of 238, High Holborn"—a very modest publication compared with the brilliantly illustrated *Vade Mecums* and *Amateurs' Guides* of the present day—I find thirty varieties of Peas enumerated, but there were more in cultivation in all probability. In one of the leading wholesale catalogues of the present day I find the astounding number of ninety-eight varieties of Peas, and on this formidable list I perceive but three catalogued by James Carter forty-three years previously, viz., Bishop's Dwarf, now represented by a selection known as Bishop's Longpod, Bedman's Imperial, and Scimitar. I think, that while making a generous allowance for synonyms in a list of ninety-eight varieties, it may be assumed that there are something like eighty varieties of Peas at the present time, differing more or less from each other. And a large house of business, with customers in every part of the United Kingdom, on the Continent, in our colonies, and the New World of America, must be prepared to satisfy the requirements of these, and this involves an amount of forethought, careful calculation, and large responsibility, inconceivable to those unacquainted with the internal economy of one of these large wholesale houses. It is a little kingdom, with a settled form of government, working harmoniously in all its parts, and by a skilfully conceived method of devolution an astonishing amount of labour is got through in a thoroughly systematic way, at high-pressure for a certain period of the year, but in a complete and satisfactory manner. One may, in the mind's eye, compare the establishment of James Carter in 1842 with that of his successors in the present day; and here will be realised an apt illustration of the marvellous growth of this line of business all over the country during the past thirty years.

VARIETIES GROWN.

Some varieties of Peas have to be produced in enormous quantities. There are varieties that are in demand in every part almost of the United Kingdom, such as Champion of England, Sangster's No. 1, Laxton's Supreme, Maclean's Advancer, Payne's Conqueror, or Ne Plus Ultra, Veitch's Perfection, and British Queen. These are standard Peas, that will be grown for years to come. In the next rank may be put American Wonder, Dr. Maclean, Laxton's Alpha, Hundredfold, Laxton's William I., Stratagem, Maclean's Premier, Telephone, Telegraph, and Pride of the Market—sorts that have made, or are making, great reputations. In certain districts of the country certain leading varieties are in demand; in other parts different kinds are in the ascendant, and thus a variety of tastes have to be provided for. This involves much forethought, and not a little anxiety.

In addition to the old sorts of Peas grown for market garden purposes, such as Scimitar, Bedman's Imperial, Champion of England, Harrison's Glory, &c., Messrs. Hurst & Son inform me that the following varieties have been much on demand among market gardeners during the past few years:—Kentish Invicta, Sunrise, Harrison's Glory, Pride of the Market, Dr. Maclean, Fortyfold, Prince of Wales, Veitch's Perfection, and Yorkshire Hero. For exhibition purposes they name Duke of Albany, Stratagem, President Garfield and Telephone. Messrs. James Carter & Co., make mention of the following six varieties as highly valuable for market garden purposes:—Telegraph, Hundredfold, Kentish Invicta, Fortyfold, G. F. Wilson, and Pride of the Market. A very fine half-dozen varieties for exhibition purposes is also given by them as follows:—James' Prolific, Telephone, Culverwell's Giant Marrow, Telegraph, Dr. Maclean and Stratagem.

THE SEED FARMS.

In this country many hundreds of acres of Peas are grown for seed purposes, and especially in Essex, which is a great seed-producing county; in Bedfordshire, Cambridgeshire, Lincolnshire, and others. A contract is made with a farmer to grow so many acres of particular varieties, and a certain price is determined upon at the time of the contract being made. This is the general principle underlying the growth of Peas in this country for seed purposes, but there are modifications according to circumstances. It is the practice for the seedsman to supply the seed to be grown, and it is invariably a fine selected stock of a particular variety. Every large wholesale seed house has its seed trial ground—a most valuable and indispensable adjunct to a business of this character, to be turned to practical account in very many ways—and here a fine selected stock of a Pea is grown until there is enough of it to be sent out for growth. In this way our wholesale seedsmen are constantly engaged in making high class selections. There is a tendency in sorts to revert to inferior forms, hence the immense advantage of a fine and thoroughly reliable selected stock. The severe competition in the wholesale trade makes this a matter of the highest importance, and gardeners up and down the country owe much to the seed-houses for their painstaking efforts in this direction. What is done at the trial-ground in the way of selecting choice stocks of Peas, is done also in respect of many other leading vegetables. Germany and France supply large quantities of Peas to the English market, and the United States of America send large consignments also. Such good and useful American varieties as Abundance (Bliss), American Wonder, Cleveland's Alaska, and Cleveland's Rural New Yorker, can be reckoned among the American Peas that appear destined to find much favour in this country. In addition the leading sorts of English wrinkled Peas are largely grown in America also, and not alone for the English markets.

The farmer or other person who takes a contract for Peas is expected to farm them properly, gather the crop, thresh out the seed, and send the produce in to the seed-house. But this is not all the oversight required. It has already been stated that there is a tendency on the part of Peas to revert to inferior forms, or to produce plants of a taller and more straggling habit of growth than the tpye; or, it may be, that by accident the seeds of other sorts get mixed with the sowing sample. Then it is the business of the seed-house to send a person round to the different farms for the purpose of "rogueing the Peas," a term used in the seed trade, meaning thereby to go through the rows, and pull out by the roots all that are not true to character. A trustworthy warehouseman, or some person with sufficient knowledge and intelligence, is selected for the purpose, and he goes his rounds once at least, and sometimes oftener during the summer; on the whole, a pleasant occupation in dry, fine weather, but a disagreeable one when it is wet and stormy. In this way all possible care is taken to ensure purity of the stock.

It may here be stated that it is practically impossible in the case of houses having very large breadths of Peas grown for them to come into personal contact with all who may enter into contracts with them, and so an agent of the house, who is generally resident in the county, takes a district, and arranges the contracts. A local knowledge is absolutely necessary, and especially in the matter of the adaptability of soil to certain varieties.

THE WAREHOUSING.

From September onwards the Peas so grown reach the warehouses. Houses in a large way of business have these on a surprising scale, and any one walking through them during the winter can see huge piles of sacks of Peas, &c., piled three and four high, and looking as if a city in danger of being besieged was laying in ample store of provisions for the defenders. Each sort as received from the grower is carefully labelled, and the particulars duly recorded in a stock-book.

Before any of the Peas can be sent out they have to be "picked"—that is to say, all the inferior grains are separated from the good ones. This is done by women, and the work commences about the beginning of September. As a matter of course, the number of women employed depends on the amount of business done. During the three last three months of the year, and on to some way in the new one, a firm like Messrs. Hurst & Son employs 120 females in "picking" Peas. The Peas are first of all sifted either by machinery or hand, and the cleverness shown by some of the pickers in throwing a half peck or so of Peas from a sieve into a bushel measure by a quick movement of the hands after they have been sifted, without spilling a single Pea, has much interest for the visitor. A long somewhat broad bench is placed against a wall, generally of a permanent character, and this is divided into partitions, at each of which a woman sits on a stool. In the front of the bench there is a hole, and the mouth of a sack is attached to this beneath; a bushel or so of Peas is then placed on the bench. Both hands are employed by the worker. One draws the good Peas towards the hole and so into the sack, the other gathers the pickings into a bowl or similar vessel placed on the bench, which is emptied as required. Practice gives great expedition in a work of this kind; some of the women use their hands with surprising quickness.

The pickers are paid a certain price per bushel, according to the nature of the sample. When it is bad, *i.e.*, contains a great quantity of pickings, a higher price per bushel is paid than in the case of a good one. A few of the pickers are paid regular wages, as their services are required all the year round. Women are found very useful in seed warehouses in many ways, and about twenty are constantly employed in the Houndsditch warehouses for example. The women work from nine to ten hours per day, and their average weekly earnings may be set down at from nine to ten shillings per head. Powerful gas-jets are arranged above the benches, so that when day-light fails there may be no intermission in the work. During the summer months, when business is no longer brisk, the permanent female workers fill up their time in cleaning and mending sacks, and many other jobs of a similar character. Those who are taken on only for a few months of the year, find employment during the summer in various ways—hopping, weeding, &c., in market gardens, fruit gathering, shelling Peas in Leadenhall and other markets; but as sure as "picking" time comes round they make application for their winter's work. Thus a house is able to maintain a sure supply of experienced pickers. I have put the average earnings per week at a certain sum, but the experienced pickers earn more—the less experienced ones less.

Then as to the waste in Peas, as the "pickings" are termed. A good sample of Peas of 4 bushels to the sack will yield on an average 4 quarts of waste; a bad sample will give from 3 pecks to 1 bushel. This waste is sold in the market in Mark Lane, and is used for feeding purposes. Cattle and sheep are fed with it; it is sometimes ground up, and sometimes given to the cattle whole. I asked the foreman at Messrs. Hurst & Son who has charge of the Pea-picking as to what was the quantity of waste obtained in one year. The record is so well kept that after a short calculation the reply was forthcoming, and it was of an astounding character. In the season of 1884-85 the Pea-pickings amounted to 609½ quarters, or 4876 bushels. But what must the sales have been? *Pisum.*

The Flower Garden.

PLANTING, &c.

Should the weather be favourable the earliest opportunity should be taken advantage of to plant Ranunculi, Anemones, and Tigridias. The latter like a rich sandy soil, and exposure to the sun. Sow a few hardy annuals when the ground is in condition, such as Mignonette, Nemophila, Silene, &c.

Roses.

Prune a few Roses for early blooming on sheltered corners. Do not cut these so closely as the general stock, as the young shoot may get nipped by frost. This will do little or no harm, as the next buds will start, but you will have to wait a few weeks longer for blooms. The coarser sorts of rambling Roses may be trimmed and tied up, but climbers in the rosery had better be left for some time yet.

Hardy Climbers

on walls may be pruned, and the walls well syringed with a preparation of two ounces black or soft soap, one half-gill double refined petroleum to six gallons of rain-water, previous to tying them to the walls. This will destroy insect pests. I prefer tar-cord for strong shoots, and small unbleached twine for the smaller, as there is not so much harbour for insects as with list. The deliciously fragrant early-blooming Chimonanthus fragrans and grandiflora one ought to see by the half dozen in every garden. Give these a wall facing the sun.

Flower Beds.

Where these are stiff and sour, collect prunings from shrubberies, Roses, &c. Remove the soil from the centre of the bed, build up the whole of the prunings, and set fire to them. When a good body of fire is secured, proceed to trench over the bed, laying the soil round about the burning pile, until the whole is covered over, leaving a few ventilation holes for air. The whole character of the bed will be changed, and a soil will be obtained capable of growing any sort of bedding plants or annuals. Continue stirring the surface of beds containing bedding and other plants, to allow admission of air to the roots.

Cuttings.

If the stock of bedding Calceolarias is short, cuttings may be put into pans and subjected to a gentle heat, but great caution in watering is requisite, or else the bulk of them will damp off. The stock of bedding Chrysanthemums may also be increased, but they flower earlier when struck in the autumn. *W. M. Baillie, Luton Hoo Park.*

Plants and their Culture.

THE STOVE.

The month of February brings with it an increase of work in this department. The glasswork, stages, &c., should be scrubbed, and all plants which have not already been done should have a good cleaning from all dirt and insects, nothing being so stimulating to growth as cleanliness, and wherever insects of any kind are prevalent strong measures should be adopted to eradicate them. Materials for potting should have the first consideration, and a good quantity of good fibrous peat and loam should be placed in a heated shed to get thoroughly warmed and in a fit state for use.

Alocasias.

Those plants that have been at rest will require attention, such as were potted last season will not require shifting, but merely surfacing, provided the materials used were good and lasting in quality. Others that are required to be grown on for specimens must be potted according to the vigour and size of the plants. The compost that I find to suit them best is good fibrous peat, broke up in lumps about 2 inches square, with a third of fresh sphagnum moss, and a liberal addition of charcoal and silver-sand. It is good practice to keep the plants well elevated above the rim of the pots, or deep pans. The old Alocasia metallica is still a favourite for general purposes, while A. Sedeni, A. Lowi, A. gigantea, A. Thibautiana, and A. macrorrhiza variegata afford considerable variety in form, colour, and habit.

Anthuriums and Marantas

of the stove section require the same treatment as regards material for potting, &c., as the foregoing. A. Veitchii, A. Portei, A. intermedium, A. amabilis, and A. giganteum, are some of the best and most effective. Marantas should all be turned out of their pots, and if not shaken entirely out of the soil should be reduced about 2 inches round the outside of the ball, replacing them in clean and dry pots, and well crocked, quite half full, as Marantas are very shallow rooters, and require much water during the growing season, this matter of good drainage should not be overlooked. The soil best suited for them is roughish leaf-mould (that is, not sifted), peat, sand sufficient to make the compost porous, and charcoal. M. Veitchii, M. Lindeni, M. rosea picta, M. zebrina, M. splendida, M. Wallisii, M. Makoyana, and M. Baraquinii, are the most decorative of the varieties. The plants are benefited by being plunged up to the rims in cocoa fibre in bottom-heat after potting; they will then make surprising progress in a short time.

Peperomas and Fittonias.

Where large pans of the above have been grown, they will require breaking up, and replanting in the same sized pans; or the tops may be taken off and propagated for making up pans later on. The plants are very suitable for planting on staging, intermixed with Cyrtoderia fulgida, Panicum variegatum, and Lycopodium, as a groundwork or carpet whereon taller plants are arranged. *A. Evans, Lythe Hill, Haslemere.*

Hardy Fruit Garden.

PRUNING AND TRAINING.

The late spell of severe frosty weather which suspended ground operations for some time will have given an opportunity to push on with the pruning of large fruit trees, and this work should now be well advanced. There will yet remain in many large gardens a considerable amount of wall tree nailing to be done. This work should be executed as the weather permits, by the employment of several men during the middle part of the daytime, when shreds and nails can be handled with facility. Of all winter garden operations, nailing during biting cold weather is one of the least inviting; yet it has to be completed before there is any growth in the trees. Advantage will also have been taken when frost had possession of the soil to wheel material to convenient places (in heaps), to be used as mulchings after the prunings had been cleared up, and the ground in suitable condition.

Mulching.

Avoid the injurious practice of digging near the stems of fruit trees which are occupying positions on the margin of vegetable quarters. If the surface beneath the trees is weedy, use the hoe, and rake off the weeds, after hoeing it; prick over the surface soil 2 or 3 inches deep, and apply a mulch of 3 or 4 inches thick with half-decayed straw or good rich farmyard manure. Which of these mulchings will be most advisable to use will entirely depend upon the vigour of the trees and the depth and quality of the soil in which they are growing. Trees growing vigorously in naturally fertile soil (without root-pruning) should be simply mulched with half-decayed straw, applied to keep the surface soil moist, and free from weeds. Trees growing in poor shallow soil, providing the roots are really in the cultivated soil, and not down in a lower stratum, would be in most instances much benefited by the application of the richer mulching. But to apply this valuable material beneath trees which have their roots down out of reach of its influences, and trees which are already making sappy unfruitful growth through a succession of seasons of sterility, would be simply a waste of good material, which could be much more profitably employed for other crops. The remedy and its application have been fully described many times in this journal for the cure of trees in the last-mentioned condition. Those who plant fruit trees in shallow soil, and are not afterwards prepared to meet the extra labour and expense to maintain them in a healthy, fruitful condition, by lifting, mulching, &c., would undoubtedly find it much more profitable to purchase their fruit than to become the unfortunate possessors of numbers of trees producing small spotty fruits scarcely marketable, and certainly not worth the ground they occupy. *G. H. Richards, Somerley, Ringwood.*

Fruits Under Glass.

FIGS.

The want of sunshine and the severe weather of late would materially affect the progress of these fruits, which, when the drainage has been carefully looked to, so that free egress is afforded for water, and after a good top-dressing of rich soil the trees in pots started in November or December will require well syringing and plenty of moisture in the air of the house. Air may be given on favourable occasions, shutting up early to maintain a high temperature—85° or 90° with sun-heat. They will now begin to make rapid growth, and commence to show fruit. Disbud weakly shoots, stopping all shoots at the fourth or fifth joint, so as to enable the fruits to swell to maturity; at the same time they must not be allowed to want for water, and occasionally the trees may be supplied with tepid liquid manure; the Fig being a gross feeder, any neglect in watering might cause the fruits to drop before ripening. If spider is present use the syringe freely to keep it down; a good preventative against this pest is to put about a gallon of clear soot-water into two of pure water. The second house may now be brought on slowly after being prepared by cleaning, watering, and mulching the borders, introducing a little fire-heat, and syringing on all bright days. *J. Vert, Audley End Gardens.*

The Kitchen Garden.

GENERAL WORK.

In bad weather stores of roots should be examined, and all decaying matter removed. Onions, especially those intended for late use, should always be tied in bunches or ropes, and hung up in an airy, open shed, having a north aspect. Early seed Potatos should also receive attention, and, if practicable, be placed thinly on shelves, or, better still, in shallow boxes, where they can be freely exposed to air and light, but be made secure from frost. The required supplies of Pea and Bean sticks should be got together, assorted, sharpened, and tied in convenient bundles for future use. On warm, sheltered borders, small sowings may be made of summer Spinach, Early Milan or other Turnips, and Horn Carrots. Sow also for succession in cold frames, or under south walls, Radishes, and a small quantity of Lettuce seed.

Seakale.

This vegetable succeeds in almost any good rich garden soil, if in an open sunny situation. In planting it will be necessary to consider whether it is required to be grown and bleached on the ground, or for lifting purposes hereafter. If for the former, preparation should be made by manuring and trenching. In planting the rows should be 2½ feet apart each way, and three sets together in a triangular form, 3 inches from set to set, leaving a 3-feet alley every third or fourth row. For annual lifting any well dug rich soil will suffice, planting singly 1 foot apart and 15 to 18 inches asunder. Cuttings for planting may be obtained from the trimmings of plants lifted for forcing, and should be cut from 4 to 5 inches in length, and not less than 1 inch in circumference; these should be laid thickly together, with a sprinkling of fine soil over them, until they are callused, and be finally planted out, or they may be permanently planted at once, if the ground is ready to receive them—a plan that answers well and saves time later on. After starting to grow two of the strongest growths should be retained on each plant, and the surplus ones removed. Good plants may be obtained for forcing in one season from seed sown in drills early in March, and attended to in the way of thinning out, &c.; if any of these prove too small for that purpose they make capital sets for replanting, care being taken to remove the crown by cutting it straight across before doing so, and thus preventing their flowering. An occasional sprinkling of nitrate of soda during the growing season will be found very beneficial. *J. Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 8	Sale of 12,000 Liliums, in variety, from Japan, at Stevens' Rooms.
TUESDAY,	Feb. 9	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M., Scientific Committee at 1 P.M., General Meeting at South Kensington, at 3 P.M., Dinner, at the "Criterion," at 6.30 P.M.
WEDNESDAY,	Feb. 10	Sale of Plants from Ghent, Roses, Fruit Trees, Bulbs, and 500 lots of valuable Orchids in Flower and Bud, at Stevens' Rooms.
		Sale of 200 Lilium auratum, Plants, Roses, Lilies, &c., at Protheroe & Morris' Rooms.
		Sale of Nursery Stock, at the American Nurseries, Leytonstone, by Protheroe & Morris.
THURSDAY,	Feb. 11	Sale of 500 lots of valuable Orchids, in Flower and Bud, at Stevens' Rooms.
		Meeting of the Société Botanique de France.
FRIDAY,	Feb. 12	Sale of Imported and Flowering Orchids, at Protheroe & Morris' Rooms.
		Sale of Nursery Stock, at the Wanstead Nursery, by Protheroe & Morris.
SATURDAY,	Feb. 13	Sale of Plants from Ghent, Roses, Fruit Trees, Bulbs, &c., at Stevens' Rooms.

THE condition and prospects of the ROYAL HORTICULTURAL SOCIETY make it imperative that the Horticultural Fellows should attend the coming annual meeting on the 9th inst., and not only that they should attend but be prepared with some practical suggestions to lift the Society from the slough in which it is now placed from no fault of its own. There is no need for us to point out the humiliating but thoroughly undeserved position in which it is now placed. The evidences of good horticultural spirit and good horticultural work done during the last few years are striking and abundant. The fortnightly meetings, the Apple Congress, the Narcissus meetings, the Orchid Conference, the Pear Congress have been carried out under adverse circumstances with a freshness and vigour by the Council and their assistants, which entitle them to the gratitude and confidence of the horticultural body.

It is rumoured that the negotiations with the Exhibition Commissioners are likely this year to be very unsatisfactory in their results. If this be so the question once more arises, whether it is not high time that a vigorous effort should be made to free ourselves, as we can do if we will, from the entangling embarrassments at South Kensington. The financial condition of the Society, though much less onerous than in former years, is, we believe, far from satisfactory; and, if rumour prove true, it must be made much worse from the want of sympathy and mutual co-operation on the part of the Commissioners. There can be no doubt that if this unsympathetic attitude be maintained, the result will be a serious falling off in the number of non-horticultural Fellows, and consequently in the funds of the Society.

This is the state of things we have to face. It is something to know this. It is something also to know what we want; and there is a general consensus of opinion that we want to be free from what we may conveniently call South Kensington ties; we want a home of our own—a meeting place such as other societies have; rooms for exhibitions, for meetings, for the housing of the library. We want to maintain and develope Chiswick as an experimental garden. Its utility is so generally acknowledged that every effort must be made to maintain it. So much, so far as London is concerned. But while the permanent headquarters must necessarily be in London, we want to put ourselves far more intimately in touch and co-operation with the provinces generally, and the local horticultural societies in particular. It is of no use catering for Cockneys and pleasure seekers—the attempt has been made for years with no success. It is of no use hugging complacently the memories of what has been done in the past—this is ancient history. We want united effort now to adapt ourselves to the circumstances and requirements of the present. We need to concentrate all our efforts to maintain the integrity of our empire. Special societies no doubt do good work. The Rose Society and the National Chrysanthemum Society are very earnest and business-like in their operations; but their aims are necessarily limited and narrow. There is nothing to prevent federal union of these societies with the parent body—to ensure co-operation and united action where desirable, and free separate action where the necessity for independent exertion becomes evolved from force of circumstances. We allude to this matter because proposals are afloat for the establishment of a separate special society for Orchids. If Orchid growers and Orchid lovers feel that there is an imperative necessity for such separate organisation well and good; we shall do our best to support it. But, in our opinion, if the thing be desirable at all, the time is ill-chosen. So far from the Royal Horticultural society having neglected the interests of Orchids, it is notorious that the Society has exerted itself vigorously and satisfactorily in this direction, and, for our part, we do not think a special society would do the work better. This, however, is a matter of opinion. All that we would urge now is, that this is not the proper time for any measure of disintegration, rather, for the reasons we have already stated, it is time for the most thorough and earnest co-operation: and this is the reason why we would urge all interested in the progress of horticulture to attend the annual meeting and to be prepared for vigorous action. We do not know what, if any, proposals the Council may bring forward. We know that the prospects are far from bright; we know, also, that the Council has had much hard work in the last few years, and merits confidence and support. We would hope that in the present crisis they may have the undivided support of the horticulturists. An opportunity for discussion will be afforded at the meeting, before which time, doubtless, the annual report will have been circulated among the Fellows. A further opportunity will also be afforded for discussing ways and means at the dinner which it is proposed to hold on the same evening. We regret very much that it should have been thought necessary to fix so high a rate for the dinner tickets; this will be prohibitory to many who would otherwise have liked to be present, but probably in the course of the summer means may be taken to secure one or more informal meetings of this character in such a manner that they can be partaken of by many to whom the outlay of 30*s.* for such a purpose is looked on, and not unnaturally, as unwarrantable.

A word as to provincial efforts. We hope that the annual report may contain some definite information upon a scheme concerning which we know negotiations are taking place—we mean the holding in Liverpool of a provincial show of the first magnitude. We earnestly trust this may be carried out. Liverpool is such an excellent centre for the purpose that we believe neither funds nor zeal will be lacking to make the exhibition a success.

—— MISS M. GLADSTONE'S MARRIAGE.—The Rev. HARRY DREW, who on Tuesday last married Miss MARY GLADSTONE, second daughter of the Right Hon. W. E. GLADSTONE, is the second son of JOHN DREW, Esq., of Powderham, the agent for the Earl of DEVON'S estates, and is a brother-in-law of Mr. P. C. M. VEITCH, of the firm of Messrs. ROBERT VEITCH & SON, of Exeter.

—— ASA GRAY.—A sympathetic notice of the career and labours of the eminent American botanist appears in the *American Sun* of January 3. English botanists claim ASA GRAY as one of themselves, despite the accident of his birth on the other side of the Atlantic, and he is held in as great esteem here as in the land of his birth.

—— GLYCOGEN IN FUNGI.—M. ERRERA has lately ascertained by means of iodine (which communicates to it a reddish-brown colour) that glycogen exists in fungi, replacing starch, to which it is chemically allied.

—— ROYAL MICROSCOPICAL SOCIETY. — The annual meeting of this Society will be held on Wednesday, February 10, at 8 o'clock precisely, when the Rev. Dr. DALLINGER will give his Presidential address.

—— "LINDENIA."—The last issued part of this beautiful publication contains figures of Spathoglottis Angustorum, Odontoglossum rubescens, Catasetum tigrinum, and Cattleya aurea. Each of these demands a longer notice than a mere paragraph permits. We propose, therefore, to revert to them on a future occasion.

—— MALE AND FEMALE PLANTS.—HOFFMANN (*Botanische Zeitung*, 1885, n. 10, 11) says that the proportion of male plants to female plants in the case of dicœcious plants, such as Willows, Hops, &c., depends on the closeness with which the seeds are sown. When the seeds are sown very closely together, the proportion of male to female plants is 283 males to 700 females; while, when the seeds are sown at wider distances apart, there are only 76 males.

—— SINGLE CAMELLIAS.—When the late Dr. SEEMANN monographed the Ternstrœmiads (the order to which the Camellia belongs), he had occasion to observe the rarity with which five-petalled flowers of Camellias occur; if we remember rightly, he even went so far as to say that he had never seen such a flower. Mr. SCRASE DICKENS, however, has a plant which year after year produces single white flowers with five petals only. The flower, kindly shown us by Mr. DICKENS, is small, but very chaste—prettier to our fancy than the coarser double flower. Most of the stamens in these flowerst are destitute of anthers.

—— CHIRIQUI.—Mr. J. H. HART, of the Government Cinchona plantations in Jamaica, has lately visited the neighbourhood of Lake Chiriqui, in the province of Veraguas, Central America, and spent some days also on the river "Wari Biarra," the vegetation of which is more tropical in character than that of Jamaica.

—— SYNDICAL CHAMBER OF BELGIAN NURSERYMEN.—The annual general meeting will be held at the Casino, Ghent, on the 7th inst., at 11 A.M., to receive the annual report, elect new members, and other business.

—— "THE GARDEN ORACLE."—Mr. SHIRLEY HIBBERD has surely had experience in the matter of oracles, for we see this is the twenty-eighth year of publication of his very useful little book, which will be found much less ambiguous than oracles generally are. It is a book which is daily referred to in our editorial offices—a pretty good test of its utility.

—— GLUTINOUS RICE (ORYZA GLUTINOSA).—It appears that in Siam a variety of Rice has been long known in which the grains contain a considerably smaller proportion of starch than usual, this substance being replaced by sugar and dextrine. It is evident that for stiffening purposes this variety would be advantageous.

—— LABISIA? MALOUIANA. — Under this provisional name the *Illustration Horticole* figures (t. 580) a stove shrub stated to come from Borneo. The flowers are at present not known, but have nearly sessile alternate leaves, lanceolate in form, deep green, with a broad central irregular stripe of paler colour. The young leaves are of a pale claret colour. Judging from the figure, this should make a beautiful foliage plant.

—— THE SARDINIAN FLORA.—M. WILLIAM BARBEY has drawn up a useful list of the plants of this island, under the title of *Floræ Sardoæ Compendium*. The introduction is occupied with some historical details relating to the flora of the island, and the authors who have dealt with it, especially MORIS, of Turin, whose *Flora Sardoa* was never completed. Various tables are given, showing the exclusive occurrences of certain species in Corsica, in Corsica and Sardinia, in Sardinia only, and the existence of other markedly Sardinian species, which are represented in other islands, and in the Mediterranean region. The total number of plants enumerated amounts to 2856 species. Dr. SCHWEINFURTH'S account of his visit to the island in 1858 is added at, perhaps, undue length. Dr. ASCHERSON also adds some important supplementary notes. It

will be seen that the work is somewhat fragmentary, but it is of great importance to have the fragments brought together, even if the time has not come for integrating them. Some well-executed lithographic plates accompany the volume, which may be had from any foreign bookseller.

—— The Primula Conference.—We are now in possession of the revised programme of this Conference, which will be held on April 20 and 21, and not, as at first stated erroneously, on April 23 and 24. The exhibition of plants will take place in the conservatory at South Kensington, in conjunction with that of the National Auricula Society. In all, there are eleven classes indicated in the schedule, viz. :—1, the Auricula ; 2, the Primrose and Polyanthus ; 3, varieties of Primula Sieboldi ; 4, varieties of Primula sinensis. Special schedules for garden varieties in the first two classes will be provided by the National Auricula Society. Class 5, European species, varieties and hybrid of the genus Primula ; 6, Himalayan and other Asiatic hybrids of the genus ; 7, Chinese and Japanese hybrids of the genus ; 8, American hybrids ; 9, plants allied to the genus Primula, but not garden hybrids ; 10, Primulaceous plants grown to illustrate special modes of culture ; 11, specimens, models, and drawings, illustrative of the structure and mode of growth of these plants. Papers will be read by Mr. Shirley Hibberd, Mr. Samuel Barlow, Mr. J. G. Baker, and Dr. Maxwell T. Masters.

—— Dombeya Mastersii.—The flowers of this species are white, but when looked at with transmitted light the curious oblique petals assume a delicate pink tint. The inflorescence consists of a pendent umbel, as in its noble congener, D. (Astrapæa) Wallichii, but presents a widely different appearance owing to the corollas being widely expanded, the longer pedicels, and the inconspicuousness of the surrounding bracts. The stamens are united into a tube in the lower part, which is pink ; but the most striking peculiarity is the five barren filaments that are much longer than the others, and stand on a level with the styles. Their outer surface near the tip is covered with short hairs, as are the tips of the inner face of the petals, and the pollen as it falls from the fertile anthers is collected here in great quantity. As the styles elongate they would doubtless come in contact with this contiguous supply of pollen. The flowers besides being large and conspicuous, are possessed of a peculiar odour, and doubly welcome at this season of the year. The cordate, softly hairy leaves are not unlike those of the Lime. A figure is given in the *Botanical Magazine*, t. 5639, and a flowering specimen may be seen in the Begonia-house at Kew.

—— "Capacities of the Potato."—A circular with this heading has been sent us by Mr. Torbitt, of Belfast. The circular urges the utilisation of the fruit or berry of the Potato as an article of diet. The money value of this fruit in the United Kingdom is set down at the modest value of one hundred millions. Mr. Torbitt's statements are so "capacious" that we should not wonder if they deterred rather than attracted the practical man. In the first place, we are not sure whether or no the fruit is harmless. It may be, and probably is when ripe, but the point requires to be settled. The berries of the common Solanum nigrum are not poisonous, neither are those of the nearly allied Tomato even in the raw state, so that the probabilities are as we have stated them. Still, before the fruit is utilised, this point ought to be proved to demonstration. The poisonous ingredient solanine is said by some chemists to exist in the unripe fruit, while others deny its existence, so that its presence or absence depends probably on the stage of growth. Solanine is not



Fig. 35.—Allamanda hendersoni. (see p. 178.)

changed by boiling water unless an acid be present, when it splits up into solanidin and glucose, or sugar. Whether solanidin is poisonous we do not know. Mr. TORBITT tells us that the action of heat and sugar decompose absolutely the acrid poisonous constituents of the raw berry. This may be so, and we think very probably it is so, but we should prefer some more definite knowledge. Again, granted the innocuousness of the berries, we doubt whether it would economically be worth while to grow the plant for the sake of the berries, when there are so many other "soft fruits" already, and we still more doubt the financial prudence of endeavouring to get two distinct and partially antagonistic crops from the same plant in the same season. It can be done, no doubt, but whether it would be worth while is another question.

—— THE AURICULA, CARNATION, AND PICOTEE SOCIETIES.—We learn from the *Manchester City News*, of January 30, that the annual meetings of the Auricula Society and of the Carnation and Picotee Society were held on Wednesday afternoon at the old "Bull's Head," Manchester, at which "ancient hostelrie" these meetings have been held for nearly a century. It was largely attended by the florists from Halifax, Todmorden, Middleton, and other centres, and the Secretary, the Rev. F. D. HORNER, came all the way from Burton-in-Lonsdale. Mr. WILLIAM BROCKBANK was the Chairman. Both societies are still in a flourishing condition, but are a little hampered for want of funds. It would be well if some of our more wealthy lovers of flowers would help these two societies by their subscriptions, as it would be a pity if they were given up for want of funds. Exhibitions were arranged for at Manchester at the usual dates, under the kindly auspices of the Botanical and Horticultural Society, who undertake to provide the room, and who give a liberal contribution to the funds.

—— CHRYSANTHEMUMS.—These flowers may be had for more than half the year, beginning with the summer-flowering varieties—which, by the way, we could spare—and ending with the Japanese section, which we could not spare, as they are so useful for conservatory decoration. Mr. STANTON sends us from the gardens at Park Place, Henley, a fine bouquet of these magnificent flowers, to show how well they may be made to enliven our conservatories even so late as the beginning of February. The varieties sent comprise Boule de Neige, white, a great acquisition; Princess Teck, white; Ethel, white; Madame C. Audiguier, red; Fulton, yellow; Père Delaux, red and yellow; Mrs. Carey, red; Boule d'Or, yellow; Comte de Germiny, yellow; Sultan, lilac; Meg Merriles, yellow; Souvenir d'Amsterdam, red.

—— THE NURSERY AND SEED TRADE ASSOCIATION.—We are glad to see that this Institution shows more signs of life. There are many points which are purely personal to its members, such as those connected with the credit and financial position of individuals, which cannot be discussed with propriety in public. There are, however, numerous questions involving general principles and calling for concerted action, which may appropriately be discussed in the public journals. But there is a want of public spirit which we trust the Nursery and Seed Trades Association will do much to remove. By way of illustration we may cite the questions of rating, income tax, railway rates, tithes, the competition of so-called amateurs, seed adulteration, manure analyses, the predatory habits of certain members of the Long Firm, &c. In our desire to be of service we have often, at considerable risk, and more often still at considerable expense and some personal annoyance, taken up these questions. But with what result? A letter or two in support have appeared in our columns and then the matter is dropped, till some fresh cause for grumbling occurs. We may safely claim to have done more than any other class journal of the kind for the support and protection of the trade, but the encouragement to proceed is not great in the face of the statement attributed to Mr. WILLIAM PAUL, and against which, if correctly reported, we protest, and appeal confidently to our record for forty-five years in justification of our claim. With a properly organised trade association working on the same lines much might be done, but to go on piping when the hearers won't dance, and say they do not hear the tune, is unsatisfactory.

—— MANCHESTER HORTICULTURAL SOCIETY.—Mr. BRUCE FINDLAY is a perfect OLIVER TWIST—he is always calling out for more, but, unlike his prototype, he generally gets what he wants. This is a sure sign that he wants the right thing. Our Manchester friends are too shrewd to purchase wooden nutmegs, and they know that when Mr. FINDLAY wants a thing it is a good thing. Now he wants a new Palm-house, and we earnestly and sincerely hope he will get it.

—— WHAT WHEAT TO GROW.—The French agriculturists experience the same difficulty in the profitable culture of Wheat that our farmers do. In France the depression arises from scanty production and the low price for what is produced, so that the yield is secured at a loss. This has directed the attention of M. DEHÉRAIN, of the Agricultural School of Grignon, to the subject. He attributes the poor yield to the deficiency of manure employed, but points out at the same time that with most Wheats this is unavoidable, because, when a more plentiful supply of manure is afforded the Wheat becomes laid with the slightest storm. It has hence become an object to find a variety with stiff straw, and sufficiently productive to pay for high manuring. Such a Wheat has been found in a variety closely resembling Sheriff's Square-headed Wheat, and known as Scholey's Wheat, from the English farmer with whom it originated. This Wheat maintains itself erect when others are laid. It tillers abundantly, so that weeds have no chance of growing. The quality of the grain is not equal to that of some other Wheats.

—— SIEVE TUBES IN ALGÆ.—These microscopic tubes, which are perforated so as to permit the passage of protoplasm from cell to cell, have now been discovered in many Algæ (Laminaria, Macrocystis). It is satisfactory to know that our own anatomists have taken a prominent part in this discovery of the continuity of protoplasm, which bids fair to be little short of revolutionary in its character. Mr. GARDINER, of Cambridge, has been one of the most successful investigators in this field.

—— ANOPLOPHYTUM STRICTUM—A pretty Bromeliad from Rio Janeiro, figured in *Gartenflora* for January. 15, 1886. The plant is found in the mountains of Rio Janeiro, growing on the small twigs of trees, on which there is no accumulation of vegetable mould, the plant being secured thereto by a few roots. M. E. ORTGIES, of Zurich, states that the plant came by chance from Rio, in a consignment of Orchids, and probably from the region of the Organ Mountains, which is much visited by collectors from Rio. The chief beauty of the plant lies in the bracts, which are retained much longer than the blooms, the latter falling very early. The bracts appear at first as closed round buds of the purest white, which then lengthen out, and gradually assume a rose-purple colour at the tips. Soon the flower-buds appear, whilst the bracts take on a deeper colour, until, at flowering time, they have become quite rose-coloured. The flowers appear in the figure of a blueish-purple colour. The plant was in cultivation at the beginning of the present century, but was lost to gardens in the lapse of time, and it has been repeatedly imported from Brazil.

—— CITRUS TRIFOLIATA.—In the *Revue Horticole*, Nov. 16, 1885, is a beautiful figure of this hardy Orange under the name of C. triptera. A leafless branch is shown bearing flowers, while another bears leaves and young fruit. A third branch bears the small orange-coloured ripe fruit. These three conditions are very characteristic of the plant, but they show nothing to merit or justify the specific name of triptera, while that of trifoliata is very appropriate. The reason given by the author quoted for preferring the former name is to avoid confusion with another plant, the Limonia trifoliata, L., or Triphasia trifoliata, DC. The latter is a more slender shrub, with evergreen leaves, small spines, and small red fruits about the size of Peas, and may be at all times distinguished from C. trifoliata, whether in fruit or merely in leaf, by the above characters. The latter is hardy at Kew, has stout, crooked, green branches, leafless in winter, and furnished with very strong spines, but does not fruit. Triphasia trifoliata, on the other hand, has been in fruit for many weeks past in the Palm-house, and is probably far from being hardy. From these considerations there seems no just reason for altering the name to C. tripera, not to C. californica, as some have done.

—— GALANTHUS ELWESII.—Messrs. BARR & SON, Covent Garden, sent us a pan of this early flower for our inspection. Galanthus Elwesii is a good early flowering and large Snowdrop, having a calyx of large and broad white segments, though not so large as those of G. imperati. It would be useful for beds just now, and can be left out-of-doors all the winter, so is quite hardy. An illustration of this flower, showing its comparative size when side by side with some other Snowdrops, will be found in *Gardeners' Chronicle*, p. 236, vol. xi., 1879, and in the *Botanical Magazine*, t. 6166.

—— RHIPSALIS CASSYSHA.—The quaint appearance of this curious shrub is not altogether devoid of attraction when loaded with its pearly, subpellucid berries, bearing no remote resemblance to Mistleto fruits. The cylindrical, or rather angular, slender branches, are fascicled at irregular intervals along the larger branches, and doubtless lose much of the graceful character they would otherwise possess if furnished with foliage. Owing to this leafless condition they present a uniform sameness throughout the year, except at the flowering and fruiting period. The pale yellow, sessile flowers are arranged laterally on the branches, and certainly deserve the epithet of pretty, by reason of the numerous stamens set in a fascicle of petals gradually merging into, and similar to the sepals. An idea of their character may be gleaned from R. rhombea and R. crispata, Brazilian species, flowering alongside of R. Cassytha in fruit in the Succulent-house at Kew. The latter is figured in HOOKER'S *Exotic Flora*, 20, and at one time received the name of Cactus pendula. The specific name would not be inappropriate, seeing that in its native habitats the plant is suspended from the branches of trees.

—— PUBLICATIONS RECEIVED.—The *Canadian Record of Science*. Natural History Society, Montreal.—*Forest Department Code* (Government of India). Calcutta: Government Printing Office.—*Sulphate of Ammonia as a Manure*. By A. H. CHURCH, M.A. Sheffield: G. SLATER, West Court.

—— GARDENING APPOINTMENTS.—Mr. W. C. LEACH, late gardener to E. P. MONCKTON, Esq., Fineshade Abbey, has been appointed Head Gardener to His Grace the Duke of NORTHUMBERLAND, Albury Park, Guildford, Surrey.—Mr. S. TAYLOR, late of Malsis Hall Gardens, Yorkshire, has been appointed as Gardener to A. HODGSON, Esq., Clopton House, Stratford-on-Avon.—Mr. WM. RAE, Gardener to Lt.-Col. TOKE HEATHCOTE, Camberley, Surrey, has been appointed Gardener to J. D. WHITE, Esq, of Dankeith, Symington, Kilmarnock, N.B.

ALLAMANDAS.

THESE plants are now so familiar to us all that to enlarge on their elegance and usefulness as stove climbers is not necessary; suffice it to say that they are equally valuable as exhibition plants, and I have yet to see the garden where greater attention is paid to the culture of this lovely genus than at Messrs. Lucombe, Pince & Co.'s establishment at Exeter. The illustration, from a photograph (fig. 35), represents one of their specimens of Allamanda Hendersoni, and which was exhibited by them at the summer meeting of the Devon and Exeter Botanical and Horticultural Society, where its clever training and the profusion of its beautiful golden funnel-shaped flowers attracted much notice, and won for it great admiration. At the Exeter Nursery Allamandas are treated as deciduous plants, and the cultivation of them as practised there is somewhat analogous to the way in which they so successfully grow the Stephanotis described at p. 136, save that the Allamandas spend the resting period in the stove, and that the compost in which they are grown consists of fibrous loam, sand, and leaf-mould. Moreover, they are great feeders when making their growth, requiring then liberal watering daily. To Mr. James Luxton, the clever foreman at Messrs. Lucombe, Pince & Co.'s Exeter nursery, the credit is due of having grown the Stephanotis floribunda, which was figured in our number for January 30, and the plant now figured. *W. N.*

COTTAGERS' ALLOTMENTS AND SMALL HOLDINGS.

Regarding this proposal without any political bias, the best criterion possible as to the advisability of such a wide-spread extension of the system as is proposed is, as your leading article (p. 144) maintains, the average state and efficiency of allotments now existing, and of the cottagers' gardens. As a rule, it is the most thrifty who have allotments, although a cottager who can manage well a small vegetable garden round his house, very often would refuse an allotment, knowing full well the amount of work and attention he would have to bestow upon it. The conclusion you arrive at, that the class who are to be primarily benefited by the Birmingham scheme show at present a great need of instruction before they will be able to garden with profit, is a perfectly just one. This, notwithstanding the fact that the Onions, Cabbages, and Potatos exhibited in the cottagers' classes at provincial shows, are as good and sometimes better than the exhibits by gentlemen's gardeners in like classes. These three vegetables grow by a kind of rule-of-thumb, and, probably would grow as successfully in larger plots, provided they could get the same manures.

But these three things alone, with so many growing, will hardly pay, the labourer will still need his ordinary weekly wage, and to work the usual number of hours, and cultivate three, or even two acres of his own, will only make his yoke heavier for very little extra lucre. Again, will not a man who has to be about his own business at certain times find a difficulty in obtaining work on large farms? But putting these matters on one side, the fact is that any labourer who thinks to get much else but wear and tear of body and soul out of bigger allotments than he has now, must develope capabilities as yet scarce even among highly educated lessees and owners of soil.

I saw a letter the other day from a member of Parliament to the secretary of a local flower-show, offering to give prizes; but asking at the same time, if something could not be done under the auspices of the society, other than in the way of offering rewards for the best kept gardens, by means of lectures in the village schoolroom in the winter, and by oral instruction in any suitable outdoor place in the summer. The idea, although not novel, is a good one. Something of the kind is necessary. For one must be of the radical "household of faith" to believe sincerely, that any substantial good will come, for a decade at least, by granting up to 3 acres of land to most agricultural labourers. Numbers no doubt will learn by bungling; but too many before reaching the turning for slight success will find a store of land a sore in the flesh. *Vagabond.*

THE FERNERY.

DAVALLIAS.

This genus deserves to be extensively cultivated, not only for its extreme beauty and gracefulness, but on account of its thick coriaceous texture of the fronds of some of the species, which renders them more serviceable for decoration, as they will withstand a dry atmosphere better than many Ferns. Some of the species are nearly hardy, and will thrive well in a cool greenhouse.

Propagation.

Most of the species produce spores in great abundance; but as these lie dormant for a long time after they are sown before they begin to germinate, and after they have started are rather slow in establishing good plants, the best way to increase the stock is by division. Of the free-growing sorts a good stock may soon be had by taking off the points of the rhizomes; and by doing this it will keep the old plants in better shape. It is a good plan to plunge the pots in some suitable compost for the young rhizomes, which grow over the rims of the pots, to root into, and they can be taken off and potted after they have made a few nice roots.

Potting.

As the roots of Davallias are generally confined to the surface, it is best to use shallow pots or pans for growing them in; these should be well drained. The compost for potting should consist of fibrous loam, peat, and leaf-mould in equal portions, with a liberal addition of sand; a little sphagnum moss and charcoal may also be used in the compost. In potting the plants they should be kept well above the rims of the pots. When grown in baskets, for which purpose many of the Davallias are especially suited, the baskets should be well lined with moss. If this is kept damp, the rhizomes which grow round the basket will root freely into it, and derive a great benefit therefrom. During the winter Davallias will succeed well suspended from the roof, but during the summer they should have a more shady position, and where a moister atmosphere can be maintained most of the species may be grown on in a good stove temperature, and hardened off after they have attained a useful size. Watering must be attended to carefully; as they do not fill their pots with roots so quickly as most Ferns, they are liable to get over-watered, and it should be remembered that they are equally liable to be damaged by being allowed to become too dry. I believe all the species are worthy of a place in any collection; the following, however, are among the most useful for general purposes.

D. canariensis.—This, which thrives well in a cool greenhouse, should be included in every collection; the rhizomes are supposed to resemble a hare's foot, hence the common name, Hare's-foot Fern.

D. fijiensis.—This is one of the most beautiful species of the genus; the fronds, which are very finely cut, have rather long stipes, and droop over very gracefully; the rhizomes are short and thick, with pale brown scales. D. f. major differs from the above in having shorter stipes, and the fronds are not so finely cut. D. f. plumosa, when grown under the same conditions, so much resembles the normal form, that it is difficult to distinguish one from the other. It is, however, considered to be an improved variety.

D. Griffithiana.—A very beautiful form, with dark green fronds; the rhizomes are rather stout, and covered with long silvery-grey scales, which form a pretty contrast to the dark green fronds.

D. æissecta.—This well known species is one of the most useful for baskets, being of remarkably growth, with long rhizomes, and the fronds are light and elegant.

D. Tyermanni.—A free growing species; the silvery-grey rhizomes, which spread quickly, are very conspicuous; the fronds are small, and of a deep glossy green.

D. elegans.—This is a very lightand elegant species; the rhizomes are long and slender, and covered with brown scales. It somewhat resembles D. dissecta, but is lighter in appearance: one of the most useful for baskets.

D. bullata.—This is very pretty for summer use, but being deciduous it is of no service during the winter. In the fernery, however, the dark brown rhizomes, which are very conspicuous, have an attractive appearance.

D. Mariesi.—A beautiful species, from Japan. The fronds are of a bright lively green; the rhizomes are slender and covered with greyish scales; it is of very compact growth, the rhizomes branching out in all directions. It is generally described as an evergreen species, but it loses all the old fronds during the winter: these are soon replaced with new ones, especially if the plants are placed in a warm growing temperature. It is a good basket Fern.

D. Mooreana.—This distinct and beautiful species makes a grand specimen; in a small state it is also very useful. The fronds when well developed are very large, and of a pale green colour, the rhizomes are not so conspicuous as in the other species alluded to.

D. hemiptera.—A very distinct little Fern, with simply pinnate fronds, and slender creeping rhizomes. *H.*

THE ORCHID HOUSES.

It is now a busy time in the Cattleya houses, for with the flower come the growth and the roots; these plants will require almost daily attention in watering, which should be very carefully done. When Cattleyas are making their growth and are properly potted they will require a considerable quantity of water, but if they should not be in a very vigorous and healthy condition a lesser quantity of water will be required, as an excess would prove fatal to nearly all the young roots. Cattleya Dowiana, C. Sanderiana, C. Warneri, and C. gigas invariably send out a number of roots above the compost; it is, therefore, good practice that peat, charcoal and sphagnum should be at once placed about these. The new C. Lawrenceana appears to be at home in the Cattleya-house, but it certainly will not stand a house that is much warmer, nor yet a close atmosphere. In growing Cattleyas one of the most important items is to have an abundance of moisture at all times; the second is to have the atmosphere properly freshened by ventilation night and day; at the same time there must not be a draught blowing direct on the plants, but air should be let in from above and beneath them. In the cool house Odontoglossums will be growing fast, and must be placed so as to give the plants sufficient room, or the growths will soon become thin and drawn. Where flower-spikes are showing it is a good plan to tie a small piece of cotton-wool round the spike to prevent insects creeping up the spike and eating the buds off; give plenty of water, never allowing the plants to become dry. Give careful attention to Oncidium Rogersii, which does best in this house suspended near the glass on Teak rafts with sphagnum; it should be well supplied with water. *A. Bradshaw, Waddesdon, Jan.* 19.

FORESTRY.

STAKING TREES.

This is a simple and inexpensive, though much neglected, operation, to which at the present planting season we are inclined to draw attention. It is well known that if newly-planted trees are allowed to rock to and fro with the wind much damage, caused by the constant and severe stain on the tender rootlets, is the result; and also that the untidy and unsightly appearance of numbers of trees half-blown over by the wind, betokens anything but good management on the part of those to whom the work is entrusted. In ordinary forest planting, where the young trees rarely exceed 2 feet in height, staking is quite unnecessary; but when the plants are 4 feet and upwards in height, and on exposed sites, but more particularly when ill-rooted specimens are being planted, staking and secure tying should in every case follow up the work of planting. Evergreen trees, such as the Conifers generally, Hollies, evergreen Oaks, &c., are also more liable to be upset after planting than hard woods, particularly when used as standards, so that to such we would direct special attention. Hard woods, from their absence of leaves when planted, also present less surface to the wind than Pines, and seldom require staking. No hard-and-fast lines should, however, be drawn, as much must to a great extent depend on the situation and exposure as well as size of plants used; thus a tree of even 8 feet in height may, in a low-lying, sheltered situation, be perfectly safe without stake or tie of any kind, whereas another of a similar size, but growing in an open situation, and exposed to the prevailing winds of the district, will require a mooring of the most secure description, and adjusted in the most efficient manner. For trees of from 4 feet to 6 feet, but not more, in height, strong Larch stakes should be driven firmly alongside the tree, and within 6 inches of the same, and on the most exposed side, not, however, in a perpendicular manner, but with the head slightly inclined from the tree and pointing in the direction from which the worst blasts may be expected to blow. To prevent damage to the roots the stake should be finely pointed previous to being driven, or, as is sometimes the case, placed in position before the tree is planted, or rather before the roots are covered with soil. Such precaution is, however, quite unnecessary, and will be found so by those who have had extensive experience in staking, and who wish to investigate the matter fully. The stake, which is usually three-fourths the plant's height, being firmly fixed in position, a stout ligature of some kind—we find tarred rope, when well teased out, to be most lasting—is then passed round the stem of the tree, and at about half its height from the ground, and made fast to the stake at a similar height, the tie being crossed between the tree and stake. Trees or shrubs when over 6 feet in height will, however, require stronger moorings than that just described, and the following, which has met with the greatest appoval at Penrhyn, may be pointed out.

Several plies of tarred rope—for fancy Conifers a band of leather—is placed loosely around the stem of the tree requiring staking, and at about three-fourths its height. Three wires are then joined to this collar—ordinary fencing wire will do very well—two on the most exposed side, and one on the other, and nearly equidistant apart, and made fast to strong short stakes, driven firmly into the ground at a distance from the stem proportionate to the tree's height.

LARGE TREES.

For reinstating fallen trees of large size double wires and an iron collar are in each instance substituted for the rope or leather collar and single wire, and they have, here at least, been found to answer well. Last week I examined a 60 feet high specimen of the Cornish Elm, that five years ago was blown over in the park here; and as it could ill be spared from the surrounding landscape, it was again set up and moored in the above way. It has never occasioned the least trouble since, nor have the moorings flinched in one way or the other. The wires in this case were, I may state, fastened to adjoining trees, and not to stakes driven into the ground, which latter, unless of unusual strength and very firmly placed, would have been next to useless for the purpose intended. One point in connection with staking and tying trees requires special care and attention, that is, to guard against the possibility of either the rope, leather, or iron band chafing the tree's bark; but this is readily enough prevented by using a little common sense in adjusting. *A. D. Webster, Penrhyn Castle.*

THE NATIONAL AURICULA SOCIETY: SOUTHERN SECTION.

THE schedule of prizes for the Southern Section of the National Auricula Society has just been issued. It has given great dissatisfaction in the North, and formed the subject of a resolution at the annual meeting of the Northern Section of the Society, held at Manchester on Wednesday, January 27. It may, therefore, be well to state the matter clearly, as there is yet time to amend the schedule, if it be thought desirable to do so. At the show meeting of the Auricula Society at South Kensington in April last it was particularly noticed that very few of the Northern growers were present; and at the luncheon I pointed out that the reason for their absence was to be found in the prize schedule, a very large proportion of the prize-money being absorbed in the prizes for fifties and twelves, in which large lots there was literally no possibility of competition from the North. It was only the home grower who could stage such large lots. The prize-money, therefore, went to the London men almost without any competition. When the time approached for drawing up the new schedule I wrote to Mr. Douglas, the Secretary, and to Mr. Rolt, the Treasurer, to remind them of the above facts. Mr. Douglas replied, asking if I spoke for myself only, or if Mr. Barlow and Mr. Horner had also been consulted. I replied that I had corresponded with Mr. Barlow on the subject, but that I had written only my own views. These appear to have carried little weight, as the annual meeting of the Auricula Society (at which very few were present) actually reduced the value and number of the smaller prizes, so that the new schedule is worse than ever. It still provides four prizes for "fifties," value £14, nearly one-fourth of the whole prize-money. For this there will be no competition: it will simply be divided amongst any four large growers who can bring up fifty Auriculas in twenty sorts, good or bad. It is only practicable for Mr. Douglas, and to Mr. Turner and one or two other growers near London. Next there are six prizes for "twelves," value £11 10*s*. For these there is also little competition, as it is a very difficult matter to stage twelve plants from a distance, and very costly unless you are certain to win, as is the case with Mr. Horner. For the "sixes" there are six prizes, value £5 15*s*. The above three lots, therefore, absorb £31 5*s*.—one-half of the prize-money available for the whole show, and it is practically divided amongst the same large growers every year. When we come to the smaller, which are alone practically open to the Northern florists, we find the highest prize for four Auriculas is but 25*s*., and for two 15*s*. For single specimens it is only 9*s*. It was 10*s*. in last year's schedule, but the highest prize has been cut off. It will, therefore, be seen that a Northern florist can only win 40*s*. if he comes 1st in both fours and pairs, so that he cannot cover his expenses to London out of his winnings, even if he comes in 1st. It is certainly not for the good of the Society that this state of things should continue, and it appears to me that a very simple readjustment of the schedule will meet the case. I would propose to reduce the prizes for fifties by offering two prizes only—80*s*. and 60*s*.—in this large class. This would leave £7 for augmenting the prizes in the smaller classes. The fours I would increase in amount and length thus—35*s*., 30*s*., 25*s*., 20*s*., 15*s*., 10*s*., 7*s*. 6*d*., 5*s*.; the pairs in the same manner, viz., 20*s*, 17*s*. 6*d*., 15*s*., 12*s*. 6*d*., 10*s*., 7*s*. 6*d*., 5*s*., 2*s*. 6*d*.; the singles—12*s*. 6*d*., 10*s*., 9*s*., 8*s*., 7*s*., 6*s*., 5*s*., 4*s*., 3*s*. This would just absorb the £7, and it would, I believe, bring up a large lot of exhibitors from the very class for whom the National Auricula Society exists, but who seldom appear at its Southern meetings. *Wm. Brockbank.*

POTATO GRAFTING.

THE accompanying illustrations, (figs. 36, 37, 38), drawn one-half the size of Nature, will

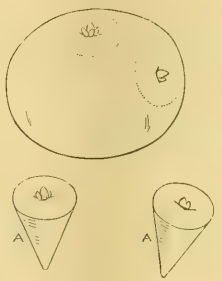


FIG. 36.

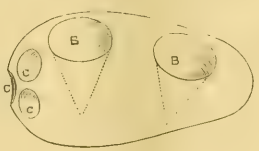


FIG. 37.

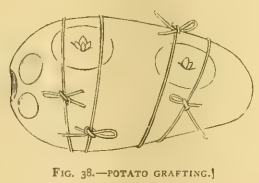


FIG. 38.—POTATO GRAFTING.

explain my method of plug-grafting Potatos. Fig. 36 represents a tuber of early Regent with two strong eyes; the dotted lines show the size of two grafts proposed to be carefully cut out. The shape of these two grafts when taken out is shown at A, A. The oval Potato is Webb's Early Ashleaf Kidney, from which all the eyes have been removed (fig. 37). The large holes seen at B, B, are hollows from which eyes have been removed, so cut as to be able to exactly receive the plug-grafts, A, A, cut from the Early Regent; C, C, C, are hollows from which shallower eyes have been carefully removed. Fig. 38 shows the plug-grafts from Early Regent, carefully tied into the holes made in Ashleaf Kidney. In this condition the tubers were planted. The cutting of ninety-six plugs and ninety-six hollows (to say nothing of the tying-in) occupied a long time, much longer than might be imagined, as the work had to be done with extraordinary care, and the plugs with their sockets had to be geometrically precise in form. My opinion is, that unless the plug-grafting is simply perfect, failure must ensue. When well done, every part of the exposed surface appears to adhere. It is said to be doubtful whether the flesh of the parents really amalgamates. Amalgamation appears to me possible on consideration of the following facts:—1. The produce from the grafted tubers is sometimes (it was completely so with Early Ashleaf and Early Regent) intermediate in character between the two parents. 2. The seed-tuber with its plugs becomes completely exhausted during the growth of the plant, showing that all the stored food within the flesh of both parents has been used by the growing plant. The flesh of the tubers, of course, may not amalgamate, and the produce may not be of a hybrid character. I never implicitly believe in anything! *Worthington G. Smith, Dunstable.*

Notices of Books.

Permanent and Temporary Pastures; *with Descriptions and Coloured Illustrations of Leading Natural Grasses and Clovers.* By Martin J. Sutton. Hamilton, Adams & Co., Paternoster Row. 1886.

Notwithstanding several recent pamphlets on the formation of pastures, the present volume was much needed. Fashion and fancy are by no means excluded even in such a practical and technical business as the laying down of grass land. It was the fashion to include in a mixture of grass seeds an excessive proportion of Rye-grass; it is the fashion to exclude it altogether. Still this much-abused grass—the oldest of the cultivated grasses—which has held its own since it was first mentioned in an agricultural book in 1611—is likely still to do so when the best and most productive varieties are sown on soils adapted to them. The German botanist, Dr. F. G. Stebler, is perfectly correct in describing it as "one of the most valuable plants in our meadows," because, to quote from the work before us, it "positively revels on tenacious land. Even pure clay is not too stiff for it." The duration of Rye-grass varies much according to soil and climate, "the poorer and drier the soil," says Mr. Sutton, "the shorter will be its duration," while on stiffer, better, moister land—especially when nourished by cake-fed stock—it will prove permanent and perennial. No doubt the duration of any grass is increased when the herbage is cropped close, and production of seeds prevented. It is true that Rye-grass is not permanent on all soils, nor under adverse conditions, but few, if any grasses are. Among its merits are its quick maturity, its endurance of much treading by cattle, its suitability for irrigation, its hardy habit, and its high feeding value. According to Dr. J. Augustus Voelcker's report and analysis, which will be found among those of many other cultivated grasses prepared for this volume, it is only exceeded by Foxtail in nutritious properties. Sinclair had observed sixty years since (*Hortus gramineus Woburnensis*) the different productive powers of different varieties of Rye-grass. Even in the case of two improved and approved sorts he found that one produced 4083 lb. per acre, the other, 5445 lb. We have ourselves seen a dozen varieties grown side by side for experimental purposes, and exhibiting still greater differences.

In referring to Mr. Faunce de Laune's successful use of considerable quantities of Festuca elatior in the formation of pastures, Mr. Sutton makes some very timely remarks on the habitat of this and other grasses. Probably some writers who can scarcely claim to be experts in the laying down of pastures, have given too little attention to this point. We agree with the author of this very practical and excellent work that grasses should be selected with a view to the soil on which they are to be sown. Sinclair recommended Festuca elatior for damp clays and fens, and especially for soiling. Mr. F. de Laune's success with the same vigorous and productive grass has induced him to recommend it on strong soils and medium loams like his own. It has proved most successful with him, but Mr. Sutton says, nevertheless, "I should advise great caution to be observed in the use of this grass, even in the formation of pastures, except in low-lying situations, which are always grazed, and I would exclude it entirely from prescriptions for meadows, which are generally cut for hay, whatever their situation, not only because of the tendency of the

grass to become ergoted, but from the extreme coarseness of the hay produced." The most fashionable grass of the present time is, however, Cock's-foot (Dactylis glomerata). This grass does not attain full maturity till the second year, and we may here point out the importance to the expert of particular knowledge with respect to the characteristics of each kind of grass, and specially to the way and the time in which it makes its growth, whether under or above ground. Forestry is an art less complicated perhaps than that of making pastures, but the forester finds that the Oak, the Fir, and the Chestnut, and most other trees, have their special soils and sites, and the fanciers of particular grasses should not forget that the same law controls their growth to a considerable extent. Cock's-foot, says Mr. Sutton, is totally unsuited for some geological formations, and on the Chiltern Hills, where Rye-grass and Clover answered well, Cock's-foot in alternate leys has proved a pest difficult to eradicate. It is out of place in upland meadows, failing in drought sooner than Foxtails, while it cannot be exceeded for profit on strong moist soils, which are grazed by bullocks. With Rye-grass and Clover it forms a superior "temporary pasture," or three or four years' ley, and for farm use its coarse hay is not objected to. If we mention that it should be cut early, and that after cutting or cropping it quickly grows again, producing herbage which cattle greatly relish, and that it owes its name of Orchard-grass probably to its thriving under trees, we do so to suggest the thousand matters of detail connected with the subject on which Mr. Sutton so ably treats. We do not find in this volume the recipes of seed mixtures which are sometimes made too prominent, and which every seedsman's catalogue contains, but we have in it more than fifty pages of practical information derived from long experience of the agricultural value of the varieties of all the grasses in common use. It is now the general practice to order the particular seeds which the purchaser believes to be best adapted for his purpose, and this requires a great deal of practical information which the pages just referred to are well calculated to afford.

A valuable portion of this very handsome volume consists in the botanical descriptions of the grasses. The numerous and excellent coloured illustrations will greatly enhance the value of the book to the practical farmer, to whom we commend the study of the grasses, their habit, mode of growth, predilections, time of flowering, &c., as a greatly neglected but indispensable preliminary to successful pastoral management. Mr. Sutton has not burdened his volume with extended remarks on the "cultural preparations" required in laying down grass. It is true there is already plenty of available literature on this subject, still we could wish the chapter so headed had been longer, for the sake of making the work more complete.

HOME CORRESPONDENCE.

Lilium auratum degenerating.—There is a very important statement on this point, concluding a thoroughly accurate "method of treatment," signed "Jas. Carter & Co," in your last issue, p. 117, that seems to require further notice, if not dissent. Remembering that this firm is one of the largest importers of those splendid Lilies, their opinion, that "after two years the bulbs deteriorate," is of much consequence. I grow numbers of these and other Lilies outside and in pots, and know several places where, in Rhododendron beds, they have remained undisturbed for more than a dozen years, apparently without in any way deteriorating. I say apparently, for the old bulbs rot, and, except the soil and situation are suitable, the young bulbs never come to much. Mr. Burbidge showed me, in Trinity College Botanic Gardens, Dublin, L. auratum, undisturbed for years, flowering finely. What do other growers say? *W. J. Murphy, Clonmel.*

The Camellia as a Decorative Plant.—No one is fonder of arranging flowers and plants than I am, but I hope no one will follow the suggestion of "W. R. R." in the *Gardeners' Chronicle* for January 23, p. 118, which is practically to grow one flower on another plant, whose foliage is so far removed from its own as to be known (by any one I should hope) to be "borrowed plumes." Why does he not suggest that various colours of Camellias be put on the one "stamped plant," like you see the paper flowers in a country schoolroom occasionally at some *fête* in "colours of sorts" all along a row of Laurel leaves. Who would not be disgusted to sit and see the "single vase plant" growing leaves of a Rhododendron and blooms of Camellia C. M. Hovey? Of course, to keep up the "little deceptive" idea, the Camellias should be "mixed" in a bunch like a Kalmia, fifteen or twenty together. I have heard many ideas of arranging, but none to come down to this. If any gardener of mine did it, I should ask him if he wanted to do so to insult me by word of mouth, or to say whether he thought me a bigger fool than I look, and then I would dispense with his services at once; but I can hardly imagine any one, who has any respect for his calling as a gardener or decorator, to do such a thing as to "wire Camellia blooms on to a stumped Rhododendron or Kalmia." When such pranks are played we shall have descended in the scale of art in decorating as low as my carpet has at home, which is an everlasting worry to me, as it has twenty-five different æsthetic flowers (save the mark!) growing all up one scrolling (I almost said strolling) stem, or rather what was meant for one. *De B, Crawshay.*

Seville Longpod Bean.—As to the merit of the Seville Longpod Bean, I quite agree with what your correspondent, "R. D.," states as to its being a very useful sort for early work. I have sown Mazagan for early, and the former for succession some time after; but picked Beans from the Seville Longpod first, and now do not grow the old sort. Are the Mazagans grown in some of the colder counties because they are more hardy? *G. Sleep.*

Pines, Early Summer Fruiting.—One of the most difficult points successfully to attain to in Pine culture, as far as my experience goes, is to secure a good supply of well-grown fruits of Queens through May and early June, when Pines of any sort, either foreign or home-grown, are scarce, and therefore difficult to procure, especially Queen Pines. This also happens to be the time when the demand for superior dessert is the most pressing (and the most appreciated), to meet the Queen's birthday, ministerial and other important dinner parties of the London season. And if Pine culture in English gardens is to be continued I am convinced that gardeners must give more time and thought to the production of Pines at this season, and less to summer supply, when foreign fruit can be had in good condition and in any quantity at prices which are exceedingly low, compared to what it costs to grow English Pines. The difficulty of the matter lies in the fact that Pines which show for fruit before or even immediately after the new year seldom do any good. From the middle to the end of January is as early as I care for a Queen plant to show for fruit, earlier shows being generally deformed in consequence of imperfect fertilisation, and they never swell away so freely and kindly as later shows. The time, therefore, at our disposal to grow and mature the fruit, even from the earliest shows, is limited to little more than three months, and that in a sunless time of the year, so that there is not a day to lose, if the object is to be attained. My practice is to subject the fruiting plants about the middle of January to a sharp rise in the bottom-heat—that is, from 75° (which is their normal root temperature in winter) to 95°, and I am not at all alarmed if the thermometer occasionally touches 100°. It must not be supposed that this rise in temperature takes place all at once or in a day or two, it takes about ten days before the plunging material is sufficiently warmed to give us this extra heat (the air temperature of the house is only slightly warmer and is occasioned simply by the extra bottom-heat given). Early this month this extra bottom-heat was turned on to the house of fruiting Queen plants, with the result that at this present time a few are already showing, and all which are at present in a condition to show will have done so before the middle of February, when they are removed from this house, and placed close together (almost packed) in a small well heated pit, where they are treated to from 90° to 95° bottom-heat, and water is supplied them of the same temperature, and where they have also the advantage of plenty of light, being close to the glass, which we keep very clean. I find the ammoniacal vapours arising from manure linings which are periodically applied while the fruit is swelling until near ripening time, when it is withheld, are very beneficial. This very old practice of lining Pine pits with manure linings, not of course as a substitute for hot water, but as a valuable help in promoting healthy growth, especially to Pines swelling their fruit, is a point often overlooked nowadays. Besides being invaluable to us in this way our Pine pit linings are made to answer the purpose of converting the stable litter and leaves into manure instead of forming it into a heap in the manure yard, where much of its valuable properties is altogether lost. When the Pines have done flowering they are forced on with still more heat, especially by taking advantage of sun-heat in bright weather, and by covering over the pit at night in cold weather. This is the most expeditious and successful plan I know of for producing ripe Pines at this early period of the year. The vacancies caused by the removal of the fruiting plants from the stove are filled up by successional plants from the pits, and all grow together and fruit in succession during the summer. I adopt the same practice with plants to fruit from October to Christmas as is done with early Queens. I find the fruit swells much better during winter in small close pits than they do in more lofty and airy houses; and this practice of placing plants swelling their fruits together in winter, when they require much more heat than is good for successional plants, has the further advantage of permitting one to give to resting or growing plants that treatment which we may deem the best. Objection may be taken to the extra labour entailed in removing the fruiters, and the chance of injury to the plants may be a bar to the adoption of this plan. In practice, when the work is carefully done, I have not found it so. *Owen Thomas.*

Propagation of Aspidistra lurida.—The way to propagate and increase this plant is to divide it by shaking it out, or cutting the ball or mass of roots through, as the plant spreads by sending forth creeping stems with crowns or eyes, from which the leaves spring. Although the division may, with tolerable safety, be effected at almost any time, the best season to carry it out is in spring, just as the plants begin to shoot, as then they suffer little check, and quickly get over the disturbance. The soil most suitable to grow the Aspidistra in is a mixture of loam and peat, with a good sprinkling of sharp sand, and it is always advisable to keep the plants confined to small pots, as with their roots pinched they are sure to come better variegated, and remain in a healthier state when standing in pans or saucers to catch the drainage that runs through the balls. The potting should be very firmly done. After potting the plants should be stood in a close frame or other situation where they can be kept warm and have a moist air for a short time, just to give them a start, after which they will be safe, and may then be used for any purpose required. *J. S.*

Eucharis amazonica Planted Out.—I cannot advocate the planting out in stoves of this Amaryllid for the following reasons. It is a fact known to most experienced growers of the above that it is essential, to induce it to flower two or three times a year, to give it what we call a rest at certain periods—that is, by taking batches of it at a time to cooler temperatures, say, 10° or 15° cooler, and refraining from giving moisture and heat during those periods. Now should the bulbs be planted out permanently in a stove they could not have rest. It would always be an exciting temperature, and I question very much indeed if Mr. Ward or any other could get the same bulbs, so treated, to flower two or three times a year. It is quite possible where there are a great many bulbs planted out that some will flower one season and some another according to their different stages of growth and ripeness. But that the same bulbs will flower thrice in stove temperature continually is exceedingly doubtful. Besides Mr. Ward says his plants have been planted out nine years. If so I should think it is time they were thinned out, as their freedom in forming young bulbs is remarkable, and I should think his border must be crammed with bulbs if he has not thinned them out for nine years. I should, therefore, advise my gardening friends who want a continuous supply of Eucharis blooms to grow them in pots. *A. Macdonald. The Gardens, Royal Asylum, Cheadle.* [We believe that Mr. Ward grows his Eucharis in pits which are used for forcing Melons, &c., and as these are not always at work there may be resting periods during the year. The fact of withholding water and not being liberal with the use of the syringe would also induce a degree of rest, even

should the temperature not be reduced. Some persons are so fastidious as not to appreciate the Eucharis at all seasons, but like to see it in its season only. ED.]

The International Potato Exhibition.—It is to be deplored that Mr. Hibberd, in publishing the severance of his long association with the International Potato Exhibition, has given no reasons for his action, because that is liable to grave misconstruction, and may be variously interpreted. If Mr. Hibberd has come to the same conclusion that I have—which is that in its present form there is now no farther need for the continuance of the exhibition—then his action will probably provoke little comment. It must be remembered that the exhibition originated solely from the fact that then the Royal Horticultural Society practically gave no encouragement to Potato culture. That state of things now no longer exists, and it has been for some two or three years evident that the old society was willing to encourage Potatos both by exhibitions at South Kensington and in the interesting work in regard to seedling kinds performed at Chiswick. A strong feeling was expressed at the late International Potato Show that the one for the coming autumn should be held at South Kensington, some assurance being given that permission would be granted. Such transference would have been very popular, and no doubt led to that complete association of the Potato Committee with the Royal Horticultural Society that now exists between the latter body and some other committees. This suggestion has, however, not been fully reciprocated in city quarters, and it seems as if by reason of that coolness the International would collapse. It has done good work for Potatos in the past, and greatly popularised their culture. Practically little more remains to be done that cannot be done by the Royal Horticultural Society. Probably not a little of the support granted to the International may be transferred to South Kensington, if the Council will arrange for a good Potato show next October. *Alex. Dean.*

Pontederia crassipes.—It may interest your readers to learn that Pontederia crassipes has for some years flowered in our Victoria tank. The plants are not fixed in any soil, but float freely at will. We also find that when the plants get crowded together in a corner of the tank that they grow taller, losing some of the inflated footstalks, as Mr. Baxter describes. Eichornea azurea also flowers freely in the same tank, the period of blooming continuing for two or three months. Pontederia cœrulea also flowers here, but in a cool tank. *William Coomber, Royal Botanic Gardens, Regent's Park, N.W.*

Reports of Societies.

ROYAL BOTANICAL AND HORTICULTURAL OF MANCHESTER.

THE 58th annual general meeting meeting of this Society was held on January 25 at the Town Hall. In the absence of Lord Derby, President of the Society, and Dr. John Watts, Chairman of Council, Dr. R. F. Ainsworth presided. Letters of apology for absence were read from Lord Derby and Dr. Watts. Dr. Watts stated that he had looked carefully over the report and accounts, and thought that, considering the commercial character of the past year, the Society had come out fairly well. He hoped that the whole of the proprietors and subscribers would sympathise heartily with the movement to crown the work of the last few years be the erection of a Palm-house worthy of the past history and present importance of the Society—a house which should combine the giants of the tropical forest with the Victoria Regia and other plants of the same latitudes. The report of the retiring Council, of which an abstract has been already published, was taken as read, and its adoption was moved by the Chairman and seconded by Mr. J. Hough. In the course of a brief explanatory statement Mr. Bruce Findlay, Curator and Secretary, said reference was made in the report to the new house about to be put up in the gardens. Had it not been an absolute necessity it would not have been taken in hand. Any one who would at the present time take a walk through the exhibition and other houses would see at a glance that it was a question of either destroying some two or three hundred magnificent specimen plants—some of them above a century old, and natives of various parts of the world—or of providing a home for them. The Council had, he thought wisely, adopted the latter course. Operations had already commenced, and by Whitsuntide the new structure would be complete. He ventured to predict that the building would be an ornament to the gardens and a source of great attraction to visitors. The financial question was the only one about which there was any anxiety, inasmuch as an additional £1000 would have to be raised during the present year to pay for the building. It was a most unfortunate circumstance that all these extraordinary items of expenditure should come upon them at once. Two years ago, they had to build a new exhibition-house, which cost £2000. Four years ago the old range of glass houses had to be removed and a new one erected, and various other additions had to be made, so that in about nine years £6000 had been spent upon the property in the way indicated without adding anything to the liabilities of the institution. The reason for all this was explained by the statement in the report that the present was the fifty-eighth annual meeting of the Society. During so long a period tropical plant-houses must of necessity decay. The question was, how were they to raise the sum required? He found that they had a constituency of about 900, consisting of about 300 life members, and nearly 600 paying £2 2*s.* and £1 1*s.* per annum. His suggestion was that an appeal be made to each of these 900 members asking their kind co-operation in the way of getting an additional subscriber. If 500 of this number would get a subscriber of £2 2*s.* per annum the difficulty would be overcome, and if a resolution to this effect were passed he believed it would have the desired effect. So far as he was concerned he would promise that nothing would be wanting on his part to make such a resolution successful. The object would, he was sure, commend itself to a large number of persons, inasmuch as the money was required to protect and exhibit to the people the most beautiful objects in the world, for he supposed all would admit that there was nothing in the world so beautiful as plants and flowers. He thought it must be admitted that the Society had done important public work during the period of its existence. The report stated that during the last twenty years the large sum of £25,000 had been distributed in prizes, and there could be no doubt whatever but that this had had an important influence upon horticulture in this and the adjoining counties. It was admitted that the great exhibition held at Whitsuntide was the best of its kind held in the country, and some 50,000 people were admitted annually to see these magnificent displays. Every nation that boasted civilisation, elegance, refinement, taste, had shown a love for gardens and gardening; and it was certain that a city like Manchester could not afford to dispense with such a civilising and humanising agency as its Botanical and Horticultural Society; and although the times were not propitious for an appeal of this kind, he felt sure that when all the circumstances of the case were fully made known the Council would receive the support to which he thought they were fairly entitled.—The motion for the adoption of the report was then put to the meeting and carried. *Manchester Paper.*

SCOTTISH HORTICULTURAL ASSOCIATION.

ON the 2d inst. a meeting of this Association was held at 5, St. Andrew Square, Edinburgh. Mr. Milne presided. A paper on "The Ivy" was read by Mr. John Methven (of Messrs. Methven & Son), Vice-President. At the outset he gave a historical and poetical account of the Ivy, in which he stated that in the earliest days of civilisation it acquired renown by its association with religious rites and social usages. Mr. Methven proceeded to give descriptions of the various kinds of Ivy and their cultivation, and in this connection exhibited specimens of thirty-three different varieties. He next spoke of its usefulness as a town garden plant, referring specially to the bank of Ivy in West Princes' Street Gardens, Edinburgh. No other plant, he asserted, could be grown so effectively on that bank as the Ivy, and Mr. M'Leod deserved credit for having adopted it for that purpose. He also pointed out the suitability of the plant for window culture. A discussion followed, after which Mr. Methven was awarded a vote of thanks for his paper.

The following interesting collection of early spring flowers from Easter Duddington Lodge was exhibited:—Garrya elliptica, Helleborus niger, H. n. angustifolius, Hepatica triloba, H. t. alba, H. t. rubra, H. angulosa, Galanthus plicatus, Eranthis hyemalis, and Erica herbacea alba.

A new Leek—a hybrid between the Musselburgh and Henry prize varieties—sent by Mr. Howie, of Inch House, Liberton, was also shown.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 3, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea Level.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 19 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 1000.	WIND. Average Direction.	RAINFALL.
	In.	In.	°	°	°	°	°	°			In.
Jan. 28	29.74	—0.03	41.3	25.0	16.3	33.6	—4.6	29.9	87	S.E.; S.S.E.	0.00
29	29.41	—0.35	40.8	30.8	10.0	36.7	—1.6	34.4	91	S.E.; S.S.W.	0.04
30	29.45	—0.31	43.8	32.0	12.0	38.3	—0.1	34.5	87	S.W.; S.S.W.	0.18
31	28.99	—0.78	46.5	35.0	11.5	41.3	+2.8	37.4	87	S.W.; S.S.W.	0.10
Feb 1	29.12	—0.64	42.2	32.2	9.0	36.9	—1.7	29.2	82	N.W.; W.N.W.	0.00
2	29.43	—0.33	41.0	32.5	9.4	36.8	—1.9	30.2	83	WNW	0.00
3	29.39	—0.38	36.3	32.0	4.3	33.7	—5.1	31.2	89	E.:	0.37
Mean	29.36	—0.40	41.7	31.2	10.5	36.8	—1.7	32.4	87	Variable.	0.69

Jan. 28.—Fog from early morning till 11 A.M., fine and bright afterwards.
— 29.—Dull day, slight fall of snow in afternoon.
— 30.—Dull day, rain in afternoon.
— 31.—Slight rain from early morning till 11 A.M.; fine and bright afterwards.
Feb. 1.—Dull morning, fine bright afternoon.
— 2.—Fine and bright generally.
— 3.—Snow and sleet from early morning till about 9 A.M., drizzling rain afterwards.

LONDON: *Atmospheric Pressure.*—During the week ending January 30, the reading of the barometer for the week at the level of the sea increased from 29.42 inches at the beginning of the week to 29.52 inches by 9 A.M. on the 24th, decreased to 29.32 inches by 1 P.M. on the 25th, increased to 29.85 inches by 9 A.M., and decreased to 29.83 inches by 1 P.M. on the 27th, increased to 29 93 inches by 9 A.M. on the 28th, and was 29 53 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.63 inches, being 0.23 inch higher than last week, and 0.31 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 43°.8, on the 30th; on the 24th the highest temperature was 38°.2. The mean of the seven high day temperatures was 41°.

The lowest temperature was 25°, on the 28th; on the 26th and 27th the lowest temperature was 33°. The mean of the seven low night temperatures was 29°.8.

The greatest range of temperature in one day was 16°.3, on the 28th; the smallest, on the 27th, was 7°.9. The mean of the seven daily ranges was 11°.2.

The mean temperatures were, on the 24th, 32°; on the 25th, 34°.6; on the 26th, 37°.3; on the 27th, 36°.8; on the 28th, 33°.6; on the 29th, 36°.7; and on the 30th, 38°.3; and these were all below their averages by 5°.7, 3°.2, 0°.6, 1°.3, 4°.6, 1°.6, and 0°.1 respectively.

The mean temperature of the week was 35°.6, being 3°.9 higher than last week, and 2°.4 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 76°.2 on the 27th. The mean of the seven readings was 62°.2.

The lowest reading of a minimum thermometer placed on grass was 24°.2, on the 28th. The mean of the seven readings was 28°.4.

Rain.—Rain fell on four days to the amount of 0.64 inch.

ENGLAND: *Temperature.*—During the week ending January 30, the highest temperatures were 50°, at Truro, 46° at Plymouth, 45° at Bristol; the highest at Wolverhampton was 38°.5, at Sunderland 39°, at Bradford 39°.5. The general mean was 42°.5.

The lowest temperatures were 24° at Truro, 25° at Plymouth and Blackheath, the lowest at Brighton Leeds, and Newcastle was 30°. The general mean was 27°.5.

The greatest ranges were 26° at Truro, 21° at Plymouth, 18°.8 at Blackheath; the least ranges were 10° at Newcastle, 10°.4 at Bradford, 11° at Leeds and Sunderland. The general mean was 15°.

The mean of the seven high day temperatures was highest at Truro 44° at Brighton 42°.9; at Blackheath 41°; and was lowest at Wolverhampton, 36°.5, at Sheffield and Bradford 37°.3. The general mean was 39°.4.

The mean of the seven low night temperatures was highest at Newcastle, 33°.6, at Brighton and Liverpool 33°.3; and was lowest at Plymouth, 28°.9, at Wolverhampton 29°.4, at Truro 29°.7. The general mean was 31°.3.

The mean daily range was greatest at Truro, 14°.3, at Plymouth, 11°.6, at Blackheath 11°.2; and was least at Newcastle 4°.2, at Preston 5°.4, at Liverpool 5°.7. The general mean was 8°.1.

The mean temperature was highest at Brighton, 37°.8, at Truro 36°.6, at Bristol and Liverpool 35°.8; and was lowest at Wolverhampton, 32°.6, at Sheffield 33°.4, at Bladford 34°.1. The general mean was 35°.1.

Rain.—The largest falls were 2.29 inches at Sheffield, 1.88 inch at Newcastle, 1.81 inch at Bradford. The smallest falls were 0.34 inch at Brighton, 0 54 inch at Cambridge, and 0.64 inch at Blackheath. The general mean fall was 1.13 inch.

SCOTLAND: *Temperature.*—During the week ending January 30, the highest temperature was 42°.2, at Paisley; at Edinburgh and Greenock the highest was 39°.2. The general mean was 40°.3.

The lowest temperature in the week was 26°, at Edinburgh; at Aberdeen the lowest was 31°.3 The general mean was 29°.5.

The mean temperature was highest at Aberdeen, 37°.6; and lowest at Edinburgh, 34°.5. The general mean was 35°.5.

Rain.—The largest fall was 1.78 inch, at Perth; the smallest fall was 0.56 inch, at Glasgow. The general mean fall was 1.26 inch.

JAMES GLAISHER, F.R.S.

Obituary.

MR. CHARLES FRISBY.—It is with regret we announce the death of this widely-known and much respected gardener, in his seventy-first year, which took place, after a short illness, at Branston, Lincoln, on the evening of the 2d inst. The deceased had been head gardener at Blankney Hall, near Sleaford, for upwards of forty years—a post from which he only retired a few years ago on a good pension from the Right. Hon. H. Chaplin. He was a good all-round practical gardener—was for many years a successful exhibitor of vegetables, &c., at the leading metropolitan and provincial shows, and was very popular among his brother horticulturists and acquaintances, as much on account of his courteous manner, cheery and kindly disposition, as for his characteristic straightforwardness; and many young men who received practical and kindly advice from the late Mr. C. Frisby will read this notice of his demise with feelings of deep regret. Blankney Hero Melon, and Excelsior Beet, and sundry florist flowers were raised by the deceased, who leaves a widow (second wife), three daughters, and three sons (by his first marriage), two of whom are filling a like position to that which their late father occupied at Blankney—one being at Hainton Hall, Wragby, and the other at Horden Hall, Preston. *H. W. Ward.*

—— JOHN ROBSON.—The death of this well-known gardener on the 1st inst., at Hunton, near Maidstone, is announced. For many years he was head gardener at Linton Park, Kent, the seat of Lady Julia Cornwallis, now of Viscount Holmesdale, but retired on a pension in 1876. Under the direction of the late Mr. Masters, of Canterbury, Mr. Robson carried out much of the ground work on the estate, including the planting of many of the Conifers, for which Linton is now famous. Mr. Robson was for many years a regular contributor to the *Journal of Horticulture*, and occasionally to our own columns.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

AMERICAN POMOLOGICAL SOCIETY: *Pyrus.* Apply to the Secretary, W. J. Beal, Lansing, Mich., U.S.A.

BEECH TREE: *W. L.* The white substance on the bark is not a fungus, but the work of an insect allied to the "American blight" on the Apple.

BEURRÉ DIEL PEARS NOT MELTING: *J. Harding.* We can only account for these Pears not melting by some unhealthy condition of the trees, either through the roots being too dry, or checked in their growth by some other cause which cannot be determined without inspection of the trees themselves.

CERINTHE AURICULATA: *W. Sownell.* The Cerinthes form a small genus of Borageworts, with one except on of annual growth, and are mostly European. *C. major* and *C. minor* have long been grown in gardens under the name of Honeywort, due to the abundance of honey found in their flowers. *C. auriculata* may be a variety only. The plants are dwarf, seldom exceeding 1 foot in height.

CLAY'S FERTILISER FOR CHRYSANTHEMUMS: *Constant Reader.* It is considered to be one of the best of the artificial manures for pot plants, and is very much employed by the best growers of the Chrysanthemum.

CUCUMBER PIT HEATING: *C. C.* You do not state what width the cement troughs will be that you intend to use underneath the soil for bottom-heat purposes. These should be not less than 1 foot broad inside, and of a depth of 4 inches; if they were of still greater depth the heat would be steadier. For top-heat your flow and return are quite insufficient, unless they be carried round the pit on all sides; or, if that is not practicable, by having four pipes placed in the front of the pit. With plenty of piping the heat of the water may be less, the air of the pit will be far more suitable for the plants, and you will have less trouble with red-spider.

GAS TAR ON PIPES, AND CUCUMBERS GOING OFF: *E. C.* You might try a very strong solution of wood-ash lye, and apply by means of rags or tow dipped in it and wrapped round the pipes for a few hours till the tar becomes softened, when it might be scrubbed off with the same mixture. If that cheap remedy should not answer you must take the pipes to pieces, and burn off the tar in a large wood fire. Your plants of Cucumbers die off from excess of damp and want of ventilation. As they are in dung-beds make hotter linings, so that the temperature of the air of the frame may rise to 85° or even more, when you will be able to ventilate little or much according to the weather, but constantly day and night. Put thin muslin over the back of the frame, where the air must be admitted.

LENTILS: *W. S., Edin.* We have examined the three Lentil seeds sent (in six pieces). They appear to be very slightly mouldy. The "white substance," however, which you suspect to be a fungus, is starch belonging to the Lentil itself.

MONSTROUS TULIP: *W. P.* There is nothing unusual in the specimen you send.

NAMES OF FRUIT: *A. Z.* Not recognised.—*T. M. Y.* Rymer.—*J. H.* 1, not known; 2, Wadhurst Pippin; 3, Royal Russet; 4, French Crab; 5, Fearn's Pippin; 6, Wadhurst Pippin.

NAMES OF PLANTS: *W. H.* One of the varieties of Aucuba japonica.—*Snowdon Robin.* The spike was a very fine one of Dendrobium speciosum Hilli. It was figured by us in the *Gardeners' Chronicle*, vol. vii., p. 112, 1877. The treatment you adopted is a good one for many kinds. Mr. Smee, of Wallington, Surrey, turns many species out-of-doors during the whole summer and early autumn with general satisfactory results.—*W. H. D.* Cattleya guttata.—*A. C. Cant.* 1, Dendrobium Findlayanum; 2, Maxillaria lepidota.—*H. B.* Pittosporum undulatum.

WELLINGTONIA GIGANTEA FROM CUTTINGS: *A. Pakenham.* The twig sent would make a plant if it had been taken off after growth had ceased—say in September or October, which is the better time for propagating the Coniferæ by means of cuttings. After removing the "needles" the cuttings are placed in a bed of sharp sand over bottom-heat, or in pots of sandy loam, having a layer of clean sharp sand on the top. It is necessary to cover with a flat-topped bell-glass, which should be only just a trifle higher than the cuttings. The bottom-heat should not exceed 75° to 80° Fahr. The best cuttings are those that have wood—that is, solidified and woody—as these form roots readily, and are not so liable to decay. The cuttings should be put into the cutting-pots in the autumn, and be kept in a cool pit with bell-glasses over them till there is an appearance of a callus at the base, at which time the warm treatment, with bottom-heat in the propagating pit can be more safely carried out. Spring propagation should take place just before natural growth commences, when the preparatory cold stage may be dispensed with. If in propagating Conifers a young plant were headed back, shoots of the nature of leaders would be produced, and these make the best cuttings, as they do not assume the branch form at a later stage.

INTELLIGENT READERS, PLEASE NOTE. — *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

CATALOGUES RECEIVED.

J. MEREDITH, Golden Square, Warrington—Vegetable and Flower Seeds.

J. FARRAR & CO., 39, Primrose Street, Bishopsgate, London, E.C.—Seed Catalogue.

WM. FISHER, Burton-on-Trent—Garden Seeds.

VICCARS COLLYER & CO., Central Hall, Leicester—General Catalogue of Seeds, Special Fruits, and African Rarities.

WILLIAM WATT, Cupar-Fife and Perth — Vegetable and Flower Seeds.

POPE & SONS, 3, Great Western Arcade, Birmingham—Seed Catalogue.

W. CROSSLEY, 15, Vicar Lane, Leeds—Vegetable and Flower Seeds.

ROBERT CRAIG, 90, Stucklandgate, Kendal—Vegetable and Flower Seeds.

R. CROSSLING, Penarth, North Wales—Vegetable and Flower Seeds.

THOS. WARNER, The Abbey, Leicester—Seeds.

EDMONDSON BROTHERS, 10, Dame Street, Dublin—Seeds.

FOTHERINGHAM & WALLACE, Dumfries — Vegetable and Flower Seeds.

D. LANDRETH & SONS, Philadelphia, Pa., U.S.A.—Kitchen Garden Seeds.

COMMUNICATIONS RECEIVED.—Hugo Grunwald, Kubanskoi-obblasto, Russia.—C. W. B.—D. T. F.—T. M.—W. W.—R. W.—J. E. D. A R.—E. B.—Rev. H. E.—C. E.—H. Adlam, Natal (packet with thanks).—W. S.—A. B., next week.—W. B. H. C. F.—Rev. C. W. D.—R. D.—A. H. J. G. B.—N. Blandford, next week.—Many communications are held over till next week, owing to want of space.

Markets.

COVENT GARDEN, February 4.

OUR market is still well supplied, principally with foreign produce. A few home-grown Apples are reaching us, but with the exception of best sorts are making low prices in face of the foreign competition. Trade remains quiet, and prices as last week. *James Webber, Wholesale Apple Market.*

FRUIT—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0–	3 0	Lemons, per case	8 0–	10 0
— Canadian, barl.	10 0–	14 0	Pine-apples, Eng., lb.	1 6–	..
Grapes, per lb.	.. 1 6–	4 0	— St. Michael, each	2 6–	8 0
Kent Cobs, 100 lb.	70 0–	..	Pears, per dozen	.. 1 0–	2 0

VEGETABLES—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0–	..	Mushrooms, punnet	1 0–	1 6
Asparagus, Eng., per 100	0 0–	..	Mustard and Cress, per 3d.	0 4–	..
— French, bundle	18 0–	25 0	Onions, per bushel	4 0–	..
Beans, Kidney, lb.	2 0–	..	Parsley, per dozen bunch	2 0–	3 0
Beet, red, per dozen	1 0–	2 0	Parsnips, per dozen	1 0–	..
Broccoli sprigs, bush.	3 0–	..	Potatoes, per cwt.	4 0–	5 0
Capsicums, per doz.	0 6–	..	.. kidney, per cwt	4 0–	5 0
Carrots, per bunch	0 6–	..	Salsafy, per bundle	0 9–	..
Cauliflowers, per doz.	2 0–	3 0	Savoys, per dozen	2 0–	..
Celeriac, per root	0 3–	..	Scorzonera, p. bundle	1 0–	..
Celery, per bundle	1 6–	2 0	Seakale, punnet	2 6–	..
Coleworts, doz. bunch	4 0–	6 0	Shallots, per pound	0 3–	0 9
Cucumbers, each	1 0–	1 6	Spinach, per bushel	4 0–	6 0
Endive, per dozen	1 0–	2 0	Sprouts, per pound	0 3–	..
Herbs, per bunch	0 2–	..	Sprue, bundle	1 0–	..
Leeks, per bunch	0 3–	0 4	Tomatos, per lb.	1 0–	1 6
Lettuce, per dozen	1 0–	1 6	Turnips, bunch	0 6–	..
Mint, green, bunch	1 6–	..			

POTATOS.—Magnum Bonums, bad trade, 50s. to 80s.; Regents, 60s. to 80s. per ton; German Reds, 2s. to 2s. 6d. per bag.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0–	18 0	Ferns, in variety, per dozen	..	4 0– 18 0
Arbor vitæ (golden), per dozen	..	6 0– 18 0	Foliage Plants, various, each	..	2 0– 10 0
— (common) dozen	6 0–	12 0	Genistas, per dozen	12 0–	18 0
Arum Lilies, dozen	12 0–	18 0	Hyacinths, per doz.	6 0–	9 0
Azaleas, per doz.	24 0–	42 0	Lilies in clumps, or pots, per dozen	18 0–	30 0
Begonias, per dozen	6 0–	12 0	Marguerite Daisy, per dozen	..	8 0– 12 0
Bouvardias, doz.	12 0–	18 0	Myrtles, per dozen	6 0–	12 0
Cinerarias, per doz.	10 0–	12 0	Palms in var., each	2 6–	21 0
Cyclamen, 12 pots	12 0–	24 0	Pelargoniums, scarlet, per dozen	..	6 0– 9 0
Cyperus, per dozen	4 0–	12 0	Poinsettias, per dozen	..	12 0– 18 0
Daffodils, per dozen	9 0–	12 0	Primulas, single, 12 pots	..	4 0– 6 0
Dracæna terminalis, per dozen	..	30 0– 60 0	Solanums, per dozen	8 0–	12 0
— viridis, per doz.	12 0–	24 0	Tulips, 12 pots	..	6 0– 9 0
Ericas, various, doz.	12 0–	24 0			
Euonymus, in var., per dozen	..	6 0– 18 0			
Evergreens, in var., per dozen	..	6 0– 24 0			
Ficus elastica, each	1 6–	7 0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	0 6–	1 0
Arum Lilies, 12 blms.	4 0–	9 0
Azalea, 12 sprays	0 6–	1 0
Bouvardias, per bun.	0 6–	1 0
Camellias, 12 blms.	2 0–	4 0
Carnations, 12 blms	1 0–	3 0
Chrysanth., 12 blms.	2 0–	4 0
— 12 bunches	9 0–	18 0
Cyclamen, doz. blms.	0 4–	0 6
Daffodils, per bunch	1 0–	2 0
Epiphyllum, 12 blms.	0 6–	1 0
Eucharis, per dozen	4 0–	6 0
Gardenias, 12 blooms	2 0–	36 0
Hyacinths, Rom., 12 sprays	0 9–	1 6
— red, 12 blooms	1 0–	2 0
Lilac, French, bunch	2 0–	7 0
Lilium longiflorum, 12 blooms	6 0–	9 0
Lily-of-the-Valley, 12 sprays	0 9–	1 6
Marguerites, 12 bun.	4 0–	8 0
Mignonnette, 12 bun.	4 0–	7 0
Pelargoniums, per 12 trusses	1 0–	1 6
— scarlet, 12 trusses	0 9–	1 0
Poinsettia, 12 blms.	4 0–	8 0
Primula, dble., bun.	1 0–	1 6
— single, per bunch	0 6–	
Roses (indoor), doz.	3 0–	9 0
— Tea, French, doz.	0 9–	1 6
— red, French, doz.	2 0–	4 0
Snowdrops, 12 bun.	2 0–	6 0
Tropæolum, 12 bun.	2 0–	3 0
Tuberoses, 12 blms.	2 0–	3 0
Tulips, doz. blooms	0 9–	1 0
Violets, 12 bunches	1 0–	1 6
— Czar, Fr., bunch	1 6–	2 0
— Parme, French, per bunch	4 0–	6 0

SEEDS.

LONDON: *Feb.* 3.—In consequence of the rough and wintry weather, the seed market to-day was thinly attended, and there was but little business doing. With regard to values no change of importance can be noted, prices all round continuing at a moderate level Rather more inquiry has been recently shown for farm seeds generally. Spring Tares are in improved request. For bird seeds the sale is slow. Blue Peas are now unprecedentedly cheap. The Linseed market is steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

MARK LANE: *Feb.* 1.—Business was slack to-day; holders of Wheat and flour nevertheless showed no disposition to make any concession in price, or more might possibly have been done, as there was some inquiry. Barley, whilst quiet, maintained steady and even rather firmer value for grinding sorts. Beans and Peas met a retail demand at previous rates. Oats were not quotably altered in price, but did not sell readily.

Feb. 3.—There was not much passing in Wheat or flour, and prices were without quotable change. Oats and other spring corn were quiet and unchanged.

Average prices of corn for the week ending Jan. 30: —Wheat, 29*s.* 7*d.*; Barley, 28*s.* 8*d.*; Oats, 18*s.* 10*d.* For the corresponding period last year:—Wheat, 34*s.* 6*d.*; Barley, 32*s.* 1*d.*; Oats, 20*s.* 6*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Feb.* 3.—Average supplies of all kinds of vegetable produce. Trade good, prices fair. Quotations:—Apples, 2*s.* to 4*s.* per sieve; Cauliflowers, 5*s.* to 10*s.* per tally; Savoys, 3*s.* to 10*s.* do.; Beetroots, 3*s.* to 3*s.* 6*d.* do.; Brussels Sprouts, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve; Spinach, 2*s.* to 3*s.* do.; greens, 3*s.* to 3*s.* 6*d.* per dozen bundles; Turnips, 2*s.* 6*d.* to 3*s.* 6*d.* do.; Carrots, 2*s.* to 3*s.* do.; do. Parsley, 1*s.* to 2*s.* do.; Celery, 4*s.* 6*d.* to 10*s.* do.; Onions, 4*s.* 6*d.* to 5*s.* per cwt.; Carrots, 25*s.* to 30*s.* per ton; white Turnips, 30*s.* to 70*s.* do.; Swede do., 25*s.* to 30*s.* do.; Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD: *Feb.* 2.—With a good supply of produce, a fair trade was done at the following prices:—Cabbage, Drumhead, 6*s.* to 8*s.* per tally; Savoys, 8*s.* to 10*s.* do.; greens, bunch, 2*s.* 6*d.* per dozen; Mangels, 21*s.* to 22*s.* per ton; Swedes, 22*s.* to 25*s.* do.; Turnips, 60*s.* do.; Carrots, cattle feeding, 20*s.* to 28*s.* do.; do. household, 30*s.* to 42*s.* do.; Apples, 2*s.* 6*d.* to 4*s.* per bushel; Onions, 75*s.* to 85*s.* per ton; Horseradish, 10*d.* to 1*s.* bundle; Celery, 12*s.* to 15*s.* per dozen; Rhubarb, 2*s.* do.; Sprouts, 3*s.* to 4*s.* per sieve; Parsnips, 10*d.* to 1*s.* per score.

POTATOS.

BOROUGH AND SPITALFIELDS: *Feb.* 2.—The market continued weak and dull for all but prime samples, which were not so plentiful; otherwise supplies were in excess of demand, Quotations:—Regents, 60*s.* to 110*s.*; Magnum Bonums, 50*s.* to 60*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Feb.* 3.—Quotations:—Magnums, 50*s.* to 80*s.*; Regents, 60*s.* to 70*s.*; Victorias, 55*s.* to 65*s.*; and Champions, 50*s.* to 60*s.* per ton.

STRATFORD: *Feb.* 2.—Magnums, 50*s.* to 80*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 410 bags from Hamburg, 60 bags from Boulogne, and 100 sacks from Malta.

HAY.

WHITECHAPEL: *Feb.* 2.—With very large supplies an exceedingly dull trade prevailed at a reduction all round in prices. Quotations:—Clover, prime, 90*s.* to 103*s.*; inferior, 70*s.* to 88*s.*; hay, prime, 70*s.* to 88*s.*; inferior, 50*s.* to 65*s.*; and straw, 28*s.* to 37*s.* per load.

Feb. 4.—There was a large supply on sale. The trade was very dull, at late rates.

CUMBERLAND (Regent's Park): *Feb.* 2.—There was a large supply, with a very dull trade at the following rates:—Clover, best, 90*s.* to 105*s.*; seconds, 70*s.* to 90*s.*; hay, best, 75*s.* to 90*s.*; seconds, 62*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Feb.* 2.—Quotations:—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 36*s.* per load.

CANNELL'S FLOWER SEEDS.

BEST THE WORLD PRODUCES.

Sole Specialty—FLOWERS.

We have the best position and greatest facilities; and further, all our Seeds are our own growing, and from our highest and best appreciated varieties and strains, acknowledged throughout the world to give the greatest satisfaction. Our **"FLORAL GUIDE"** is also admitted, from one end of the world to the other, to be much the best book ever issued on all popular flowers. Sent post-free.

GARDEN EDITOR—"*Reynolds*," *January* 30, 1886.

"From Messrs. H. Cannell & Sons, Swanley, Kent. Their very luminous plant list is, without exception, the best and fullest plant catalogue published in the kingdom. It is also wondrously illustrated, giving the reader admirable examples in that way of the diverse plants advertised. Florists' Flowers, such as all like to grow, are specially prominent. This firm not only offer the greatest variety of plants of this class of any firm of the kingdom, but they rank amongst the best cultivators. It is of great value, and presents a most interesting element in horticultural literature."

J. WEST JONES, ESQ., *Coroner for Hanley, The Hollies, Shelton, Stoke-on-Trent, January* 28, 1886.

"Gentlemen,—I am very much obliged for your Catalogue for this season. It is a perfect encyclopædia for the amateur florist."

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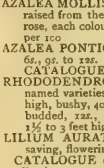
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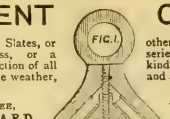
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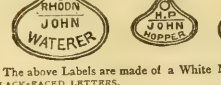
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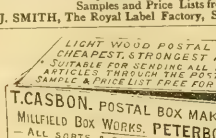
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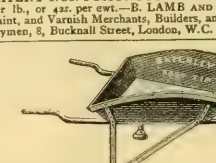
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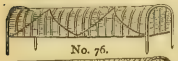
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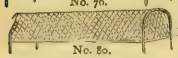


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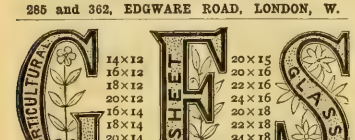
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Any size Panels made to measure at 2d. per square foot.

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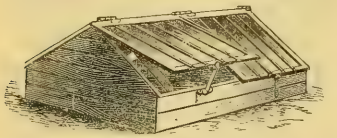
21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.

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The above are without exception the most useful kind of Frame for Plant Growing, and every one with a garden should possess one. The sashes turn right over one on the other, and the boxes are put together with wedges, and can be taken apart in a few minutes. Sizes and prices, carriage paid to any station in England, ready glazed and painted:—

6 feet long, 4 feet wide, packing cases free	£2	15	0
12 feet long, 4 feet wide, " " "	4	15	0
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The glass is nailed and puttied in.

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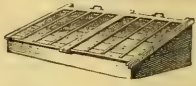
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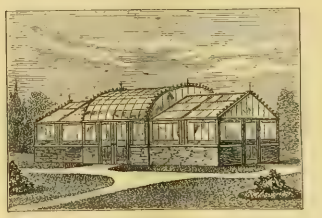
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Length.	Width.	Price.	Heating Apparatus.
21 ft.	10 ft.	£48	..... £6 15
27 ft.	11 ft.	£68	..... £7 10
36 ft.	12 ft.	£88	..... £12 15
42 ft.	14 ft.	£125	..... £14 0
48 ft.	16 ft.	£162	..... £17 15
60 ft.	16 ft.	£202	..... £18 15
70 ft.	17 ft.	£249	
80 ft.	18 ft.	£302	
90 ft.	19 ft.	£360	
100 ft.	20 ft.	£425	

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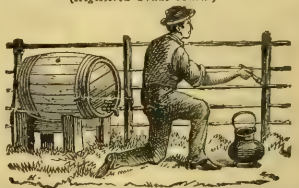
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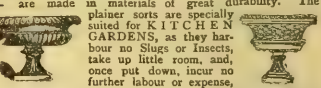
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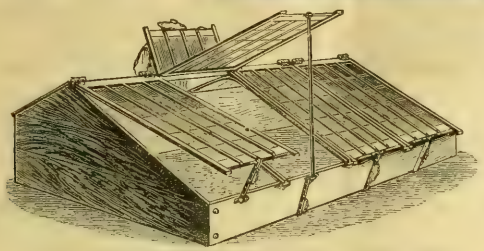
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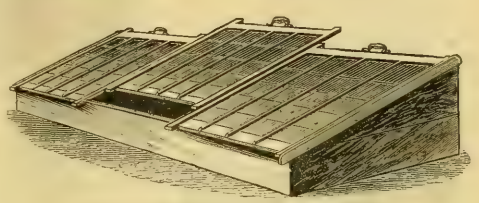


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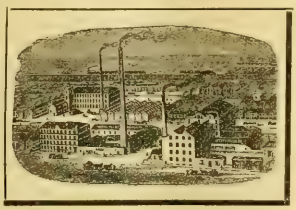
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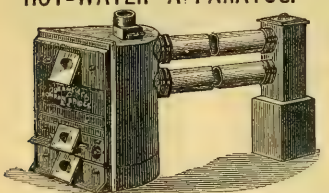
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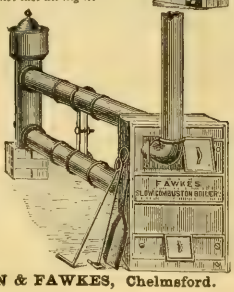
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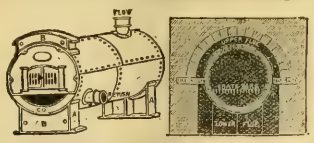


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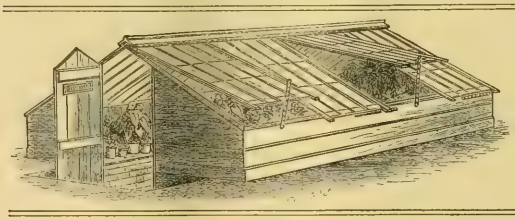
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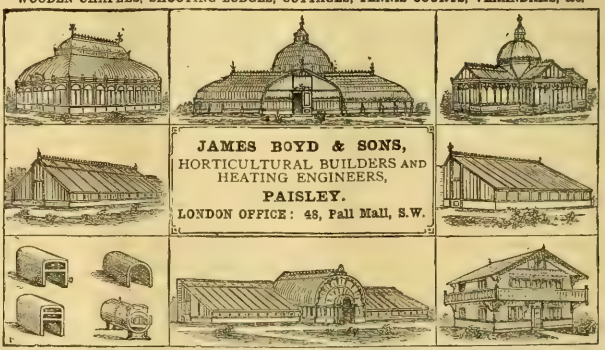
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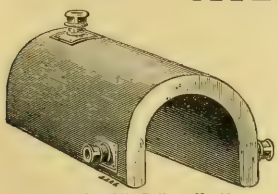
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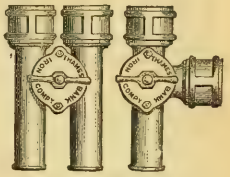
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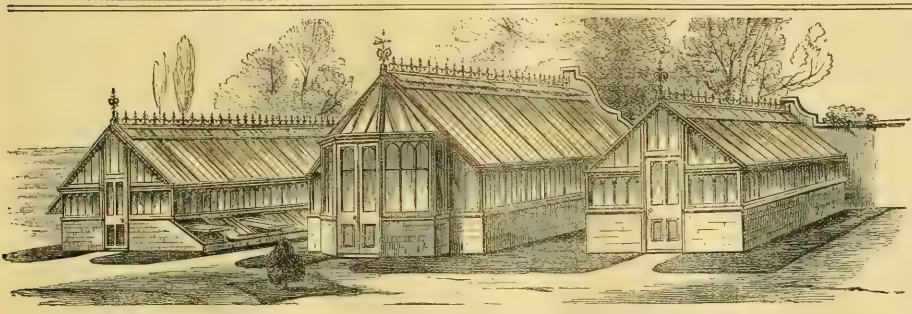
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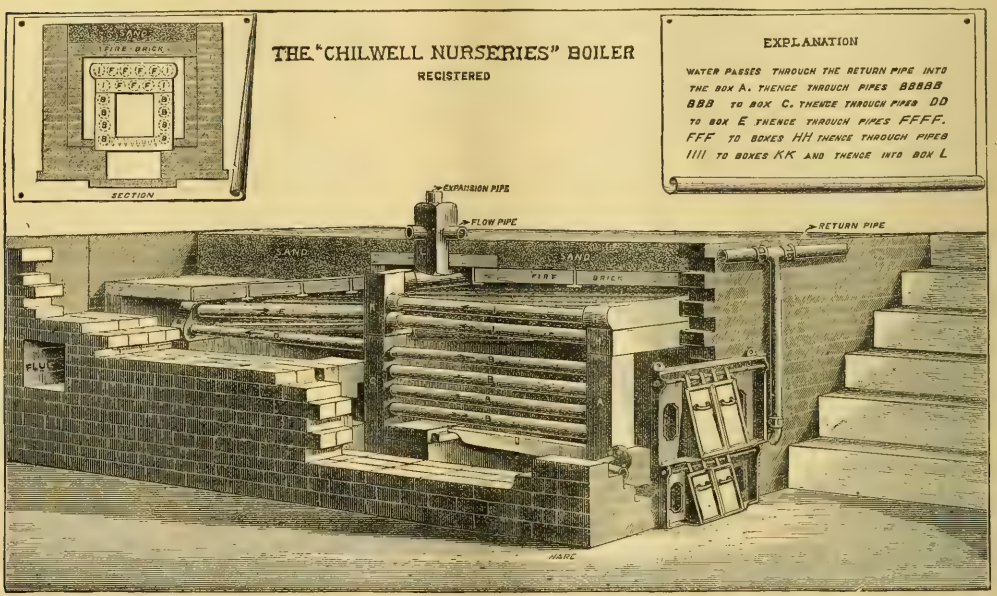
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MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, as above, on THURSDAY NEXT, February 18, at 12 o'Clock precisely, 4000 FERNS of sorts, 2500 PALMS, 100 AZALEAS, ORCHIDS, RHODODENDRONS, HERBACEOUS PLANTS, and other STOCK.

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MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises so widely known as Cranston's Nurseries, King's Acre, Hereford, on TUESDAY and WEDNESDAY, February 23 and 24, at 12 o'Clock precisely each day, without reserve, the First Portion of the extensive and valuable NURSERY STOCK, which is in fine condition for removal, comprising a great variety of splendid Specimen Conifers, Portugal Laurels, Common and other Laurels, in large quantities; 3000 Standard Apples and Pears, in all the leading sorts; Gooseberries, Currants; 5000 Standard Ornamental Trees, including fine Thorns, Limes, and Purple Beech; 100,000 Larch and Scotch Firs, 3 to 5 feet; Ash, Willows, Deciduous and Flowering Shrubs, and quantities of other stock too numerous to mention in an advertisement.

May now be viewed. Catalogues may be had on the Premises; or of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C.; and Leytonstone.

N.B. Further Sales will take place during the year, which will be duly announced.

Wandsworth Common, S.W.

Two days' UNRESERVED SALE of unusually well-grown NURSERY STOCK, by order of Mr. Robert Neal.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Nurseries, Trinity Road, Wandsworth Common, S.W. (twelve minutes' walk from Clapham Junction and Wandsworth Common stations), on TUESDAY and WEDNESDAY, March 2 and 3, at 12 o'Clock precisely each day, a large quantity of beautifully grown NURSERY STOCK, in excellent condition for removal, including thousands of Cupressus, Thuias, Retinosporas, and other Conifers for effective planting; 1000 Cedrus Deodara, 3 to 8 feet; 1000 Aucubas, 2 to 3 feet; large Wellingtonias, specimen Yuccas in pots, 1000 Laurels, 500 Privets, 1000 named Rhododendrons, 2 to 4 feet; 200 Standard ditto, 2000 Seedling varieties, 2 to 4 feet; 1000 Yews, 3 to 5 feet; 400 Golden ditto, 3 to 4 feet; 2000 Green Euonymus, 1 to 3 feet; 500 Golden ditto, 2 to 3 feet; 2000 Standard Ornamental Weeping and Flowering Trees, 500 fine Planes, 14 to 16 feet; 1000 Virginian Creepers, 8 to 10 feet; 1000 Climbers of sorts; 1000 Pyramid and Trained Fruit Trees, and other Stock.

May now be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C., and Leytonstone.

Monday Next.—(Sale No. 7091.)

7000 splendid Bulbs of LILIUM AURATUM, 1000 L. LONGIFLORUM, 1300 L. KRAMERI, 450 L. AURATUM MACRANTHUM, 1400 L. TIGRINUM?, and other BULBS, just received from Japan, in the finest possible condition.

Also Rare Californian LILIES, CALOCHORTI, TUBEROSES, 300 EUCHARIS AMAZONICA, GLADIOLI, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 15, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next—(Sale No. 7092.)

ROSES, FRUIT TREES, SHRUBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, February 17, at half-past 12 o'Clock precisely, 1000 first-class Standard and Dwarf ROSES, including all the leading varieties; FRUIT TREES, of sorts; CUPRESSUS, THUIAS, BERBERIS, HOLLIES, LAURELS, and other SHRUBS: BORDER PLANTS, TUBEROSES, LILIUMS, GLADIOLI, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7093.)

VERY SPLENDID IMPORTATIONS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, February 18, at half-past 12 o'Clock precisely, very fine imported ORCHIDS, consisting of Lælia superbiens, Oncidium, in habit like splendidum; Sobralia xantholeuca, Lycaste Skinneri, Odontoglossum pulchellum majus, Epidendrum myrianthum album, two fine new Sobralias; also a fine lot of a most distinct looking Laitleya, from a new district; Oncidium cucullatum giganteum, O. unguiculatum, and many other rare and valuable ORCHIDS.

On view mornings of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7093.)

ODONTOGLOSSUM ALEXANDRÆ.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, February 18, at half-past 12 o'Clock precisely, a very grand and very large consignment of ODONTOGLOSSUM ALEXANDRÆ, from mountains hitherto unsearched, and where collector found, as dried flowers will show, specially fine varieties; the whole are of the round broad-petalled type, and in extra fine order.

On view morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 25, at half-past 12 o'clock, precisely, a small COLLECTION of ESTABLISHED ORCHIDS, the property of a Gentleman who is giving up their culture.

Further particulars in next Advertisement.

The Third Portion of the Valuable Collection of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 4, at half-past 12 o'Clock precisely.

Further particulars in future Advertisement.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the REVISED CATALOGUE of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

The Nurseries, Cranston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

North of London.—(6278)

FLORIST'S BUSINESS, excellent and compact, in a flourishing neighbourhood, and doing a large trade with West-End Shops, Cut Flowers, &c. Two Acres of Ground, 15 Greenhouses, 5-roomed Dwelling-house. Lease twelve years. Rent, £50. Incoming, including all Stock and 10 Greenhouses, only £300. A capital opening. Full particulars of

PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

To Nurserymen and others.

FOR IMMEDIATE DISPOSAL, as a going concern, the old and lucrative BUSINESS of Messrs. G. and W. YATES, Nurserymen and Florists, who are relinquishing this branch of trade in order to entirely devote their attention to their well-known established and increasing Wholesale and Retail Seed Business. There are upwards of eight acres of good fertile Land (well stocked with selected Shrubs and Trees adapted to the locality), which may be had on long lease at a low rent, and known as "Green Lane Nurseries," situate at Heaton Norris, five miles from Manchester, and one mile from Stockport, Lancashire, by road or rail. The Glass, Plants, Houses (nine in number), Pits, Stable, Sheds, &c., are replete with all modern requirements for a first-class trade, which has been successfully carried on for over twenty years. The Stock and Greenhouse Plants optional.

The inspection of intending purchasers is invited.

Portion of the money may remain on mortgage.

G. AND W. YATES, Seed Merchants and Nurserymen, Market Place, Manchester.

TO LET, on Agreement, Large CONSERVATORY, with two good Vines, and new Seven-roomed House, at Highbury. All in first-rate repair. Rent £36. Apply by letter to R. A. CAME, 27, Mecklenburgh Square, W.C

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots. F. R. KINGHORN, Nurseryman, Richmond, Surrey.

To Nurserymen, Contractors, and others.

THE PARKS' COMMITTEE of the METROPOLITAN BOARD OF WORKS will meet at the Office of the Board, Spring Gardens, S.W., on WEDNESDAY, the 24th day of February, 1886, at 12 o'Clock at noon precisely, and will then be prepared to OPEN TENDERS by persons who may be willing to CONTRACT for the PREPARING for and PLANTING 250 TREES, various, and OTHER WORKS in connection therewith, on Highbury Fields. Persons desirous to submit Tenders may Inspect the Specification, and obtain Form of Tender, and other particulars, on application to the ARCHITECT of the Board, at the Office, Spring Gardens, between the hours of 9 A.M. and 4 P.M. (or on Saturdays between the hours of 9 A.M. and 2 P.M.), until TUESDAY the 23rd day of February, 1886. The Tenders, which must be on the Form supplied from this Office, and be addressed to the CLERK of the BOARD, are to be delivered at the Office before 4 o'Clock on the last-mentioned day, and no Tender will be received after that hour. Any Tender which is not fully filled up in every particular, will be rejected. The Committee do not bind themselves to accept the lowest or any Tender.

J. E. WAKEFIELD, Clerk of the Board.

Spring Gardens, S.W.—February 10, 1886.

To the Trade.

WINDSOR and LONGPOD BEANS.

H. AND F. SHARPE have fine samples of the above, and are prepared to offer them at very Low Prices to clear out. Samples may be had on application.

Seed Growing Establishment, Wisbech.

HARDY HERBACEOUS PLANTS.

One Hundred good clumps, one of a sort, for 10s.

Must sell to clear ground. Cash.

EDWARD MORSE, Nurserymaa. Epsom.

The Nurseries, Trinity Road, Wandsworth Common, S.W.

ROBERT NEAL (late R. & G. Neal) begs to offer to Gentlemen, Nurserymen, Builders, and others, the large and varied stock of well-grown FRUIT, FOREST, and other TREES and SHRUBS, too numerous to mention, grown at these Nurseries. The whole of the Stock is remarkably clean and well rooted, and especially adapted for Town planting.

The Nurseries are one mile from Clapham Junction, and a quarter of a mile from Wandsworth Common Station.

CHRYSANTHEMUM "BOULE DE NEIGE."

R. OWEN is now booking orders for the above. The best Late White for Cut Flowers and Decoration. Splendid Dwarf bushy habit, requires no sticks. A fine Market variety. R. O. was awarded two First-class Certificates, December, 1885. Ready in March. 10s. per dozen, free for cash with order, in rotation. See *Gardeners' Chronicle*, January 16, page 67. Trade price on application.

The Floral Nurseries, Maidenhead.

GILBERT'S LATE WHITE VICTORIA BROCCOLI, F.C.C., F.P., R.H.S.

Read the great Royal Committee Awards,
By sending to Gilbert for his first little card;
It will give you friend Barron's and blinker's ideas,
Which is enough and to spare to drive the raiser to tears.
R. GILBERT, High Park Gardens, Stamford.
Price 2s. 6d. per packet. Trade supplied.

NEW CHRYSANTHEMUM, YELLOW GLOBE.

Incurved, a sport from White Globe, of a fine canary-yellow or primrose colour. Showy growing, and free flowering.

A fine large large bloom for exhibition.

First-class Certificate from the National Chrysanthemum Society, November 11, 1885.

Price, good Plants, 5s. each. Cash with order.

W. MARTIN,
Blackstone, Woodmancote, Henfield, Sussex.

SPECIAL CULTURE OF

FRUIT TREES and ROSES.

A large and select stock is now offered for Sale.

The Illustrated and Descriptive CATALOGUE of FRUITS post-free.

The Descriptive CATALOGUE of Roses post-free.

THOMAS RIVERS & SON

The Nurseries, Sawbridgeworth, Herts.

A Bargain—**SEAFORTHIA ELEGANS**—A Bargain

Too large for owner's conservatory.

A good Specimen, standing about 8 feet above the pot, good shape, seven large fronds (another rising), clean, healthy, and vigorous; is offered for 4 Guineas (£4 4s.), or in EXCHANGE for really good Double BEGONIAS to the value of 5 or 6 Guineas. Apply to

WOOD AND INGRAM, The Nurseries, Huntingdon.

N.B. If in exchange, please describe fully.

THE FINEST POTATO OF THE DAY

"IMPERATOR."

Very large, round, white, and floury; free from disease, and a wonderful cropper, producing over 20 tons per acre; it undoubtedly will become very popular. 8s. per bushel free on rail. Price per cwt. or ton on application.

VICAR of **LALEHAM**, finest purple Potato.
OSBORNE'S PRIDE, early Kidney Potato.
WHITE BEAUTY, and other first-rate sorts, cheap. Write for Catalogue and Prices to

HARRISON & SONS,

SEED GROWERS, LEICESTER.

CHRISTMAS ROSES.
HELLEBORUS NIGER, common variety, 4s. p. doz.
" " ALTIFOLIUS, large Aberdeen variety, 12s. per doz.
" " ANGUSTIFOLIUS, pure white Cheshire variety, 9s. per dozen.
" OLYMPICUS ALBUS, 6s. per dozen.
" " PURPUREUS, 6s. per dozen.
One well-rooted Plant of each sent free by post for 3s. 6d. cash with order.

Hepaticas.
HEPATICA TRILOBA, single blue, 2s. per dozen.
" " double blue, 18s. per dozen.
" " single red, 3s. per dozen.
" " double red, 2s. per dozen.
" " single white, 3s. per dozen.
One well-rooted Plant of each sent free by post for 2s. 6d., cash with order.
MORRISON BROTHERS, Nurseries, Aberdeen.

ACER PLATANOIDES COMPACTA.—This very splendid variety has been obtained from a seedling of Acer platanoides. This variety is of compact form and close, the foliage is like that of Acer platanoides, but it differs in the form of growth. When grown as a Standard this variety of Acer makes a compact round head; as a tree planted by itself, or in groups, it produces a splendid effect. When planted for an Avenue it makes a very agreeable and handsome sight, quite different from other trees, such as Horse Chestnut, Tilia, and other trees employed for that purpose. When trained in pyramid or column, and many together, it makes a splendid effect. This novelty is one of the finest that has been sent out to the Trade for some time. A Plate will be sent on application.
Prices:—Young plants, 2 to 3 feet, 10s. each, six plants, 50s.; do., 3 to 3½ feet, 12s. each, six plants, 60s.; middle-sized plants, 3½ to 6 feet, 16s. each, six plants, 80s; some few extra specimens with heads, £1 to £1 12s. each.

PRUNUS PISSARDI. — The very finest Ornamental Trees ever seen, foliage of deep red colour, keeping until frost. Wood of a fine deep black colour; brilliant; very hardy and vigorous. Young Plants, about 1½ foot high, per 100, £3; per dozen, 10s. Middle-size Plants, 2 to 3 feet, per 100, £4 to £5; per dozen, 12s. to 15s. Strong Plants, bushy and pyramid, 4 feet to 5 feet, per 100, £10; per dozen, £1 5s. Strong pyramid, bushy, 5 to 7 feet, per dozen £1 10s. to £2. Extra strong pyramid, bushy, 6 to 8 feet, per dozen, £2 to £3. Standards, fine specimen, per dozen £1 15s. to £3.

ACER NEGUNDO fol. variegata, to be planted with Prunus Pissardi, 2 to 3 to 4, and 6 feet, £2, £3, £4, and £7 per 100.

ROBINIA NOVA SPECIES.—This variety is quite distinct from the common Robinia; its foliage is very small, light, and of a fine tender green. It is exceedingly pretty and very ornamental, and should be planted in every Park and Garden. A group of these Acacias when planted with Prunus Pissardi will produce a very splendid effect for decoration. As a Standard it grows like Robinia inermis, and is of very handsome appearance; it can also be employed for Avenue Planting.
Prices:—Good size plants, 6s. each, 65s. per dozen; good bushy plants, 3½ feet, 10s. each, 120s per dozen; some few fine specimen plants on Standards, 15s. each, six plants for £4.
CATALOGUES, printed in English, of Fruit Trees of every description, trained or not trained, Roses, Peonies, Clematis, New Plants, and others, sent free on application.
L. PAILLET, Nurseryman, Chatenay, near Paris, France.

SPECIAL CHEAP OFFER. — PINES, Austrian, from 2 to 6 feet; LARCH, from 2 to 4 feet; FIR, Scotch, 12 to 24 inches; ELM, 3 to 4 feet, 4 to 5 feet; CHESTNUT, 2 to 2 feet; HORNBEAM, 2 to 3 feet, 3 to 4 feet; MAPLE, 4 to 10 feet; POPLARS, Lombardy, 7 to 8 feet, 8 to 10 feet, 10 to 12 feet; POPLARS, American, 7 to 8 feet, 10 to 12 feet; PRIVET, Evergreen, 2 to 3 feet, 3 to 4 feet, good; PRIVET, Oval-leaf, 2 to 3 feet, 3 to 4 feet, fine; SYCAMORES, 3 to 4 feet, 4 to 5 feet; AUCUBAS, 2 feet; BERBERIS AQUIFOLIA, BOX, CUPRESSUS, various; ELDERS, Gold; CURRANTS, flowering; HOLLIES, 11 great variety; IVIES, in sorts; JUNIPERS, LABURNUMS, LAURELS, assorted; RHODODENDRONS, several hundred thousand of all sorts and sizes—beautiful stuff; RETINOSPORAS, YEWS, Common and Irish. For Price LIST, &c., apply to
ISAAC MATTHEWS AND SON, The Nurseries, Melton, Stoke-on-Trent.

NEW CHRYSANTHEMUMS.—I offer 9 Choice New Varieties of merit, which should be in all collections. Last year's set at 10s. each. Amongst these, Gloriosum, White Dragon, and Bicolor, were Certificated at the N. C. S. in London. There are many better varieties included in this set, than two out of the three named. All are still the best in their respective classes.
H. WATERER, 56, North 38th Street, Philadelphia, U.S.A.

Surplus Stock of Garden Peas.
H. AND F. SHARPE, having a Surplus Stock of the following varieties of GARDEN PEAS, will be pleased to make offers to the Trade at Reduced Prices, which may be had, with samples, on application:—
EARLY SUNRISE.
ESSEX RIVAL.
EARLY EMPEROR.
DANIEL O'ROURKE.
KENTISH INVICTA.
LEICESTER DEFIANCE.
BECK'S PRIZETAKER.
HARRISON'S GLORY.
FILLBASKET.
HUNDREDFOLD.
SHARPE'S INVINCIBLE.
BEDMAN'S IMPERIAL.
WATERLOO MARROW.
PRINCESS ROYAL.
ALLIANCE or EUGENIE.
CHAMPION OF ENGLAND.
DR. McLEAN.
Seed Growing Establishment, Wisbech.

CHRYSANTHEMUMS, Five Hundred varieties.—This, one of the Finest and Largest Collections in the country, includes the best and newest of the Exhibition, Decorative, Early Flowering, and Single Varieties, guaranteed true to name. Plants, purchaser's selection, 2s. 6d. per dozen, 16s. per 100. Cuttings, 1s. 6d. per dozen, 10s. per 100. W. E.'s selection cheaper.
For the new English and Continental varieties, see CATALOGUE (one stamp). Many of the largest and best growers in the country are supplied from this collection.
WM. ETHERINGTON, The Gardens, Manor House, Swanscombe, Kent.

GENUINE SEEDS

JAMES VEITCH & SONS,
Royal Exotic Nursery, Chelsea, S.W.

The Finest Green-fleshed Melon for 1886.



NEW MELON, "LA FAVORITE."
The only Green-fleshed Melon awarded a First-class Certificate by the Royal Horticultural Society this season.
Per Packet, 2s. 6d.

NEW TOMATO,
"HACKWOOD PARK PROLIFIC."
Awarded Two First-class Certificates.
The most prolific and finest smooth red Tomato.
Per Packet, 1s. 6d.

The Best Red Celery for Exhibition or Table Use.

AWARDED TWO CERTIFICATES of MERIT for SUPERIOR QUALITY, and also NINE FIRST PRIZES in COMPETITION with OTHER LEADING SORTS.



NEW CELERY,
"STANDARD BEARER."
Per Packet, 2s. 6d.

NEW CAULIFLOWER,
"VEITCH'S PEARL."
The finest main crop variety.
Per Packet, 1s. 6d.

NEW VEGETABLE MARROW,
"PEN-Y-BYD."
Per Packet, 1s. 6d.

For full descriptions of the above and other Choice Novelties and Specialties, see
SEED CATALOGUE for 1886,
Forwarded Gratis and Post-free on application.

ROYAL EXOTIC NURSERY,
CHELSEA, LONDON, S.W.

To the Trade.
MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.
Seed Growing Establishment, Wisbech.

Vines—Vines—Vines.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.
The Vineyard and Nurseries, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

GRAND NEW SEEDLING POTATO—
"THE COLONEL:" First-class Certificate, Royal Horticultural Society, 1885.
"THE DOCTOR:" First-class Certificate, Royal Horticultural Society, 1884.
And many sterling novelties in Seed Potatos. Send for Retail Priced LIST, which contains all the best sorts in cultivation.
W. W. JOHNSON AND SON, Seed Potato Growers and Merchants, Boston, Lincolnshire.

ANDRE LEROY'S Nurseries, at Angers, France, the largest and richest in Europe in Collections of FRUIT and ORNAMENTAL TREES, SHRUBS, CAMELLIAS, ROSES, SEEDLINGS, STOCK FRUIT TREES, &c. CATALOGUES sent on application. Freight from Angers to London is very moderate. Medal of Honour at the Universal Exhibition at Paris in 1878.
Orders must be addressed to Messrs. WATSON AND SCULL, 90, Lower Thames Street, London, E.C.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 10 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12s. to 24s. per dozen, strong plants. Descriptive LIST on application. Plants may now be knocked out of pots and sent by parcel post.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

To the Trade.
HOME-GROWN VEGETABLE and FIELD SEEDS.
H. AND F. SHARPE'S Special PRICE LIST of VEGETABLE and FIELD SEEDS for this season comprises all the choicest varieties in cultivation, and grown from the most reliable stocks. The prices quoted therein will be found very advantageous to purchasers.
Seed Growing Establishment, Wisbech.

OUR SPRING LIST of BULBS, No. 78, is now published. Please send for a Copy.

OUR NEW ORCHID LIST, No. 79, to follow, with List of Mr. Edward Wallace's importations.
NEW PLANT AND BULB COMPANY, Colchester.

PROFITABLE MARKET FRUITS (in large or small quantities).
PLUMS—*Rivers' Early Prolific, Standard.
" *Early Orleans, Standard.
" Belgian Purple, Standard.
" *The Czar, Standard.
" *Victoria, Standard.
" Bleeker's Scarlet, Standard.
" *Kentish Bush, Standard.
" The Sultan, Standard.
" Cox's Emperor, Standard.
DAMSONS—*Farleigh Prolific. Standard.
" The Shropshire, Standard.
PEARS—Beurré Bosc, and Hessle, Standards.
CHERRIES—A few kinds, Standards.
Half-standards of those marked *.
All clean grown, healthy stuff. Prices on application to GEORGE BUNYARD AND CO., Old Nurseries, Maidstone.

OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c.) on application.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

The Best, the Cheapest.
TRAINED PEACHES and NECTARINES; extra fine, clean grown trees, well-rooted and thoroughly ripened; FRUITING TREES in Pots, GRAPE VINES, ROSES, and SEAKALE. Large stock at reduced prices. Cash Price List on application to
WILL TAYLER, Osborn Nursery, Hampton, Middlesex.

EAST LOTHIAN STOCKS.
THOMAS METHVEN AND SONS offer their choice strain of the above Intermediate Stocks in five colours—Scarlet, Purple, White, Crimson, and Snow-white wall-leaved, in packets, 1s., 2s. 6d., and 5s. each colour. Price to the Trade on application.
15, Princes Street, Edinburgh.

Seed Potatos.
JOSIAH H. BATH, York Street, Borough Market, S.E. offers the following varieties:—

Old Ashleaf.	Fortyfold.
Rivers' Royal Ashleaf.	York Regent.
Myatt's Ashleaf.	Dunbar Regent.
Snowflake.	Paterson's Victoria.
Beauty of Hebron.	Redskin Flourball.
White Elephant.	Walker's Regent.
Early Rose.	Early Don.
Schoolmaster.	Reading Hero.
Dalmahoy.	Scotch Champion.

And other leading varieties. Prices on application.

PALMS.—A few hundred splendidly grown Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, Areca lutescens, and Euterpe edulis, 12 inches high, 42s. per dozen, 25s. per 100. Latania borbonica, Seaforthia elegans, and Euterpe edulis, 20 inches high, 12s. per dozen; less quantity, 1s. 3d. each. Twelve beautiful FERNS for 3s. Packages and Parcels post-free.
GARDENER, Holly Lodge, Stamford Hill, London, N.

THE BEST MELON.

(SCARLET-FLESH.)



CARTERS' Blenheim Orange.

Important Testimony.

"Carters' Blenheim Orange is distinct in flavour, different in appearance, and superior in quality to any of the hosts of Melons now before the public."
—Mr. J. MUIR, *Margam*.

PRICE, in Sealed Packets, 1/6, 2/6, & 3/6 per pkt., post-free.

Seedsmen by Royal Warrants to H.M. the Queen, AND H.R.H. the Prince of Wales.

237 & 238, HIGH HOLBORN, LONDON.

LILIES FROM JAPAN.

LILIUM LONGIFLORUM (grand variety).
" EASTER LILY (from Bermuda).
" AURATUM.
" KRAMERII.
" LEICHTLINII.
" ELEGANS, rich apricot.
" THUNBERGIANUM.
" " ATROSANGUINEUM.
" " light orange.
" SPECIOSUM RUBRUM, deep red, white margin.

Our LONGIFLORUM, from same source, last year contained a large percentage of Eximium and Wilsonii.

The above fine varieties have just arrived from Japan. For prices see our Wholesale Seed CATALOGUE, to be had on application. Special quotations for quantities.

WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

VICCARS COLLYER & CO.'S



Spring 1886. Gratis and Post-free.

Wherein will be found offered many charming Novelties and Rarities not to be seen in any other Catalogue.

Economists specially will do well to peruse and note prices of our VEGETABLE and FLOWER SEEDS before ordering elsewhere; and will find that they can effect a considerable saving by so doing.

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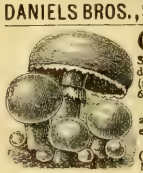
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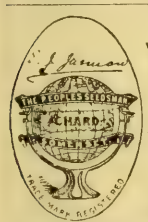
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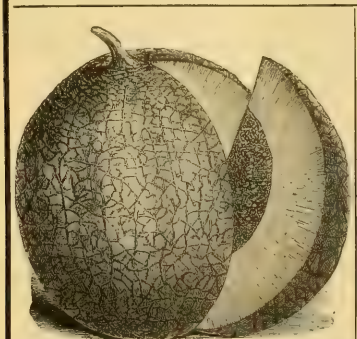
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THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 13, 1886.

ROYAL HORTICULTURAL SOCIETY.*

THE accounts and balance-sheet are submitted to the Fellows in the usual form. The Council have engaged in protracted negotiations with the Royal Commissioners of the Colonial and Indian Exhibition with the view of obtaining the same terms of admission as were enjoyed by the Fellows during previous exhibitions. They regret to state that the Royal Commissioners, having finally referred the matter to their Finance Committee, have felt themselves unable to grant these terms. The terms finally agreed upon with the Royal Commissioners differ from those of previous years in the fact that the tickets are not transferable.

The Council have had under consideration the practicability of holding a great International Horticultural Exhibition and Conference in 1887. After two meetings, largely attended by prominent horticulturists, they entered into communication with the Royal Commissioners of the Exhibition of 1851. They regret to state the encouragement the Commissioners felt able to hold out to them was not sufficient to justify them in undertaking so large a responsibility, especially in view of the very serious financial obligations such an exhibition would necessarily entail. The Council are unanimously of opinion that the time has come for such an International Exhibition, which would, they have reason to believe, be supported by amateur and professional horticulturists in all parts of the kingdom, and they are anxious that the subject should not be lost sight of by the Royal Horticultural Society.

The Council propose to resume the provincial shows which have, in past years, been of use in stimulating local interest in horticulture, in several important centres of population. They hope shortly to conclude arrangements for holding a show in the summer at Liverpool.

The thanks of the Society are due to Sir Henry W. Peek, Bart., for his liberal donation of £20 for prizes for Marguerites.

The Orchid Conference held in May last, at South Kensington, fully realised the expectations of the Council. The plants exhibited were numerous, and many of them of great rarity and beauty. Several papers of great interest, including three communications from Professor Reichenbach, and a valuable memoir on the hybridisation of Orchids, by Mr. H. Veitch, based on original observations, were read, and important discussions took place. A general report of the Conference, with special horticultural and botanical reports on the plants shown, by Mr. Burbidge and Mr. Ridley respectively, is in the hands of the printer, and will shortly be obtainable by Fellows on application to the Secretary.

A Pear Conference was held in the Chiswick Gardens, from October 21 to November 4. About 7000 dishes of fruit, sent from nearly

* The accompanying extracts are taken from the Annual Report for 1885.

every part of England, were shown, and opportunities were afforded for comparison, correction of nomenclature, and the mutual exchange of information between the growers and others specially interested. The unfavourable weather interfered considerably with the attendance of the general public, but in no way impaired the usefulness of the Conference. A full report, with the result of the labours of the Conference committee, is being prepared by Mr. Barron.

A Primula Conference will be held on April 20 and 21. This has already attracted the attention of Primula growers abroad and at home, and will form an interesting feature in the Society's work.

The Scientific, Fruit, and Floral Committees at South Kensington carried on their labours as usual during the year. The Society is indebted to them for much valuable work. The number of First-class Certificates awarded was 238, of which 59 were for Orchids, which seem to be rapidly increasing in popularity.

A most interesting exhibition of Daffodils was held on April 14, when further discussion on questions relating to Narcissus took place, and the report of the committee of the Conference held in 1884 was adopted.

The exhibitions in the conservatory during the Inventions Exhibition were of a very high class, especially those of fruits and vegetables, and proved a great attraction to the visitors.

The Council have to thank many of the Fellows for their exhibition of valuable plants at the various meetings; especially Mr. Ware, of Tottenham, for his continuous and attractive display of cut hardy flowers during the entire season.

The practical work of the Society at Chiswick has been satisfactorily conducted, and the gardens maintained in their usual high state of efficiency.

The trials by the several committees have given good results. Those of the Fruit Committee comprised Potatos, 200 varieties; Peas, 72 varieties; Cauliflowers and Strawberries; in each of which classes several certificates were awarded. Those of the Floral Committee embraced Fuchsias, 180 varieties; new Pelargoniums, single Dahlias, Begonias, Carnations and Picotees (of which the Society possesses a large collection), and Ivies, of which 80 varieties are now planted against the walls of the gardens.

Facilities were again afforded to the International Potato Exhibition committee for testing new varieties of Potatos.

The experiments instituted by the Scientific Committee for the prevention of the Potato disease, by what is termed the Jensenian system, were continued, and an interesting report has been prepared by Dr. Masters.

Experiments have been instituted at Chiswick by the Narcissus committee on the doubling of common Narcissus, Pseudo-Narcissus, and for the purpose of determining points of nomenclature.

It is proposed during the present season to continue trials by the Fruit and Vegetable Committee of the newer varieties of Peas, Potatos, Cabbages, and Strawberries; and by the Floral Committee, of Fuchsias, Ivy-leaved and zonal Pelargoniums, Carnations, and hardy annuals. The making of a complete collection of the different varieties of Holly is under consideration.

The crops of Grapes and other fruits were generally good. The Council hope that in future Fellows will avail themselves more extensively of their privilege of purchasing first-class Grapes at prices far below those of the market.

The collection of Apples and Pears in the gardens having now been proved, and their merits recorded, worthless varieties have been discarded.

Applications from Fellows for plants, seeds, and cuttings, continue to increase. During the year, 1110 Fellows were supplied with 22,180 plants, 40,000 packets of seeds, and nearly 10,000 cuttings of Vines and other fruit trees.

At the request of various Colonial Governments the Society has received and taken charge of large consignments of Tree Ferns and other plants from Victoria, South Australia, New Zealand, Ceylon, and the West Indies, intended to be shown at the forthcoming Exhibition. These plants occupy a considerable space in the Chiswick Gardens, and have necessitated the heating of the large Rose-house for their accommodation. As many of them may not be sufficiently established to be exhibited, Fellows of the Society who may have large spare plants representative of the flora of any of these countries, are invited to place them at the disposal of the Society for the purposes of the Exhibition.

During the year twenty-nine life Fellows and twenty-nine annual Fellows died; sixty-three Fellows retired from the Society, and 239 new Fellows were elected.

New Garden Plants.

CYPRIPEDIUM GERMINYANUM, *n. hyb.*
Angl. ex horto Veitch.

THIS is an offspring of Cypripedium villosum and hirsutissimum. The fine ligulate acute leaves have an exceedingly inconspicuous dark reticulation. The peduncle is covered with reddish-brown stiff hairs, and so is the ovary. The short bract has some dark purple spots at the base. The flower is somewhat larger than that of Cypripedium hirsutissimum, the general aspect of which it has most decidedly. Dorsal sepal oblong, undulate, fine green, with large shining sepia disc. Connate lateral sepals oblong, narrower, fine light green. Petals ligulate, oblong, spreading, green, and provided with numerous brown spots at the base, all the broader anterior part purple. Lip in the way of that of Cypripedium villosum, light greenish-yellow and sepia-brown in front. Staminode oblong, with exceedingly obscure angles, so that it is very near the square staminode of Cypripedium hirsutissimum. It has a green knob on the light ochre-red hairy surface.

This plant will, no doubt, prove much easier to grow than C. hirsutissimum, and it may in the future replace this capricious plant in many places. It is dedicated to one of the best Continental growers—Monsieur le Comte de Germiny, of Jonville, near Rouen, whose collection is so well known. *H. G. Rchb. f.*

ADIANTUM ELEGANS (*Moore*), *n. hyb.* (?).

Fronds evergreen, tufted, very numerous, ovate or triangular-ovate, quadripinnate; pinnæ distant, long-stalked, broadly ovate or deltoid, with distant ovate distinctly-stalked pinnules in their lower portion, more crowded toward their apices; pinnulets or ultimate pinnules 2—3-lobed, quite small, the largest, which are at the ends of the pinnæ, scarcely a quarter of an inch across, their general form roundish, a few of the larger ones near the ends of the pinnules slightly trapezoid, the terminal ones shortly cuneate; lobes blunt, with a deep narrow sinus, at the base of which is a rotundate-cordate sorus having a deep indent or notch on its exterior side; sori two to four on each pinnulet; indusium roundish-cordate, smooth, entire; stipes blackish-purple, glabrous, elongate, slender.

The stipes are elongate, glabrous, of a blackish-purple colour, quite slender and erect, the lower two-thirds void of pinnæ. The lamina is ovate, four times pinnate, the pinnæ bare for some distance from the rachis, distant, deltoid; the pinnules also stipitate, distant, ovate-oblong, and made up of numerous pinnulets or ultimate pinnules which are stalked, of small size, the longer ones rarely exceeding one-fourth of an inch in breadth, and generally of a roundish outline with the base cut off straight, the terminal ones being rather larger and subcuneate; the margin is crenately lobate, the two or three lobes cut down in the centre, and having a sorus in the sinus, the two sides which meet over the sorus being obtuse. The sori are roundish with an indent on one side, two to four on a pinnulet, and covered by indusia of the same form, which are smooth and entire at the margin.

In this novel Maidenhair Fern we have a truly elegant and graceful distinct evergreen Fern—one which cannot fail to win the approval of all who admire or cultivate decorative plants. It has all the charm of airy lightness belonging to A. cuneatum, with just a little more length in the stipes, which lifts the fronds more distinctly above the soil or the pot, and makes the plant especially useful for grouping in combination with the dwarfer decorative varieties of Maidenhair. Like A. cuneatum it thrives in a warm greenhouse, or it may be grown in a cool stove. We are informed that it originated about two years ago as a seedling in a mixed group of Adiantums raised in the Victoria Nursery, Holloway, and proves to be quite constant, being reproduced from the spores; it is therefore probably of hybrid origin, and if so has, we suspect, a rather close relationship with A. colpodes, than which, however, it is a much more symmetrical and better furnished plant. The crown or rootstock is tufted, and produces a profusion of fronds, which, being semi-erect in habit, soon grow up into a well-furnished specimen. The example now before us, which is perfectly symmetrical in its development, is about 2 feet high, the head spreading to bout 2½ feet in width.

The elegant semi-erect character and graceful contour of this plant are sufficient to commend it to the good opinion of all growers of ornamental plants; but in addition to these merits it possesses the further one, which it shares with several other Maidenhairs, of having the young fronds produced during the spring and summer months distinctly tinted with a lively shade of rose colour, which adds considerably to its beauty. The semi-erect habit, symmetrical contour and abundant small pinnules prettily lobed at the edge, are, however, the features which most distinctly mark it out as a popular favourite. *T. Moore.*

GARDENS, ALLOTMENTS, AND SMALL HOLDINGS FOR LABOURERS.

THIS is one of the most important social and political question of the day, and therefore no apology can be needful for adverting to the subject and your important leader of last week on some of its practical features. Of course, however, its influence on the cultivation of the soil, and the increase of the products of the same, are the vital points *apropos* to your pages. No one or no society, so far as has yet appeared, proposes to make the possession of such land compulsory on any or every labourer. The only compulsion proposed is that, in the comparatively rare cases where suitable land cannot be otherwise had, county boards or councils may be endowed with compulsory powers of obtaining land to be converted into gardens, allotments, or small holdings among labourers at fair rents and secure tenures.

Those most conversant with the land-hunger of the agricultural labourers have no fear of their eagerly hiring the land thus offered to them at their own doors, or as near to their homes as practicable, for two abnormal features have appeared abreast, under the present abnormal conditions of agriculture—the one is the giving up of farms by tenant-farmers, and the other is the eagerness to possess land by agricultural labourers. And it is in the direction of gratifying these desires that not a few of those most conversant with the facts of the case see most hope of finding a solution for the present deadlock in agricultural affairs.

But the branch of this complicated subject most germane to the pages of the *Gardeners' Chronicle* is —Will the labourers make a good use of the land? When they have obtained that, that they will generally get almost as much land as they care to have may be taken for granted. Disintegrating, as well as healing forces, are at work in rural affairs, that will provide the labourers with larger gardens and allotments than they have ever had before, and even small holdings where these are wanted; hence the vital importance of the question of the use he will make of them, to which you have mainly confined your leader. A somewhat extensive acquaintance with the subject leads to the conclusion that the labourers in the mass possess alike the knowledge, the power, and the will, to turn their gardens, allot-

ments, or small holdings, to the best account. Of course, exceptions may be met with in all directions—veritable gardens and farms of the sluggard, rendered the more painfully apparent by their contrast with the high level of surrounding excellence; but generally, those most conversant with the gardens of cottagers and artisans will be the first to admit that no class gets more or better produce out of the soil than these small cultivators. In confirmation of these views, were confirmation needed, I would challenge an examination of small and cottagers' gardens, for the districts so widely separated as Bury St. Edmund's and Nottingham.

The produce of allotments in contrast with that of the larger fields is assuredly equally in favour of the superior produce of the smaller holders. The testimony of landholders as to the produce of their smaller tenancies runs in the same direction—though had it been otherwise in the past the result need have caused no surprise, for up to a very recent period gardens, allotments, and small holdings have been at far higher rentals than larger portions of land. The small cultivators thus have been handicapped all through their tenures with perhaps double, treble, four or more times the rental charged for larger occupations; and yet in this unequal struggle for existence the small holders have not seldom succeeded to score a profit, while the larger ones have been passing through the bankruptcy courts in scores. If such has been the result under such unequally matched conditions yet more hopeful and satisfactory results may be confidently anticipated when the small holders pay neither more nor less rent than the larger occupiers, when their tenure is rendered reasonably secure, and they have complete freedom of cultivation. With these boons and a fair rent we may expect to see the produce of small holdings yet further extended and improved, and their profits much increased.

The fruit tree planting and treatment proof of the ignorance or incapacity of small holders is singularly infelicitous, inasmuch as fruit trees are mostly selected and planted by the landlord, and in not a few cases must not be cut back nor pruned without permission. I quite agree with you that they are often badly selected, and worse placed in planting; but both these mistakes are mostly the faults of those who ought to know better, and few things would tend more to enhance the value of small gardens than the furnishing of a portion of them with a carefully assorted selection of first-rate varieties of fruit trees and bushes that previously have proved suitable for the locality.

This last proviso—that of marrying, as it were, local varieties to local climate, soil, and conditions—may be described as the very keystone of success. The landlord's attention often needs to be called to other trees besides fruit-bearing ones. It is probably no exaggeration to affirm, that fully half the fertility of thousands of cottagers' gardens is prevented or destroyed by hedge-row or other forest trees, either in the gardens themselves or in close proximity to them. The impoverishing effects of huge trees of Elm, Ash, Beech, Oak, or other trees in such must be seen to be appreciated. The roots sift the manurial strength almost clean out of the soil before the annual crop can reach it, while the overshadowing tops render anything like a fair measure of success impossible. No tree other than a fruit-bearing one should be left in or within a distance of ten yards—twenty would be better—of any cottager's garden or allotment. As to the picture drawn of interlaced crowded cropping, it is easy to be deceived. What may be condemned as such in the cottagers' gardens is not seldom praised as simultaneous cropping and the running of two or more crops abreast, in private and market gardens. After all, by their fruits and their perennial fertility shall we know them, and I know cottagers with fruit trees above and fruit bushes below, sub-cropped with vegetables under both, that yield a weight of good produce which, could it be made general, would at once banish agricultural depression out of the land.

I trust no one will misunderstand these remarks as apologising for imperfect knowledge or cultivation. So far as the agricultural labourers in East Anglia are concerned, they have a very special knowledge of the subject, and not a few of us have picked up our most useful wrinkles in kitchen gardening among them. And for this and other reasons I hold that they are just the right people to hold more of the land, and that their doing so at fair rents and with safe security will add to their wealth and happiness, as well as to the security and prosperity of the nation at large. *D. T. F.*

ROOT-PROLIFERATION IN PLATYCERIUM.

Attention has lately been drawn, both by Mr. Chas. Druery, F.L.S., and by Mr. G. S. Jenman, of Demerara, to the very interesting subject of proliferation in Ferns, the last named writer having considered at some length the whole subject, from the development of buds or bulbils on the leaves, now well known to every gardener, to the rarely noticed bud-production in the roots of various Ferns. In the last volume of the *Gardeners' Chronicle*, p. 244, occurs a little sketch and note by Mr. Druery, of root-buds produced by the Lady Fern (Athyrium Filix-fœmina), and so far as I can ascertain, this is the first recorded instance of root proliferation in any member of the fern order. There is, however, in Burbidge's *Propagation and Improvement of Cultivated Plants*, a statement to the effect that the thick fibrous roots of Platycerium stemmaria and P. biforme, if removed, may be made to develope buds; but I have not been



Fig. 39.—Root proliferation in platycerium.

able to discover that any one has succeeded in doing this.

Whilst looking over the Platyceriums in the ferneries at Kew a short time ago, it occurred to me that by selecting some of the strongest roots, and planting them with a view to their producing young plants, some light might thereby be thrown on this subject of root-buds in Ferns; but we found that the question, so far at least as regarded the Platyceriums, had already been fully settled: on examining a specimen of P. alcicorne for these, pushing up through the soil were the root-buds represented in the accompanying figure (fig. 39), in which they are reproduced life-size. It will be seen that the small conical bud is developed at the extreme tip of a stout root, the branches on which have no relation to the bud itself. As the bud strengthens a cluster of roots are produced from near its base, till finally it becomes possessed of a mass of these roots, and begins to live an independent existence. The series of specimens here shown represent this most beautifully, and we may therefore place them by the side of the figure of the Lady Fern above mentioned, as true instances of root-proliferation in Ferns. No buds were found in any other of the species of Platycerium at Kew, but we intend keeping a sharp look-out for their appearance. A number of the strongest roots of P. alcicorne and several others have meanwhile been taken off and planted under conditions favourable to their developing buds. It does not of course follow that these roots will form buds when severed from the parent plant any more than would happen in the case of similarly treated leaves of Aspleniums and other prolifer-ous-leaved Ferns, if removed *before* the buds have appeared. Still it is probable, after what has been stated by Mr. Jenman on this subject, that the roots of Ferns, or at least some of them, may be utilised for purposes of propagation. It seems strange that the development of buds on the roots of Ferns has so long escaped observation. Mr. John Smith, in his *Historia Filicum*, says nothing on this point, mentioning only proliferous leaves and stolons. In the same author's *Ferns, British and Foreign*, the following interesting statement occurs:—"Up to the present time (1866) attempts to propagate Ferns by separate portions, devoid of any previously formed bud, have proved fruitless." Nothing is said about root proliferation in Ferns by Sachs, in his *Text-Book of Botany*; the only important paper on the subject being that of Mr. Jenman, in the *Gardeners' Chronicle*. How far Mr. Jenman's statements with respect to root-buds are supported by what occurs among Ferns under cultivation, is an open question. I have examined all those Ferns at Kew which appear to produce root-buds, but in every case, except the Platyceriums, they have proved either stolon or rhizome buds. Certainly I cannot find anything in the shape of buds on our plants of Asplenium auritum, although this species is spoken of by Mr. Jenman as a "striking instance of root-proliferation." I must, however, confess, that until I found these buds on the Platycerium I doubted their occurrence, and we are making preparations at Kew for an extensive trial of the roots of Ferns as a means of propagation. As above hinted, it may be that the buds cannot form on roots separated from the plant, and I may mention as bearing upon this point an experiment made last year at Kew on the roots of several species of Phalænopsis. It will be remembered that at the Orchid Conference held at South Kensington last spring there was exhibited a Phalænopsis with young plants growing on the ends of its roots, and on seeing this I thought such plants would be more readily formed if the roots were cut away from the parent plant, and treated as cuttings. Curiously enough these pieces of root (they were about 3 inches long, with the tip growing) made a little growth after they were planted tip upwards in a pot of sphagnum and sand, and they remained perfectly fresh for about four months. No plants, however, were developed, and finally the roots withered. The result of this experiment may be also the result of the removal of Fern roots with the same object. Meanwhile we shall watch our roots at Kew, and if anything comes of the experiment perhaps I may be permitted to record it in these pages. It would be of great interest if any one who has observed the development of buds on Fern roots would tell us what they have seen. *W. Watson, Kew.*

ORCHIDS AT MESSRS. JAMES VEITCH & SONS.

The large new Cattleya-house at the Royal Exotic Nursery is again gay with the gorgeous blooms of the Cattleya Trianæ, and despite the fact that they have had to open in very dull weather, the high quality of the strain which this firm imports asserts itself, and the blooms in size, colour, and form, can compare favourably and far surpass those of ordinary strains which may have had the advantage of opening in a purer air further away way from the metropolis. Locality from whence they come seems to be everything with Cattleya Trianæ as with many other Orchids; from some districts the varieties have narrow contracted labellums, from others the petals do not expand, while from another locality the strain has such insignificant sepals that the flowers appear imperfectly developed. Those which Messrs. Veitch import have flowers as perfect as those of a good C. Mossiæ, with well rounded labellum, and varying in colour from pure white to the loveliest violet-maroon lipped kinds. At present some fine varieties are in flower, very noticeable being a grandly formed pure white

with orange throat; a very delicate variety, near to Mr. Lee's C. T. Emiliæ; some handsomely feathered petalled forms, after the Backhousiana type; and a grand variety with very dark violet lip, much brighter than C. T. Normanii, and nearly approaching Mr. Sydney Courtauld's magnificent variety, which he luckily secured with other fine things out of Messrs. Veitch's importation when it first arrived. Also contributing their showy flowers in the Cattleya-house are C. bicolor Measuresiana, a lovely thing, with broad white margin to the magenta lip, one of the forms having the lower half of the lip snow-white. The winter blooming Lælias, too, are still good; some fine forms of L. anceps, including the rare white L. a. Williamsii, and a huge spike of a fine form of L. superbiens, are very attractive. It was a venture to build such a large structure, and bring the valuable collection of Lælias and Cattleyas out of the smaller houses into it, but the vigour of the plants prove that, thanks to the good plan of the structure, and to Mr. Canham's skill and care, it has been one of the most marked successes of the Royal Exotic Nursery.

The cool Orchid show-house is as full of bloom as ever, and as usual the fine forms of Odontoglossum Alexandræ and O. Pescatorei predominate. These are in good quantity, and a fine specimen one of O. Pescatorei has two spikes, one of sixty-four and one of forty-eight blooms—a lovely object. Contributing to the lovely show, and giving variety, are fine masses of Odontoglossum Rossii majus (one with thirty-two flowers), O. Cervantesii, O. cdoratum (true slender form), O. Andersonianum, O. mulus, O. Wilckeanum, O. pulchellum majus, O. citrosmum, O. maculatum, O. triumphans, O. bictioniense, many forms of O. luteo-purpureum, Oncidium cucullatum giganteum (which has been in flower for months), O. cheirphorum, O. prætextum, O. unguiculatum, O. incurvum, O. macropetalum, many fine spikes in bud of O. macranthum, good specimens of the white Masdevallia tovarensis and the lovely scarlet Sophronites, and here and there some good masses of Cœlogyne cristata (a fine lot of the Lemoniana variety being in bloom), and the various forms of Lycaste Skinneri from the peerless white kind down to the rose and ruby-lipped varieties.

In the other houses among many other handsome things in flower are the white Lycaste lanipes with about thirty blooms, many Angræcum sesquipedale, Dendrochilum glumaceum, with over thirty spikes; Angræcum citratum, A. hyaloides, A. eburneum, Aërides Vandarum, Saccolabium giganteum, the curious Neottia spiralis, Chysis Chelsoni, Calanthe Dominianum, C. nivalis, Pilumna fragrans, Ionopsis utricularioides, Dendrobium Wardianum, D. crassinode, D. moniliforme, D. nobile, and the pretty hybrid gained by crossing the two last named. D. Dominianum a. D. heterocarpum, and its crosses give some grand and fragrant winter bloomers, and among them in flower are the best Ceylon form of D. heterocarpum, with its primrose-petalled flowers; D. endocharis, white; D. Ainsworthii, D. splendidissimum, and another hybrid not yet named, which beats them all in flower and habit. The Phalænopsis-house is well furnished with bloom, and with them the grand forms of Odontoglossum Roezlii and Oncidium sarcodes, with much-branched spikes several feet in length.

The Cypripedium show-house is another institution of the Royal Exotic Nursery, and, thanks mainly to the numerous cross-bred varieties raised there, it is well supplied with bloom all the year round, the Sedeni form class especially being almost perpetual bloomers—even now C. Sedeni, the chaste C. S. candidulum, C. calurum, and others being well represented, as also C. Swanianum, C. cenanthum superbum, which is a lovely thing with shiny flowers, having black, white and mauve dorsal sepals; C. selligerum majus, fine masses of C. Boxalli, C. villosum, C. Harrisianum, C. Lawrenceanum, C. Haynaldianum, C. venustum, C. barbatum Warneri, &c. Among those yet but little known, are good specimens of the finely-formed bright yellow tinted C. insigne sylhetense, C. Germinyanum, an attractive cross between C. villosum and C. hirsutissimum; and the first break from C. Druryi, obtained by crossing it with C. villosum, the flowers being just intermediate between the two—the clear shiny yellow of Druryi blending well with the noble form of C. villosum. The species which will perhaps be of the greatest interest of all to the botanist, and which is flowering at Chelsea for the first time, is the British Guianan C. Lindleyana described from dried specimens many years ago. It is unlike any other Cypripedium, but nearest in the appearance of its broad green-leaved growth to C. Roezlii or C. grande. Its flowers, which are borne on tall scapes, are greenish-white lined with brownish-orange and dotted inside the pouch; the backs of the sepals and petals are hairy, and were it not that the sepals are broad and well extended, there is something about its appearance which a little reminds one of C. calceolus. It is distinct, and as that is one object desired for the hybridist to work upon, no doubt Mr. Seden will not be slow to work upon it.

ROOTS OF PLANTS.

ROOT WASHINGS.—Strange to say the distribution of the roots of plants in the soil is a subject that has received comparatively little attention from agriculturists. It would seem that before we can give an intelligent opinion as to the best system of cultivation to be observed, or the best method of applying fertilisers for any crop, we should know something of the character of the roots that sustain the plants, and the position that these occupy in the soil. If the fibrous roots through which the plant receives its nourishment grow very near the surface, it is certain that any but the most shallow cultivation must lacerate these to a great extent. If, on the other hand, the fibrous roots chiefly lie deeper than the ordinary plough reaches, it may be advisable, in preparing the soil for such crops, to plough deeper than we usually do, and thus mellow and fertilise the soil at the point where the roots can be more directly benefited by culture and fertility.

The subject of the distribution of roots suggests questions that are as yet unanswered. How far do varying soils, seasons, and climate influence the position or extent of the roots of plants? It may be that the results reached in the heavy clay soil of the station garden do not apply at all in a mucky or sandy soil. It may be that the results obtained here in a dry season would be quite different from those obtained in a wet one. It may be that the results secured in two entirely similar soils would be quite different if the climate of the two were widely different.

Does fertility or temperature have the greater influence in determining the position of the roots? If the former, then fertilising the surface tends to entice the roots upward. If the latter, then fertilising can be of benefit only so far as it reaches the feeding ground of the roots. It follows also that if the position of the root is determined by the temperature of the soil, that the roots of the same plant would lie deeper in a tropical than a temperate climate; and hence the same methods of culture would not apply equally well to both. Perhaps heredity exerts a stronger influence than either temperature or fertility. Of course the observations made during the past season in the station garden concerning the distribution of roots, furnish us no data by which we are enabled to fully answer these questions. It is only preliminary work in what seems to be a most important and fertile field.

With the view of examining the root systems of our garden plants we planted last spring seeds of one or more varieties of most of the different vegetables near the hydrants in the garden. By removing a part of the earth on one side of a plant of which we desired to examine the roots, and attaching a hose to one of the hydrants, we were able to wash out the roots easily and rapidly. In some cases, however, the tenacious character of the soil rendered it difficult or impossible to trace the finest roots to their termination. We should state here that the soil on which these vegetables were grown is a clay loam to the depth of 6 to 10 inches, below which is a tenacious subsoil of gravelly clay.

THE PEA.

July 25 we examined the roots of a plant of British Queen Pea, of which the pods were just past the marketable stage. The plant was about 4½ feet high. The tap-root extended nearly perpendicularly downward to the depth of 39 inches. Below this it was too delicate to trace. Branches separated from the tap-root throughout its length. These were most numerous between 4 and 8 inches in depth, where they seemed to nearly fill the soil for a distance of about 8 inches on either side. We traced a single branch-root a distance of 18 inches from the tap root. The majority of the branches appeared to extend little further than a foot. They gradually became shorter as the depth increased, but were 4 to 6 inches long at a depth of 30 inches. Sometimes the branches curved upward after leaving the tap-root. The latter for a depth of 6 inches below the surface was clothed with clusters of a peculiar tubercular growth. This sometimes appeared upon the branches also, but never far from the tap-root. We have frequently noticed this tubercular growth upon Pea roots [all Papilionaceous plants have them] at other times, though we have very rarely seen it mentioned. Two German writers speak of it, one ascribing it to a fungus growth, and the other to bacteria. The subject is evidently little understood.

July 9 we examined the roots of a plant of American Wonder Pea, of which the stem was 6 inches tall, with the pods just past the marketable stage. The roots extended almost exclusively downward, the tap-root extending to a depth of 30 inches, with no branches extending more than 4 inches from it. It thus appears that the Pea, like the Clover, Alfalfa, and some other of the Leguminosæ, is a deep rooting plant. We should expect, therefore, that where the straw is returned to the soil Peas would prove beneficial rather than exhaustive. The deeply penetrating roots doubtless draw much of their nourishment from a considerable depth, and hence would tend to enrich the surface. As the roots extend horizontally so short a distance no objection appears for planting the rows of garden Peas as near together as convenience in gathering will permit, provided that in the taller varieties the rows extend north and south, so that the sun has opportunity to shine between them.

The deep-rooting character of the Pea plant may explain the slight influence that fertilisers seem to have upon it, as we noted in detailing our experiments upon this vegetable.

It appears that while the root system of the Dwarf American Wonder Pea is less extensive than that of the tall British Queen, yet the diminution of the extent of the roots in the former is by no means in proportion to that of the stem.

LETTUCE.

The roots of Lettuce also run chiefly downward. July 9 we examined the roots of a plant of the Crisp Small Early Frame variety. The flower-stalk had then commenced to form, being about 6 inches high. The tap-root extended downward to the depth of more than 25 inches. Fibrous roots started out from this just below the surface of the ground, sloping downward at an angle of about 45°, but we were unable to trace these more than a foot from the tap-root. The greater part of the fibrous roots lay within 18 inches of the surface, and 6 inches on either side of the tap-root.

We thus see that the roots of the Lettuce plant at this stage of growth extend downward four times as far as the stem rises upward; although this proportion is doubtless very much changed after the flower-stalk is fully formed. It appears, also, that for the full development of the roots the rows of Lettuce should not be less than 2 feet apart. It is evident that where the plants are crowded in the bed, as we sometimes see Lettuce grown, the root system must be correspondingly dwarfed.

ENDIVE.

The Endive is also a deep-rooting plant. July 28 we examined the roots of a plant of the broad-leaved Batavian variety that was forming the flower-stalk. One of the leading roots, of which there were several, was traced to a depth of 3 feet, when it became too delicate to follow. The branches extend downward at an angle of about 45°, sending out fibres which grow mostly upward. We traced one of the longer branches a distance of 18 inches, when its delicacy prevented following it further. Few of the fibres reached nearer the surface than 6 inches. The principal part of the fibrous roots lay between 6 and 18 inches deep.

It appears that the root system of Endive is somewhat more extensive than that of Lettuce, and consequently the plants would seem to require more room. It would seem also that both these plants must act somewhat like the Clover and Pea, in recompensing to a certain degree their draught upon the soil by bringing a part of their sustenance from a considerable depth.

SPINACH.

The root system of Spinach is less extensive than that of Endive, and does not extend so deeply into

the soil. July 28 we examined the roots of a plant of the prickly or winter variety. The deepest growing root extended about 2 feet downward, and the longest horizontal roots reached about 18 inches. The feed-roots seemed chiefly to lie at a depth of about 6 inches, though many fibrous roots rose upward to within 2 inches of the surface.

The root was a thickened tap-root to the depth of 4 inches, below which it divided into many branches of varying length and thickness.

It thus appears that the roots of Spinach feed largely in the cultivated soil near the surface, which may account for the fact that it responds so freely to high manuring. As the roots extend 1½ foot on either side it is obvious that the rows should not be closely crowded.

Asparagus.

We are especially interested in examining the root system of Asparagus, because the growers of this vegetable in the vicinity of Paris, who are notoriously successful, maintain that the roots of Asparagus do not run deep where they have abundance of nourishment near the surface, and consequently that the custom so common in this country of trenching the soil for this crop is a useless waste of labour and expense. Fortunately for our present purpose, in the spring of 1882 we set out a bed of Asparagus plants, in one half of which we trenched the soil to a depth of 18 inches, putting in a liberal quantity of stable manure. The other half of the bed, also well fertilised, was simply forked to the depth of about 6 inches.

July 10 we washed out the roots of a plant on the trenched and also on the untrenched part of the bed. The variety was Moore's Cross-Bred. We find that in the Asparagus and Onion, two plants that belong to the same natural order, the root system is not unlike in kind, and in these two plants it is decidedly different from that of any other garden plant that we have examined. This difference is to be expected when we remember that these plants belong to the botanical division Endogens, or inside growers; while almost all our other garden plants belong to the division Exogens, or outside growers.

The Asparagus has no tap-root, but instead many long, rather thick cylindrical roots that unite in a crown at the base of the stem, forming a densely matted root-stock. The longest of these cylindrical roots penetrated the soil to a depth of more than 2 feet, and others extended horizontally an equal distance. The roots seemed never to branch after leaving the crown, though they put out some short fibres. The latter were very few, however, in proportion to the main roots. These were about one-fourth of an inch in diameter, and scarcely tapered, except at the extremities, where they were bluntly pointed. The points reminded us somewhat of the terminus of an underground stem of Quack-grass, or the shoots of Raspberry stems, when about to take root.

The new roots appeared growing out above the old ones, and at the base of the embryo shoots that are to form the stems for next season. These were shorter and more nearly white than the older ones, and, like the latter, had fibrous roots. The roots formed the previous year appeared to have made an additional growth from their extremities the past summer. At least a part of them were more nearly white, and more tender towards the extremity than near the crown, while those toward the base of the crown, which were presumably formed earlier, were of uniform brownish colour throughout. The original roots of the plants seemed to be mostly alive, though they were very much crowded by those later formed. The greater part of the feeding ground of the roots seemed to be within 15 inches of the surface, though many roots extended below this.

Strange to say, no difference appeared either in the amount or distribution of the roots where the soil was trenched, and where not trenched at the time of setting the plants.

The very extensive root system of the Asparagus plant clearly shows the folly of crowding the plants in the bed. The plantation from which the plants were examined was not at the time three years old, yet the roots penetrated beneath an area 5 feet in diameter. It would seem that the plants should not be set less than 3 feet apart each way, though we have rarely seen plants of Asparagus set at such great distances. It is well known that this crop demands manure in immense quantities for its best development as ordinarily grown—a fact which is easily explained when we consider how much the roots must be crowded in the soil.

The new roots, growing out above the old ones, makes it appear that the method commonly practised in France of setting the plants in trenches may be based upon scientific principles. The Asparagus growers about Paris set their young plants in furrows, gradually drawing the soil to them year by year until at length the rows occupy a ridge in place of a furrow.

Onion.

In the Onion the root system is by no means extensive, but it is very much concentrated. The roots seem to take complete possession of the soil beneath a circle about 8 inches in diameter, for a depth of about 10 inches. In a sample of the Blood-Red variety examined September 15 very few roots penetrated beyond these limits. An occasional one was traced horizontally a distance of 10 inches from the bulb. The roots of the Onion, like those of Asparagus, do not branch, in the strict sense of the word, though they give rise to many short fibres. In the sample examined the fibres were invariably simple—that is, they never subdivided.

The concentrated root system of the Onion explains the fact that it developes to perfection only in highly fertile soil, and that the bulbs may be grown very close together. In no other vegetable that we have examined does the root system occupy so little space, and no other vegetables with which we are acquainted endure crowding so well as the Onion and the other plants of the Onion tribe. *Report of New York Agricultural Station.*

(To be continued.)

CAPE BULBS.

I am far from thinking that I can throw any special light on the cultivation of Cape bulbs, but I admire them exceedingly, and as my garden is one which lends itself to their culture in a high degree, I cannot help taking to them. Such things as Ixias, Sparaxis, and the like, do in the open border very well.

I am much interested in Mr. Watson's communication in a recent number, and I think he also may grow many things from the Cape with success in the open border at Kew. My great canon is this: take care of the foliage, and the bulbs will take care of themselves. If that be attended to, I would almost guarantee everything else. Now these Cape bulbs seem to me to suffer from two different causes during the year. A great many—in this part of the world at all events—send up their fresh leaves much too soon after flowering: they are excited at once by the autumnal rains. This is exactly described in Mr. Watson's letter in these words:—"Before February was over," he writes, "we were protecting foliage a foot high on the Gladioli and Watsonias," so that the chief difficulty at Kew must be very similar to mine. If the winter be soft, this foliage will in many cases be far too weakly and long: if it be severe, the leaves will be dreadfully mauled and knocked about, and the bulbs will have but small chance of yielding fine blossom after that.

As I have said above, Ixias, Sparaxis, Babianas, &c., shift for themselves in my garden, and thrive by hundreds without any attention at all, and, unless the winter be very hard, they mostly do well; but I bestow more trouble on others, and I do not like any avowedly tender things, or a special consignment from the Cape to take its chance. Let, then, the following expedient be tried for such as these, and the mischief is obviated at once. A frame should be made (there is nothing that I know of which is half so good for covering these things as Willesden paper, and it is very inexpensive), and it should be put over the bed of the most tender Cape bulbs from late autumn to early spring—say, ten or twelve weeks in all—and this will throw the rain off from them, and will keep them dry and at rest, and, what is so very important, it will deter the leaves from pushing too soon. When the covering is taken off in the middle of February, they may go ahead as much as they choose, and they are not likely then to meet with anything which will seriously throw them back. I have treated the most precious and tender of my bulbs in this way, and after an inspection this morning I find that Massonias, Ixias, Sparaxis, Babianas, Lapeyrousias, Cyanellas, Antholyzas, Geissorhizas, Watsonias, and even Buphane ciliaris, &c., are all quite snug and happy, and they will respond to the first breath of spring as soon as I let it play upon them, and they can feel the sunshine or be gladdened by the rain. This is a far better way than that of taking up the bulbs and keeping them in boxes or drawers during the winter months. I am sure they like to be left alone and to be undisturbed in the ground for several years together.

Should the winter be exceptionally severe at Kew or elsewhere it would be easy to slip in some of Miss Molique's straw mats (which were recommended by our friend Harpur Crewe) between the covering of Willesden paper and the ground. This would effectually protect the treasures that are valued so much, and in such a state as this they could defy any amount of frost by which the outer world might be bound. I have trusted to this expedient before now, though it is scarcely ever required in the Isle of Wight.

The other danger to the foliage is in the summer time. My garden then often looks like a gravel walk, and leaves become yellow at once if nothing is done for them, and they are soon of little good. This state of things must be vastly different from what many of these beautiful flowers meet with in their own homes. I believe they blossom there under a leaden sky—the rains have begun, and they have just that supplied to them which keeps up vigour and life. I have been told by a gardener who grows Ixias well in an open border in one of the midland counties that he always mulches them heavily with cocoa-fibre during the hot months of the year, so that he may keep them moist and the foliage green at that season, as would not otherwise be the case. So far as I have tried it I think his idea quite right, and I hope to act on it much more largely in future. At any rate, in a place like this the foliage of Cape bulbs needs as much looking after in July as it does in November and December.

With this double proviso about the leaves I believe that the cultivation of numbers of Cape bulbs is practicable. Of course there are many to which the above remarks would not apply—*e.g.*, Sparaxis pulcherrima would not submit to such treatment at all, and there are hundreds which can be grown in such a place as this for which no assistance is needed; but on Professor Foster's bleak hill, and in the Royal Gardens at Kew, I think it is very likely that a covering of Willesden paper might make all the difference in the world.

The frame to which I have referred is, of course, more of a shelter than an actual frame, and is supported by legs at a height of about a foot from the ground, the sides being left open. *Henry Ewbank.*

BRAINEA INSIGNIS, Hook.

Having been asked for information as to the natural conditions in which this Fern thrives in its native haunts in China, I think it may be of some public benefit to give wider circulation to my observations than they would have if conveyed in a private letter only, so that cultivators may be able to attempt some improvement in the cultivation of this plant in England, where it certainly ought to be found in all Fern collections of any pretensions.

Brainea insignis is evidently a lover of the sun, and that not in any stint even in the tropical summers of Southern China, where it grows almost invariably under the fullest exposure to its rays on hills with steep declivities and southern aspects where the sun is felt in all its fiercest intensity. In such places it flourishes in shallow soils, and amidst fragments of rocks, and on rocky ledges, where it grows in company with grasses shorter than itself, and dwarf shrubs. In such situations, it is almost needless to say, the most perfect drainage exists. Rain falls in torrents during the wet season, which lasts from May to October inclusive, but during the summer months there is but very little rain, and the ground becomes exceedingly dry. At this time also the air generally is dry, and at times extremely so, to an extent which is probably never experienced in England. During both the wet and dry seasons the Brainea never seems to be injuriously affected either by wetness or dryness of atmosphere or soil, or by the brightest suns, or coldest north-east winds which prevail throughout the dry months. The soil of Hong Kong and the adjacent mainland, where I have seen Brainea more common than in further inland places of China, consists of decomposed granite, with only a small quantity of vegetable matter in it. I have rarely seen the Fern growing wild at a lower elevation than 500 feet above the sea level. In Hong Kong

the summer temperature ranges from about 75° to 95° Fahr., 85° being about the general temperature. In the dry months the range is about 35° (rarely so low) to 70°, 55° to 60° being about the common range. *Charles Ford, Harrogate.*

DEW.

THE following paper was read at the Scientific Committee of the Royal Horticultural Society, on February 9, by Mr. A. H. Smee, and handed to us for publication by that gentleman :—

Last summer, on going round my garden one evening, I noticed that dew was deposited on the leaves of some plants when the leaves of other plants were dry. I have appended a table for nineteen consecutive days, showing the amount of dew deposited at 7 o'clock in the evening on leaves of the Quince, Syringa, Brussels Sprouts, Peach, Rose, Mulberry, Evening Primrose, and Dahlia; and also the state of the leaves of the same plants at 9 o'clock each morning. From the table it would appear that the leaves

		Quince.	Syringa.	Brussels Sprouts.	Peach.	Roses.	Mulberry.	Evening Primrose.	Dahlias.
July 17	A.M.	Dry	Dry	Dry	Dry	Dry	Dry	Wet	Cloudy
	P.M.	,,	,,	Wet	Wet	,,	,,	Dry	Very wet
,, 18	A.M.	,,	,,	,,	,,	,,	,,	,,	Damp
	P.M.	,,	,,	Dry	Dry	,,	,,	,,	Dry
,, 19	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	Rain	,,	,,	,,	,,	,,	,,	,,
,, 20	A.M.	Dry	,,	Wet	,,	,,	,,	Wet	Damp
	P.M.	,,	,,	,,	,,	,,	,,	,,	,,
,, 21	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	,,	,,	Dry	,,	,,	,,	Dry	Dry
,, 22	A.M.	,,	,,	Damp	,,	,,	,,	Damp	Wet
	P.M.	,,	,,	,,	,,	,,	,,	,,	,,
,, 23	A.M.	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Very wet
	P.M.	Dry	Dry	Damp	Dry	Dry	Dry	Damp	Damp
,, 24	A.M.	Wet	Wet	Wet	Wet	Wet	Wet	Wet	Wet
	P.M.	Dry	Dry	,,	Dry	,,	Dry	,,	,,
,, 25	A.M.	Wet	Wet	,,	Wet	,,	Wet	,,	,,
	P.M.	Dry	Dry	,,	Dry	,,	Dry	,,	,,
,, 26	A.M.	Wet	Wet	,,	Wet	,,	Wet	,,	,,
	P.M.	Dry	Dry	,,	Dry	,,	Dry	,,	,,
,, 27	A.M.	Wet	Wet	,,	Wet	,,	Wet	,,	,,
	P.M.	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry
,, 28	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	,,	,,	,,	,,	,,	,,	,,	,,
,, 29	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	,,	,,	,,	,,	,,	,,	,,	,,
,, 30	A.M.	,,	,,	Damp	,,	,,	,,	Damp	Damp
	P.M.	,,	,,	Dry	,,	,,	,,	Dry	Dry
,, 31	A.M.	,,	,,	Damp	,,	,,	,,	Damp	Damp
	P.M.	,,	,,	,,	,,	,,	,,	,,	,,
Aug. 1	A.M.	,,	,,	Dry	,,	,,	,,	,,	,,
	P.M.	,,	,,	Wet	,,	,,	,,	,,	,,
,, 2	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	,,	,,	Dry	,,	,,	,,	,,	,,
,, 3	A.M.	,,	,,	,,	,,	,,	,,	,,	,,
	P.M.	,,	,,	Wet	Wet	Wet	,,	Wet	Very wet
,, 4	A.M.	Wet	Wet	,,	,,	,,	Wet	,,	,,
	P.M.	Dry	Dry	Damp	Dry	Dry	Dry	Dry	Damp

* A.M. at 7 o'clock; P.M. at 9 o'clock.

of the Quince and Mulberry are always the last to be coated with dew, and are never very wet at any time.

Dahlias and Brussels Sprouts become coated with dew sooner than any other plants, and in the Dahlias drops of moisture hung from the points of every leaf in heavy dews. The leaves of the Peach, Rose, and Evening Primrose were never so wet as the Dahlias, but always had more moisture deposited on their leaves than the Quince or Mulberry.

I also add a table giving the atmospheric conditions in my garden on the days the observations were taken :—

July 18.—Drying wind.
— 19.—Little rain at 9.30 P.M.; fine again in half-an hour.
— 20.—Light dew at night.
— 21.—Drying (gentle) wind at night.
— 22.—Wet hanging on nearly every lip of Dahlia leaves at night.
— 23.—All plants wet alike; heavy dew first thing in the morning.
— 24.—Heavy dew first thing; all leaves as yesterday morning.
— 25.—Heavy dew in morning; all wet.
— 26 } Heavy dew in morning; all wet.
— 27. }
— 28.—Drying wind morning and night.
July 29.—Drying wind morning and night.
— 30.— ,, ,,
Aug. 3.—Heavy dew at night.

The places in which the observations were made were similarly situated as to exposure, and were as far as practicable grown in close proximity to one another. I do not know whether any other person has made similar observations, but it appears to me that it is a subject which, if worked out over an extended area, and on a larger number of species, might lead to some interesting facts as to the value of dew in the economy of plants.

SCOTCH GARDENING NOTES.

MESSRS. R. P. LAIRD & SONS' NURSERIES, WEST COATES, AND PINKHILL, EDINBURGH.—The first-named of these nurseries is the most easy of access of any around the Scottish capital. Tramcars pass the entrance, or run close up to it, every five minutes from all parts of the city; the Haymarket station of the North British Railway is hard by; and the Princes' Street terminus of the Caledonian Railway is only about seven minutes' walk distant. The place is always worthy of a visit from those interested in flowers and their production on a large scale.

The Winter Garden, which is one of the most spacious and handsome structures of the kind in the country, was on the occasion of a recent visit rich in seasonable and forced flowers. The most striking plant in bloom was perhaps a noble specimen of Sikkim Rhododendron, named provisionally Lady Balfour of Burleigh, because there is some difference of opinion among the local authorities as to its proper name. It has a strong resemblance to R. Falconeri, but in the absence of a specimen of that species I could come to no decided conclusion as to the differences between it and the specimen before me. The foliage is of the same shape and general character, but is perhaps a little more rufous below than the species named, but the fact that it is in most robust health might possibly account for that peculiarity if, as imagined, it is really so. It is a grand specimen, standing about 11 feet high, with a clean straight stem of about 6½ feet, and a compact spreading head of about 6 feet through. There are between thirty and forty noble trusses of bloom distributed over the head, which are larger, more pyramidal, and denser than the ordinary type of R. Falconeri. The flowers also are larger and of better substance, in colour clear ivory-white, and deeply marked at the base inside the corolla with bold spots of dark chocolate. The history of the plant is somewhat obscure, but it is known to have been a fairly well developed specimen in the collection of the late Messrs. David Reid & Son, nurserymen, Leith Walk, Edinburgh, over thirty years ago, and that it was taken over with other portions of their stock by the late Mr. McIntosh, nurseryman and seedsman, Edinburgh, about twenty-five years ago, when they gave up business, and was purchased from the latter gentleman by its present owners. Messrs. Laird certainly ought to take the present opportunity of this really splendid Rhododendron being in flower to have it verified by an accredited authority on these Indian species, and have its identity settled once for all.

Among other forced and seasonable plants in flower in the Winter Garden were splendid samples of Lilac Charles X., and other forms of the same genus, which sell freely here at good prices, both as pot-plants and cut flowers; Cyclamens, Lily of the Valley, the demand for which is ever on the increase; Cinerarias, Narcissi, Hyacinths, Primula sinensis and obconica, the latter being a great favourite, both as a pot-plant and for cutting, as it never ceases flowering; Carnations La Belle, Miss Jolliffe, and L'Allegatière; Ericas in variety, Azalea indica in variety, Camellias, Spiræa japonica, Rhododendron præcox. These in masses, backed up with tree and dwarf Ferns and foliage plants, presented a splendid display, and abundant materials for all classes of customers to choose from.

In a cursory glance through the numerous stock-houses we noticed promising stock of that most elegant of new table-plants, Aralia regina—the most distinct Arad of recent introduction, Alocasia Sanderiana; a grand specimen of Anthurium Veitchi with six perfect leaves 3½ feet long each; a good stock of the interesting and by no means plentiful Ceterach aureum; home propagated and remarkably healthy stock of Lapageria alba in all stages from recently rooted layers to half specimens; the best of the newer Crotons and Dracænas in fine colour; and a miscellaneous collection of stove and greenhouse plants in excellent condition.

PINKHILL.

About two-and-a-half miles westward, on the same road, lies the Pinkhill branch of this establishment, which may be described as the manufacturing and reserve department. At West Coates the appliances are solely of glass. Here, however, there is considerable acreage devoted to fruit trees, ornamental trees and shrubs, and collections of hardy florists' flowers, for which this nursery has long been famous. There is an excellent selection of hardy herbaceous plants, which is yearly being carefully added to, only the best being admitted. The well-drained slopes of which the principal portion of the nursery is formed are an excellent test-ground for the various good things among Coniferæ, which succeed well about Edinburgh. In the collection Pinus sylvestris aurea, P. Bolanderi, P. Benthamiana, P. aristata, Picea Parryana, and P. glauca; Abies grandis, Pinsapo, and many others were in excellent form. The smaller Coniferæ, such as the various Retinosporas, Cupressus, and Junipers, seemed to be quite at home.

The houses here, which are many, are chiefly used for propagating and stock purposes, and are already merrily at work pushing on Dahlias, grafting Rhododendrons, propagating Pelargoniums of all sorts, but especially tricolors and bronzes, and thousands of the small forms of Coniferæ and other hardy shrubs. In one of the forcing-houses I observed a few plants of Prunus Pissardi, which had been tried experimentally to test its value for forcing. Judging from what I saw of it, I think it is likely to be very useful as a conservatory decorative plant. The flowers, about the size of those of a Plum, are numerous, not to say profuse, and of a delicate rose tint. It will be of little value for cutting. A large batch of Ageratum The Queen is grown here annually for winter flowering. It will be remembered by many of your readers that this variety was sent out some years ago as a bedding plant from this place, but proved a complete failure for that purpose, and was discarded almost by everybody after the first season's trial. Its merits as a winter flowering plant were discovered almost by

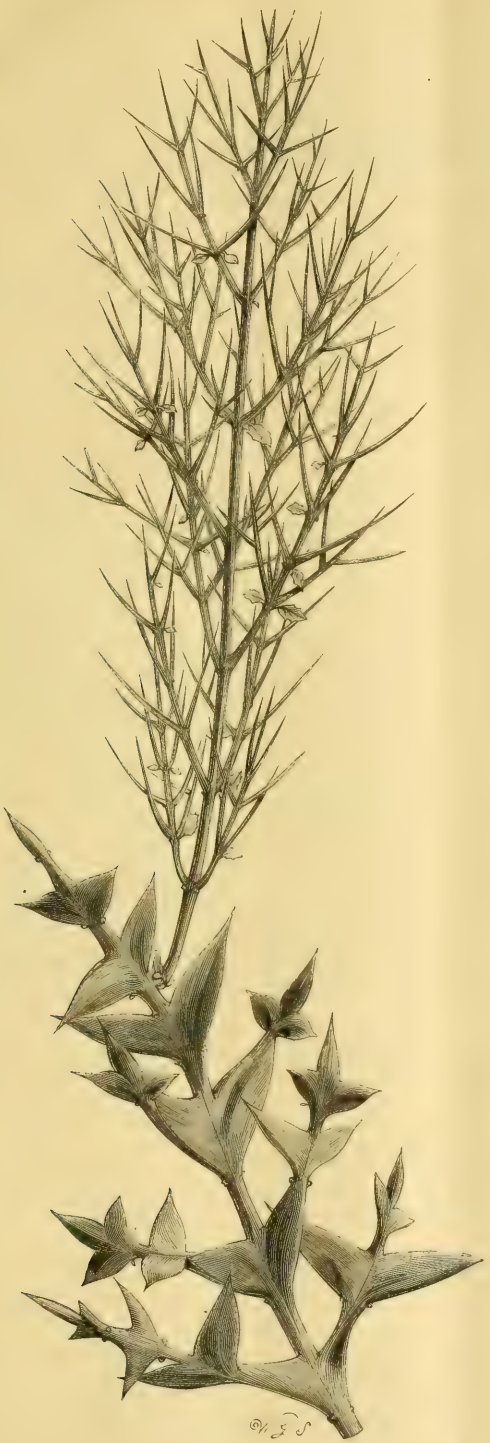


Fig. 40.—Branch of Colletia, showing that C. cruciata (bictonensis) and C. spinosa belong to the same species. (See p. 213.)

accident before it was altogether annihilated, and now it is rather prized for the abundance of blooms it yields, which, if not of a choice quality, are at least of the "cut-and-come-again" order, which are indispensable in every floral establishment. Under glass the flowers are a very good white. *S. G. W.*

THE ISLEWORTH NURSERIES
OF MESSRS. C. LEE & SON.

At this nursery a fine batch is being worked up of the beautiful new Statice floribunda. Primula (sinensis) Julia Lee, a variety originated at this nursery, will, we believe, be shortly distributed by the firm; the variety bears flowers of a brilliant crimson colour, and has a deep yellow eye. Cyclamens—a good collection, mostly in 48-sized pots—were in robust health, the flowers being from pure white to dark crimson.

The old and historic nursery at Hammersmith is still called the Royal Vineyard Nursery, although the Vines at that establishment are now conspicuous by their absence. The Vines have had to find a new home, in consequence of railways, buildings, &c., restricting the space formerly occupied by the nursery. We believe that the ground on which part of the old nursery stands was once used as a vineyard—hence its name; wine being made there as late as the middle of the last century. At Isleworth all the leading sorts are grown, the Vines having stout short-jointed canes; these, with other conditions favourable in the matter of suitable sites, good borders, attention to watering, &c., being very necessary requisites to satisfactory results at a later date. *B.*

BONSKEID AND ENVIRONS.

[See Supplementary Sheet.]

Bonskeid is situate in what is generally known as the Athol district of Perthshire. This is a part of the Highlands so well explored that there is small need to attempt to describe the surface that Nature here upturns, a surface both beautiful and grand, and with the most diverse aspects. The present writer well remembers being a passenger on a bitter cold night of drifting snow on the Highland Railway where it passes through the bleak valley between the Athol Sow and the Badenoch Boar before crossing the county march. There was a sudden halt of the train. Passengers, fearing that the engine was snowed up, inquired anxiously of the guard what was the matter. The reply was soothing, especially the addition that "we should soon reach civilisation." A century and a half ago, however, such a terse description of Blair Athol would not have been so readily, if at all, assented to. About that time the hill sides were bare and drear, and the meadows little better than stony leas.

Perthshire in the earliest period of its authentic history was one vast forest. So trackless was it, that the Roman Emperor Severus, in order to reach the fastnesses of the Caledonians, had to fell myriads of trees. This was the campaign in which the gouty emperor was borne in a litter. The extraordinary difficulties of the march through the forest cost him 50,000 men, and hastened his own end, which occurred two years later at York. Remains of the forest, including huge Oak trunks, still in good preservation, have been frequently excavated, or exposed by the draining of lakes, ponds and morasses. Although the Romans for military purposes and for road-making, caused the disappearance of a great part of the forest, the same policy was carried on in feudal times in a very shortsighted manner, and with no very tangible aims. Indeed, when the "Planting Duke of Athol" commenced re-afforesting his domains he had only 1000 acres of wood, whereas now the Larch woods alone occupy over 10,000 acres of his soil. To such an extent was the country injured by being denuded of its woods that Parliament had to interfere. Mr. Hunter, in his *Woods and Forests of Perthshire*, gives the words of an Act passed in the year 1457, wherein it is enacted that all the King's freeholds charge their tenants to plant woods and trees. In 1503, another Act enjoins that every lord and laird plant at the least one acre of wood, "where there is na great woods nor forests." In 1535 the amount of land is raised to three acres. In 1616, the "Island chiefs," were bound over to build "civil and comlie" houses, and to have "policie and planting about them." The Act passed

in the reign of Charles II. is worth quoting:—"All preceding Acts ratified, and that every heritor, liferenter, or wadsetter, worth £1000 of valued rent, enclose yearly for ten years next ensuing, four acres of ground, and plant the same with Oak and other trees, at three yards distance; and other heritors of greater or less rents accordingly, and that they uphold the same."

Such legislation as the above forced all the lairds and barons to see what was their duty to the soil, and thus they considerably increased what a Scotchman would call the "ameenity" of the property. The planting done between Perth and Blair has been most extensive. There can hardly be a tract of country in the kingdom which can show finer woodland scenery. Every visitor to the district will remember Drummond Hill, at the Kenmore end of Loch Tay and Craig Urrard, above Blair Castle—how their sides are covered by a wavering verdurous sea of foliage. Less than 200 years since both these heights were waste land. A nobleman, who lived on his estate like the "Planting Duke of Athol," and who by example and precept added the best setting possible to the rare natural beauties of North Perthshire, surely deserves honour over the border as well as in his "ain countrie." The two residences of the Athol family at Blair and Dunkeld have been described to your readers often enough, as has also Taymouth, Lord Breadalbane's castle, which is probably the most picturesque residence either in Scotland or England. Of the smaller properties in the same divison of the country, Bonskeid from its glorious position is one of the most coveted.

The River Garry, after its galloping course through the Killiecrankie Pass, joins the Tummel a short distance above Pitlochrie. Bonskeid is situated near the confluence of the two rivers so as to have one on either side. All around tower bill and mountain tops, while a fertile smiling valley accompanies the larger river. A short distance from the house are the Falls of the Tummel. These falls are insignificant as regards height, but so strong is the current, both in volume and speed, that it is an insurmountable barrier to the salmon. A proposal has been mooted, but has not received the assent of Mr. Barber, the owner of Bonskeid, to blow up a part of the rock over which the river falls. If this were done, the fish would be able to proceed into Loch Tummel, and from thence to Loch Rannoch, a large loch which is connected by rivers to Loch Ericht and Loch Lydoch. The advantage of the proposal to the people of Kenloch Rannoch and Dalwhinnie is very evident, but nobody can blame the owner of Bonskeid for withholding his consent; for even if the falls are insignificant, they form, when viewed in conjunction with the prettily wooded banks of the river and the purpling hills in the background, a lovely picture. In fact, a finer near distance would be hard to conceive.

Historically there is not much interest attaching to the place. King Robert Bruce took refuge in the neighbouring woods after his defeat by the Earl of Pembroke at Methven; on his accession to the throne he granted the property to the ancestors of the present owning family, because they had harboured him when seeking a place of refuge. About the middle of the last century the house was burned down. Lady Bath and Sir James Pulteney were so delighted with the unique and beautiful position of the property, that they took a long lease of the place, and immediately set about building a new house, living in a tent the while. They found so much food for their thoughts in the lovely environing scenery that they almost forgot to think of their discomforts. Unfortunately their perseverance was not rewarded, for neither lived to inhabit the house they daily saw approaching completeness. Sir James was killed by the explosion of a firelock, which he was holding in his hand. The present fine baronial mansion was built in 1868.

The park around, as may be gathered from the illustration, is thickly wooded. Most prominent of all the trees being the Birches, or Birks as they are frequently called. No tree, whether seen gracefully hanging over rushing mountain stream, or in coppice, or in open park, has greater attraction to the eye. Well has it been termed by Coleridge "the lady of the woods." The trees most widely known on the estate are the Larches. The best grown, although not the highest, is called the tewart Larch. It is figured as the frontispiece in Mr. Michie's book, *The Larch*. It is now over 100 feet high, and contains close upon 200 feet of timber. The Athol Highlands seem quite a second home for the Larch. Besides the well-known trees at Dunkeld, which are known as the "Parent Larches," there are some magnificent examples at Blair near the romantic Falls of the Fender, and also some nearly equal in size by the side of the Banvie Burn. The Scotch Firs and the Spruces are also well represented at Bonskied. None of the latter, however, approach the Gargantuan specimen at Blair, which is 150 feet high and contains over 420 cubic feet of timber. Other Conifers of noticeable height and general growth at Bonskeid, are Cupressus Lawsoniana, Wellingtonia gigantea, Abies magnifica, Albertiana, and grandis, and Araucaria imbricata. The best specimen of the first-named is nearly 50 feet high, and is truly magnificent in every regard. It was one of the first seedlings raised by the Messrs. Lawson, The situation of Bonskied is comparatively sheltered, so that the hardihood of any Conifer there is not a crucial test of what is best adapted for the district. Abies Albertiana has proved a success wherever planted in the neighbourhood; it is even prosperous in the wind-swept Moor of Rannoch—a moor so desolate that it is picked out for description by Sir Walter Scott in the fourth canto of "The Lord of the Isles":—

"Where the proud Queen of Wilderness hath placed,
By lake and cataract her lonely throne."

Il Vagabondo.

KEW AND ITS WORK.

(*Continued from p. 168*)

DRAWBACKS OF A BOTANIC GARDEN.—It should be borne in mind that a botanic garden, from the nature of the case, differs in many respects from an ordinary garden. Many plants which it is not worth while for a gardening firm to keep in stock are interesting from their structure or associations. The way to make a fine looking collection of Orchids, or Ferns, or Palms, is to select a few of the finest kinds and grow several plants of each, eliminating from the collection altogether the less showy and ornamental kinds. It adds very much to the labour and thought required from the cultivator if a botanical arrangement is followed. For instance, take a genus like Ranunculus; some of the species grow naturally in swamps, some in pastures, some in woods, and some in waste ground. If these are grown side by side the cultivator needs to individualise each species in order to treat it properly. A class of plants which are specially interesting to botanists are those which, either from their size or texture cannot be properly represented by herbarium specimens, such as Palms, Cycads, Tree Ferns, and succulent plants.

THE HERBARIUM AND LIBRARY.

The main object of the herbarium and library is to furnish the means of identifying the living plants cultivated in the garden, the dried plants that are sent home from India and the colonies, or are collected by British explorers in other parts of the world, and the economic specimens that are sent to the museum.

The herbarium is kept in the large brick house fenced round with tall iron railings, which stands at the north-west corner of Kew Green, and was formerly occupied by Ernest, Duke of Cumberland, the fourth son of George III., afterwards King of Hanover.

Ten years ago a three-storied room, 80 feet long, was built for the express purpose of accommodating the cabinets of dried plants. It is open from floor to roof, and has two galleries reached by spiral staircases of iron. Between each row of cabinets there is a window and a table, so that there is plenty of light, and the plants in the cabinets do not need to be carried far when they have to be consulted.

The most important part of the collection is the set of Indian and Colonial plants. Here are deposited the types from which the descriptions in the Indian and Colonial *Floras* were made, and the whole collection is so arranged that of almost any one of the 46,000 plants that grow on British soil a specimen duly named and authenticated can be referred to in a few minutes. Besides these, the herbarium contains a large collection of plants from other parts of the world. At the death of Sir William Hooker it was estimated to contain 1,000,000 specimens, counting as one all individuals of the same plant from the same locality. At present about 20,000 specimens are added every year. When dried collections are examined the rule is, that in recompense for the trouble of naming them, the herbarium is allowed to keep whatever is required, and it is to a large extent in this way that its growth goes on. At present, for instance, Dr. Aitchison, the naturalist attached to the Affghan Boundary Commission, is engaged in working out the identification of the 800 species he has collected. During the last ten years the missionaries in Madagascar have sent home 5000 numbered specimens, and of these the determinations have been sent out to them, and the new species, of which there was enough material, 700 or 800 in number, have been described and named. For any little known country like Madagascar, the plants that grow wild there furnish one of the best tests of climate, and form a guide to the useful plants that may be cultivated with a fair chance of success.

The foundation of the Kew herbarium was the private collection which Sir William Hooker brought with him from Glasgow in 1840, and to this was added the herbarium of Mr. Bentham, and a set of the specimens collected in the Antarctic and Indian travels of Sir J. D. Hooker. Of late years the principal special additions have been the European herbaria of Gay and John Stuart Mill, the Orchids of Lindley, the British herbaria of Watson and Borrer, the mosses of Bruch, Schimper, and Hunt; the lichens of Leighton, the algæ of Mrs. Griffiths, and the fungi of Berkeley and Cooke.

Besides the Indian and colonial floras Mr. Bentham and Sir J. D. Hooker have elaborated a *Genera Plantarum*, in which the 10,000 genera of flowering plants are fully described and classified under their natural orders. This was the work of twenty years, and it is used in the garden, herbarium, and museums as the standard of nomenclature and classification. Two periodicals are published in connection with Kew—the *Botanical Magazine*, in which six new or interesting plants fit for garden cultivation are figured every month. This is now in its 112th annual volume, and contains nearly 7000 coloured figures, all drawn from living plants. In the *Icones Plantarum*, of which the seventeenth century is now in progress, the more interesting new plants that come to Kew in the form of dried specimens are figured and described. In the same buildings as the dried plants there is as full a collection of all the books and pamphlets on botany as the authorities have been able to get together. The number of volumes is about 10,000. This occupies four of the rooms of the old palace. There is also a large collection of drawings, arranged in portfolios in systematic order. For naming living plants from the garden these drawings are very much used, for of course they show the colouring of flowers far better than the dried specimens possibly can.

MUSEUMS OF ECONOMIC BOTANY.

There are three museums, in which are stored the collection of timbers and other economic products. The principal museum is the large three-storied building which stands in the centre of the gardens on the opposite side of the sheet of ornamental water to the Palm-house. This is devoted to the products of the 150 natural orders of Dicotyledons, arranged in glass cases in systematic order. A similar collection of the products of the Monocotyledonous and cryptogamic natural orders is contained in a smaller museum at the north end of the herbaceous ground. In the old orangery, not far from the main gate and the palace, are the large specimens of timber. Many of the specimens in these museums are derived from the Great Exhibitions of 1851 and 1862, and from the India Museum. In addition to timbers, textile fabrics, food grains, medicines, and models of edible fruits, these museums contain the specimens of fruits and seeds which are too large to be conveniently mounted on the sheets of paper at the herbarium.

(*To be continued.*)

THE "BLEEDING" OF ROOTS COMPARED WITH THAT OF THE STEM.

MR. C. KRAUS has arrived at the following conclusions concerning "bleeding." His researches tend to show that all living cellular tissue, to whatever organ it belongs, bleeds when placed under favourable conditions. The filtration of water from the surface of an intact young leaf when removed from the influence of root-action, has often been seen. The same phenomenon has been observed in the woody parts of herbaceous stems.

As to the roots, experiments have shown that very probably with all plants the water absorbed by the roots is driven up by pressure to a certain height in the woody part of the stem. Bleeding from the cut trunks of several Firs and Pines, Hazel, White Poplar, Lime tree, Indian Chestnut, Robinia, Goose-

berry, Apple, Ash, and wild Cherry, has been recently observed. It is evident that the amount of bleeding from a wound in the trunk is greatly checked by the length of trunk through which the liquid must travel. Thus, for example, if we wish to make a plant of the common Cress, 40 centimetres high, bleed, we must cut the stem not more than 5 or 6 centimetres above the soil; while the shorter and more intact plants will bleed from the surface of all their leaves.

But whatever may be the resemblance between the bleeding of the stem and that of the root, points of difference are not wanting which it is important not to lose sight of, if we do not wish to confound these facts with the normal movement of the rising sap in an intact plant

1. Often bleeding does not take place from the woody parts of disrooted stems, in spite of the presence and arrangement of the turgescent parenchyma.

2. The fluid exuded from the root is poor in "ash," whilst that of the stem is often relatively rich in these materials. *Annales Agronomiques.*

The Flower Garden.

BEDDING PLANTS.

Proceed with the potting-off of autumn-struck Pelargoniums. In removing them from the cutting-boxes the best plan is to give the box a good rap on each side on the floor, to detach the roots from the sides; then toss the whole contents out of the box, making them alight on the floor in the same position as they occupied in the box; after this carefully disentangle the roots. Where no pit accommodation exists from which frost can be excluded, they generally have to be placed on the floors of vineries and Peach-houses. If the soil be in proper form they will not require any water for some time. Great caution will be necessary with respect to the giving of water during this month, on account of the variableness of the weather and the slight amount of growth the plants make.

Lawns.

Such of these as are overrun with moss will be benefited by having the roughest of it pulled off with an iron-toothed rake, and then receive a dressing with sifted soil raked smoothly over. Some fine lawn grasses should be sown and rolled in. Plantains and other weeds should be rooted out of lawns, as they spread and destroy the grasses, and give the surface a patchy appearance. Where Docks and Dandelions have obtained a footing it is best to cut them over an inch below the crown, and place about a teaspoonful of agricultural salt on the root; this will effectually destroy them. After the weeds have been removed, give a dressing similar to that recommended above. When soil cannot be obtained, and when labour is not available, a dressing of new-slaked lime, in the powder state, will burn up the moss and afterwards stimulate the grasses. I prefer a top-dressing of good rich soil to anything I have tried for renovating lawns. Guano and phosphates are too transitory in their effects, and require to be constantly repeated, whereas when properly dressed with soil, will remain in good order for many years.

Many of the seeds previously recommended to be sown will now have brairded. They will be very liable to damp off if watered overhead. The best plan is to dip the pots or pans in water until the water makes its appearance on the surface, and then place them in a position to drain. As soon as the plants are ready to handle, have them pricked off into boxes or pits, and have the tender ones grown on in heat near the glass, and the others nursed in an intermediate temperature for a week or two, and hardened off by degrees until they can stand a greenhouse temperature.

Dahlia Roots.

Get these placed in gentle heat to start them into growth for propagation. When the shoots are about 3 or 4 inches long take them off with a little heel, and insert in a thumb-pot or propagating bed. Fresh sawdust is one of the best mediums for striking in I have ever tried. A larger proportion of cuttings strike in this than in sand, and I find them root quicker. If the sawdust comes from green wood be careful the heat does not rise too high. There is no necessity for wasting time in making cuttings, for if they are cut midway between the joints they will root equally as well as if cut at the joints and trimmed, and valuable time will be saved. *W. M. Baillie, Luton Hoo Park.*



Plants and their Culture.

STOVE PLANTS.

Fittonia Pearcei, F. argyrea, and F. gigantea are the best. Bertolonias and Sonerillas are also charming things when well done, and ought to be in every collection of stove plants. They may not generally be so useful as the Fittonias, but they well repay all the care bestowed on their culture. The plants require a high temperature, and to be covered with a bell-glass; or a miniature pit, or frames with lights over them, always on, suit them best. The soil which suits them best is a mixture of peat and sand. Cuttings may be struck now in strong bottom-heat.

Francisceas and Ixoras.

A part of the stock of these may now be cut back, and left to break a little before potting them for the early supply of flowers. If there are any old plants of not much value they may be put in the forcing-house at once, when they will push their buds, and come in very acceptably for cutting. The plants delight in a high temperature, and to be potted in fibrous peat, sand, and powdered charcoal. Where Gardenia floribunda, Tabernæmontana, Coronaria have been prepared for flowering early in the spring, they will now be in active growth, and will be greatly assisted by having some Standen's or Clay's Fertiliser given them twice a week. Keep a sharp look-out for black-fly, to which they are very subject; a little fumigation at intervals will keep them clear of this pest.

Seeds.

These should not be overlooked, as a week or so just now makes so much difference later on in the supply of the undermentioned things, of which a pinch must now be put in, viz.:—Grevillea robusta, a very useful plant; Acacia lophantha, Begonia, Gloxinia, Cockscomb, Torenias, Panicums in variety, Celosias, Cannas, Mignonette, Amaryllis, Ten-week Stocks, &c. Sow very thinly, as usually only a limited number is required from this sowing. When large enough they must be potted-off with great care, and do not be too anxious to save too many—it is better to throw a quantity away than to err on the side of crowding, as it is more profitable to have plants that are fully developed than to have them drawn and almost useless as decorative objects. *A. Evans, Lythe Hill, Haslemere.*

Hardy Fruit Garden.

PROTECTING BLOOM.

The low temperature again experienced has been instrumental in checking the swelling of fruit tree buds on early flowering trees, which are now beginning to show in this district unmistakable signs of activity. An anxious time for fruit growers will soon be at hand, but much can be done by the watchful cultivator by the use of a little protection just at the right time, thereby saving crops which would otherwise be lost; yet many trees, even on walls, will have to be left to take their chance against frost, as labour and expense are not always equal to the demand in large gardens in providing protection for all the tender trees which more or less every season require shelter.

We often witness good results from very simple and cheap contrivances for the protection of the blossoms of fruit trees, such as netting, Spruce tree branches, &c. Permanent protection placed over the trees for a couple of weeks (when in bloom) if suddenly removed when its services are no longer required, would probably bring on blistering of the foliage; it should, therefore, be removed gradually, and when a spell of mild calm weather offers favourable opportunities. The fear of this, however, should not deter the use of a slight permanent shelter, provided something removeable day by day is not at command. Healthy trees will soon outgrow a little blister on the foliage; on the other hand, if no effort were made to protect the blossoms at the critical time when fertilisation is taking place, and the blossoms should be frozen through, a great reduction of the crop, or a total loss of it, would be the result.

Permanent protection should not be given to the trees until the moment of danger has arrived—or, in other words, not until the blooms are expanding, when the tender organs are at the mercy of the weather. When Spruce branches are employed for the purpose they are best tied to poles fixed sloping from the apex of the wall, allowing a circulation of air between them and the trees. The danger in fixing branches, unless removed in the daytime, is that they are often placed too thickly, to the exclusion of light and sun to an injurious degree. A light screen of branches may remain with safety for a fortnight, or even longer, providing its removal takes place by degrees after the setting is accomplished. Branches will repel more frost than a double thickness of netting, but the latter is not to be despised when nothing better is available.

Tiffany, when it can be removed daily (or Frigi Domo), is the best material for protecting fruit tree blossoms, and for such purpose it is best to purchase thick material of good quality. I have some that has now been used for three successive seasons, and is strong enough to do service again this spring. We use it on the Peach and Apricot walls, where it is worked up and down the wall on stout poles by the aid of blind-cord and screw eyes fixed at the top of each post. *G. H. Richards, Somerley, Ringwood.*

The Kitchen Garden.

SELECTING GROUND FOR LATE PEAS.

In anticipation of sowing the better class of Peas, such as Stratagem, Champion of England, Telephone, Veitch's Perfection, Ne Plus Ultra, and other good varieties for summer and autumn consumption, it will be advisable to select and mark out the sites the rows are to occupy. Where ground and space will be available for the purpose, a good plan is to make these rows from 10 to 15 yards apart, the intervening spaces up to within 2 feet of the Peas' lines, being planted as required, with Brussels Sprouts, Winter Greens, Broccoli, Cauliflower; &c. By adopting this method of cropping, every facility is given for an abundance of air and light—so necessary in the production of crops of Peas, abundantly, and of first-rate quality. Should the soil be insufficiently prepared and manured, trenches may be taken out, similar to those for Celery growing, and a layer of thoroughly rotten manure forked in, and the soil replaced ready for sowing; flattish drills from 8 to 12 inches wide are preferable for the latest crops. If the drills, when sown and covered in, are an inch or two, below the surrounding level so much the better, by this means allowing for mulching and watering in dry weather. Where the natural soil is clayey or otherwise ungenial, the seed should be covered over with leaf soil or other light earth. In staking Peas account should be taken of their respective heights, but it is better that the sticks should be a foot too long than the reverse.

Jerusalem Artichokes

may be planted at any time from now until the end of March in rows 3 feet asunder, and the sets 1 foot apart. Moderate-sized tubers make the best sets, but if required to increase the stock they may be cut up much in the same manner as the Potato. This profitable and excellent vegetable is too often planted in some out-of-the-way corner, or used as a screen (for which purpose it is well adapted), but if fine large tubers are required, a deep sandy loam which was manured for a previous crop, and an open situation, are indispensable. The stems and foliage when well grown are apt to attain a considerable height, and are in consequence much affected and often blown up by high winds. To avoid this the plants should be topped and kept to the height of from 5 to 6 feet. *J. Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 15	Sale of 12,000 Liliums, from Japan, at Stevens' Rooms.
WEDNESDAY,	Feb 17	Sale of Roses, Fruit Trees, Shrubs, Border Plants, and Bulbs, at Stevens' Rooms. Sale of Lilium auratum, Iris, Bulbs, Roses, &c., at Protheroe & Morris' Rooms.
THURSDAY,	Feb 18	Meeting of the Linnean Society.
FRIDAY,	Feb. 19	Sale of Extensive Importations of Orchids, from Mr F Sander, at Stevens' Rooms Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	Feb. 20	Sale of Roses, Fruit Trees, Shrubs, Border Plants, and Bulbs, at Stevens' Rooms.

THE annual meeting of the ROYAL HORTICULTURAL SOCIETY passed off very tamely on Tuesday. The Fellows present accepted the situation very quietly, and no one suggested any remedy for a state of things which is, nevertheless, intolerable. One gentleman, indeed, did suggest that the Society should devote some of its energies to farming on a small scale, or rather to the furtherance by others of such schemes. The project was, however, not very warmly received. Details given in other columns supply the substance of the report, and of the discussion which ensued.

The curtailment of the privileges of the Fellows forced on the Society by the Exhibition Commissioners will doubtless cause great dissatisfaction among one class of Fellows, and doubtless the receipts will fall of in proportion. We cannot pretend to regret this altogether. Anything which will enable us to throw off the sloughing gangrene of South Kensington and its Commissioners should be welcomed. Healthy progress and growth are impossible while we occupy the humiliating position we do at South Kensington, without a chair to call our own, without a peg to hang a hat on—tolerated so far as we can be useful, snubbed and harshly treated when of no further service. This is a state of things no longer endurable. Years ago circumstances obliged us to submit, but the Law Courts, if they did nothing else, at least freed us from this embarrassment, and there is now nothing to interfere with us that cannot be overcome by vigorous and persistent co-operation.

It seems likely that matters will be settled for us at South Kensington. The series of Exhibitions will be closed with the forthcoming one (the Indian and Colonial), and then we shall be obliged to form other arrangements.

While the absolute necessity for securing proper accommodation must be ever present to the Council, there are one or two points which call for immediate action. We must strain every nerve to improve the Society in public estimation. Two special opportunities present themselves—one the Primula Conference, which will be over before the Indian and Colonial Exhibition begins; and next, the Provincial Show at Liverpool. This latter ought to be, and doubtless will be, the event of the year. We hail the proposal with delight, recognising, as we do, the greatness of the need for improving the relations of the Society in the provinces. A better centre than Liverpool could not be picked. The circumstances are favourable. The Mayor and Corporation have formally invited the Society, and promise their co-operation. The site selected is admirable. The exhibition will be held in the Botanic Garden, adjoining the "Shipperies," or great exhibition of matters connected with maritime enterprise. The garden opens into the People's Park, where it is proposed the show of implements shall be held. "What should be shown?" Everything that is available, and Orchids in particular. "When shall it be?" That is a point which we believe the Council would desire to have discussed. For our own parts we should think the last days in June and the first in July would be the most suitable, as freest from other engagements, and propitious in other ways.

In any case, every true horticulturist must do his best to reinstate the old Society, and no means for the moment are more likely to do good than a vigorous support of the Provincial Show at Liverpool. We were pleased to hear the services of Mr. BARRON fitly recognised, an acknowledgment that might well have been extended to Mr. DICK and the other officers.

—— THE DINNER OF THE ROYAL HORTICULTURAL SOCIETY.—The annual dinner of the Society was held last Tuesday night at the "Criterion," under the presidency of Sir TREVOR LAWRENCE, M.P. Among those present were Dr. Allmann, Messrs. Bateman, Harry Veitch, G. Bunyard, P. Barr, J. Matthews, W. Lee, Dr. Hogg, Dr. Duke, and A. F. Barron. The dinner was all that could be desired, and the speeches generally hearty in tone and to the point. Mr. Thiselton Dyer, Director of the Royal Gardens, Kew, in proposing prosperity to the Society, said there was no country where he had observed better workmanship and more artistic cultivation in the horticultural art than in England, and he pointed out how dignified a thing English horticulture was. They had had a dignified past, and he hoped that the impulse with which they started the work of the new year would carry them to such a position as would enable them to place the Society before the world as the official representative of a great and splendid national industry. Mr. Mitford, C.B., proposed the toast "Success to Horticulture," referring in his speech to the appointment of Mr. Dyer as Director of Kew, and to the labours of Sir Joseph Hooker. Mr. Harvey, of Liverpool, in responding, expressed the hope that the Society's operations would, in the future, be of a more distinctively national character, and alluded to the good work done in Scotland and in Lancashire under adverse climatal conditions. He expressed the opinion that a special Orchid Society was not needed, so long as the Horticultural Society did its duty. Professor Foster gave the toast of the "Visitors," coupling with it the names of Mr. Baker and the Rev. H. Ewbank, and remarked that the Society would benefit greatly by getting away from South Kensington and establishing a fresh habitation. Mr. Baker, in responding, alluded to the relations that should exist between botanists and gardeners. In the course of some remarks Mr. Harry Veitch, in proposing the health of the "Amateurs," alluded to the anomalous circumstance that no nurseryman was placed on the Council. Dr. Allmann, late President of the Linnean Society, responded. In reply to the toast of his health, proposed by Mr. Bateman, the President remarked that they had in this country a public interested in horticulture and willing to support their Society as the representative of the art. What they wanted was to establish themselves in a place where they could hold their fortnightly shows under satisfactory circumstances. The President also remarked that in his opinion no special Orchid Society was needed, and spoke hopefully as to the prospects of the provincial show at Liverpool.

—— RUSTEM PACHA the new Turkish Ambassador to this country, deserves the respect of our arboriculturists, for having when Governor of the Lebanon, instituted measures to secure the famous Cedars on Lebanon from destruction or injury.

—— THE "BOTANICAL MAGAZINE" for February contains coloured figures of Lissochilus Sandersoni, Calotropis procera, Synthyris reniformis, Rhyncanthus longiflorus, and Calotropis gigantea. These are alluded to at greater length elsewhere.

—— "STUDIES FROM NATURE."—Under this title Mr. JOHN HEYWOOD publishes a series of large-sized lithographs representing the foliage and ramification of some of our trees, as the Oak, the Larch, the Spruce, the Filbert. They are the work of Mr. TOM KELLY. They exhibit more artistic freedom of handling than faithful imitation of Nature, and cannot be commended from the point of view of the tree-lover or botanist.

—— LINNEAN SOCIETY OF LONDON. — This Society will hold a meeting on Thursday, Feb. 18, at 8 P.M., when papers will be read—1. "On Acari of Genus Glycephagus found in Moles' Nests," by A. D. MICHAEL, Esq.; 2. "On the Botany of Western South America," by JOHN BALL, Esq.

—— A NEW FUTURE FOR THE HOLLYHOCK.—Messrs. WEBB & BRAND, who have succeeded the late Mr. W. CHATER in the proprietorship of the Saffron Walden Nurseries, announce their intention to issue a catalogue of named Hollyhocks in April. It is probably ten years since the late Mr. CHATER issued a catalogue, in consequence of the ravages made in his stock by the disease. Gradually this enemy to good culture is being overcome, and the hot dry summer of 1885 appears to have greatly aided the stamping-out process. Saffron Walden, through Mr. C. BARON, and later through Mr. W. CHATER, has been so long and so successfully associated with the Hollyhock that it is agreeable to think its traditional character will be maintained by Mr. CHATER'S successors.

—— A GARDENERS' SOCIETY FOR BIRMINGHAM.—On Thursday, the 6th inst., a meeting of gardeners, nursery *employés*, &c., took place in the theatre of the Literary Institute, Birmingham, the Mayor in the chair, to consider a suggestion thrown out at the annual dinner of the Birmingham Chrysanthemum Society that a gardeners' society should be formed for the purpose of mutual information, by the reading of papers, &c., and in any way suited to secure the objects aimed at. About 170 persons were present. A resolution in favour of the establishment in Birmingham of such a society was moved by Mr. WILLIAM DEAN, of Walsall, and seconded by Mr. G. LATHAM, of the Edgbaston Botanical Gardens, and nearly 160 persons gave in their names as members. The subscription will be moderate, and it is proposed to hold meetings fortnightly throughout the early spring months, autumn, and winter. It is also proposed to form a library in connection with the society. A committee was formed to make the preliminary arrangements, and this new Midland venture was launched with every prospect of success.

—— SUGAR IN BEETROOT.—AIMÉ GIRARD'S experiments, reported in the *Comptes Rendus*, November, 1884, show that the leaves of the Beet contain much more sugar in the evening than in the morning. It is hence concluded that the sugar is formed in the daytime in the leaf, and passes into the rootstock at night.

—— RUELLIA MACRANTHA. — A magnificent winter flowering stove plant with opposite broadly lanceolate leaves, and large Gloxinia-like flowers of a rosy-lilac colour. Count OSWALD DE KERCHOVE, who calls attention to this plant in the *Revue d'Horticulture Belge*, gives the following suggestions as to the culture of these plants:—Soil light and sandy, abundance of water in summer, syringing the foliage once or twice a day. In winter they require to be placed in the greenhouse and to be kept dry.

—— PALERMO BOTANIC GARDEN.—We have received a copy of the Exchange List for seeds grown in the Botanic Garden of Palermo, under the superintendence of the Director, Baron TODARO.

—— SALE OF PRODUCE FROM PRIVATE GARDENS.—A correspondent writes:—"Why not open your columns for gentlemen who wish to sell their garden produce? I have no doubt there are many who would be glad to have fresh vegetables, fruit and flowers sent direct, say two or three times weekly." We presume our correspondent feels, as we in London do most keenly, the unsatisfactory relations with the greengrocer. We had hoped that the introduction of the Parcel Post would have facilitated the direct association of producer and consumer. Of course our advertising columns are open to all who wish to sell or to buy.

—— ACTION OF FROST ON LEAVES.—At the Scientific Committee, on Tuesday last, Mr. BOSCAWEN showed some bunches of Camellias grown out-of-doors, the older of which were as if they had been parboiled, being of a brown colour, while the younger leaves were unhurt. Other examples of young foliage, uninjured by frost, were cited during the discussion. The question, for which no one found more than a conjectural answer, was as to the reason for this difference. For our own parts, we are disposed to consider the injury as due to the influence of the sun on the wet surface of the older leaves, which, being of a darker colour, would be more injured than the lighter ones. Moreover, the older leaves are more horizontal in position than the younger ones.



BONSKEID, NEAR PITLOCHRY, PERTHSHIRE.

—— YORK GALA.—The schedule for the York Show, which this year takes place on June 23, 24, and 25, is now issued. The prizes in the ninety-seven classes are on as liberal a scale as they have hitherto been. Amongst the most noticeable may be mentioned £20, £14, and £8 offered in the principal class for sixteen stove and greenhouse flowering and fine-leaved plants. For twelve show Pelargoniums there are prizes of £12, £8, £5, and £2 10s. Roses in pots get £66; cut Roses, £42. An addition has been made in the Orchid department of a special class for twelve plants, for which there are prizes of £12, £8, and £5. In the fruit classes, for eight, six, and four dishes, tempting prizes are offered. Altogether the schedule is such as calculated to maintain the high character which the York Show has so long had.

—— THE RESPIRATION OF PLANTS.—Messrs. BONNIER and MANGIN point out that this process must be studied as a whole, and not piecemeal. Some observers, for instance, have measured the amount of carbonic acid gas given off in a given time under certain circumstances, others have determined the quantity of oxygen inhaled under like circumstances. It is, however, necessary to study the two processes simultaneously, as there is a definite relation under all circumstances between the entry of one gas and the emission of the other. The breathing process is intensified by heat and the hygrometric state of the air, while it is checked by exposure to light.

—— CALOTROPIS PROCERA.—The "Mudar" of Central India, an Asclepiadaceous plant, yielding a strong fibre, and an acrid and milky juice, to which the emetic and tonic properties of the plant belong. It is a grey-looking shrub, with oblong leaves and terminal cymes of small bell-shaped flowers, each about half an inch in diameter, whitish externally, violet within.

C. gigantea is similar, with larger flowers with recurved corolla lobes. It has the same properties as the preceding, and occurs through India from the Punjab and Scinde to Ceylon and Singapore and Borneo, its great extension being eastward, while C. procera from a similar centre extends westward, even to the Cape de Verd Islands. Both species are figured in the February number of the *Botanical Magazine*, t. 6859 and t. 6862.

—— SPANISH AND BALEARIC PLANTS.—The last issued part of Dr. WILLKOMM's faithfully-executed *Illustrationes Floræ Hispaniæ* ("Liraison," xi., 1886) contains figures of Leucoium Hernandesii, t. 93 A; L. trichophyllum, t. 93 B; Narcissus juncifolius, t. 94; Fritillaria hispanica, t. 95 A; F. lusitanica, t. 95 B; Allium Pardoi, t. 96; Cephalaria linearifolia, t. 97; Aster aragonensis, t. 98, f. 1; A. Willkommii, t. 98, f. 2 and 3; Artemisia Alsoana, t. 99 A; Evax micropodioides, t. 99 B; and Sonchus Dianiæ, t. 100. On some of these we shall comment on a future occasion; in the meantime we may once more commend these illustrations for their scrupulous fidelity, and, what is overlooked too often nowadays in plant illustrations, their utility.

—— INSECT ON EUONYMUS.—Mr. MCLACHLAN calls attention to the fact that the leaves of Euonymus japonicus in the South of France and elsewhere are affected by a whitish insect called Chionastis Euonymi, which is doing great injury. It behoves our growers to look closely to their bushes, for the destruction of so useful a shrub is not a matter to be contemplated with equanimity. Let us hope the climate will not be propitious to the insect.

—— RHYNCANTHUS LONGIFLORUS.—A Burmese Gingerwort with sessile flowers, with very large loose membranous [pink] probably persistent bract, remarkably [small, erect corolla lobes, yellow tipped with green, a lip reduced to a mere point, and a most curious petaloid filament, like a very long canoe, exserted far beyond the corolla lobes, terminated by an anther with no appendage, and the stigma is erect and funnel-shaped. *Botanical Magazine*, t. 6851.

—— ACACIA CYCLOPIS.—Mr. LYNCH showed at the Scientific Committee some seeds of this plant with a very long funicle or seed-stalk of a reddish colour. The colour was supposed to be attractive to birds, and thus help in the diffusion of the seed. Another suggestion mooted by Mr. BOSCAWEN seems more probable, that the long thread from the end of which the seed hangs is provided to ensure the proper drying and maturation of the seed.

—— BELGIAN HORTICULTURAL SOCIETY.—At the meeting of this Society, held on Monday, 8th inst., the following awards were made:—First-class Certificates to Mr. Ad. d'Haene, Ghent, for Æchmea spectabilis; to Messrs. Jacob Makoy & Co., Liège, for Anthurium leodiense; to Mr. Ed. Pynaert van Geert, Ghent, for Cypripedium marmorophyllum; to Mr. A. van Geert, Ghent, for Begonia Gloire de Sceaux. Cultural Certificate to Mr. Bernard Spae, Ghent, for Cocos Yatai. Commendations to Mr. Spae-Vandermeulen, Ghent, for seedling Clivia Jules Hye; to Mr. James Bray, Ghent, for Lycaste Skinneri alba; to Mr. Ed. Pynaert van Geert, Ghent, for a new seedling Clivia; to Messrs. Blancquaert & Vermeire, Ghent, for Dracæna Lindeni.

—— TILLANDSIA UMBELLATA.—Under this name M. ED. ANDRÉ figures and describes in the last number of the *Revue Horticole*, p. 61, a very beautful blue-flowered Tillandsia, very like T. Lindeni, but, as it is said, superior to it. The flowers are 3 inches across, of a deep Gentian-blue, with a white centre. The plant was found by M. POORTMAN in the forests of Ecuador in the temperate regions, so that a greenhouse temperature will suffice for it. Mr. ALFRED MAME, of Tours, the fortunate possessor of the plant, was the first to flower this beautiful species.

—— UNITED HORTICULTURAL BENEFIT AND PROVIDENT SOCIETY.—The annual meeting of members of this Society took place at the "Caledonian" Hotel, Adelphi Terrace, W.C., on Monday evening last, Mr. RICHARD DEAN, one of the honorary members, being, in the chair. The balance-sheet presented by the Secretary, Mr. J. F. McElroy, showed a balance in hand on the Benefit Fund of £2183 8s. 6d, on the Benevolent Fund of £1038 2s. 11d., and on the Management Fund of £55 0s. 4d. During the past year there had been subscribed to the Benefit Fund by the subscriptions of 169 members, £255 17s. 9d., and interest had accrued, amounting to £57; and the disbursements had been very small in comparison. To the Benevolent Fund 157 members had subscribed £19 3s.; ten honorary members had subscribed £10 10s.; interest had accrued to the amount of £35 1s., while the disbursements had amounted to £20 only. A certain proportion of each member's subscription also goes to the Management Fund, and this cost is a very low one, for it is doubtful if any other benefit society in the kingdom is managed on so economical a scale; the work of the secretaryship being purely honorary. A sum of some £3 only, representing the balance remaining over from the Management Fund is presented to the Secretary, and he is precluded from participating in any benefit from the Society, as [not being a member, for at the time he became Secretary, he was beyond the age for entry specified by the rules. During the past year fourteen new members had joined, and the sum of £300 had been added to the sum invested in Consols, which now amounts to £3300. Messrs. Scott, Campbell, Coates, Wood, Cole, and G. Moreland were elected to vacancies in the committee. Hearty votes of thanks were given to the Trustees, to Mr. J. Hudson, Treasurer—whose absence through illness was deeply regretted; and Mr. J. F. McElroy, the Secretary. A vote of thanks to the Chairman brought the proceedings—which were of the most satisfactory character throughout—to a close.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—A meeting of the General Committee of this Society was held at the "Old Four Swans," Bishopsgate Street, E.C., on Monday, the 8th inst., Mr. E. SANDERSON, President, in the chair. The Secretary, Mr. WILLIAM HOLMES, reported that Messrs. SUTTON & SONS, and Messrs. E. WEBB & SONS, would continue their special prizes as heretofore; also that Messrs. SIMON DELAUX & Co., of Toulouse, the well-known Chrysanthemum raisers, had offered a Silver Cup, value 600 francs, and a medal, value 200 francs, both to be competed for at the exhibitions of the Society in 1887, the terms of the competitions to be hereafter determined. The judges of the shows, and the Floral Committee for the current year were elected. The Secretary reported that three exhibitions of Chrysanthemums will be held during the present year, one in September for early Chrysanthemums, at which the Royal Aquarium Company will offer prizes for Dahlias and Gladioli; the usual show in November; and a show of late Chrysanthemums in January, 1887. on a larger scale than this year, at which prizes will be offered for winter flowering and decorative plants, also given by the Aquarium Company. The meetings of the Floral Committee will take place at the Aquarium as heretofore. Schedules of prizes will be issued immediately. It was resolved that a revised copy of the catalogue of Chrysanthemums should be prepared and issued, and a sub-committee was appointed to do this, Mr. C. HARMAN PAYNE being elected Secretary. Several new members were elected, and the proceedings closed with a vote of thanks to the President.

—— ACCIDENT IN THE PRIORY GARDENS, WARWICK.—A Warwick correspondent writes informing us of an accident which occurred recently in these gardens in the following manner. A high boundary wall, very old, stood on an embankment; and after the late frosts and thaws it was noticed that there was a hole in the embankment, and a slight bulge in the wall. The builders were set to work to shore up the wall as a preliminary process, and while this work was progressing part fell over, killing one man and injuring another, both of whom were builders. No doubt the falling of the wall was due to the frost, and it is necessary that during such weather as we have had lately, that all walls of any height should be carefully watched. Not that the wall in question was not looked to, for it appeared during the inquest that all precautions were taken. The wall was built in a style which none would be erected in now. Mr. R. GREENFIELD, the head gardener, had a narrow escape from injury at the time, he having moved away but a short distance when the fall took place.

—— SYNTHYRSIS RENIFORMIS.—Leaves tufted on long stalks with cordate orbicular crenate-toothed leaves, and long, linear, erect, many flowered racemes; each flower is a quarter of an inch long, pale violet, not unlike some of the Veronicas. The species are North-west American, and represent the Wulfenias of Eastern Europe and the Himalayas. The plant is figured in the *Botanical Magazine*, t. 6860.

—— WINE FROM ORANGES.—We learn from the *Queenslander*, some time ago, in the querists' column of that paper the subject of making wine from Oranges was mooted. "In response to our request for practical information a Vine grower and wine-maker, who has within the last few years visited many of the European continental vineyards, called upon us. He informs us, and wishes the fact to be made widely known, that a most excellent wine can be made from the juice of the Orange, and that since the troubles caused by the phylloxera a large proportion of the 'sherry' of commerce is Orange wine. Moreover, when properly prepared, he says, this Orange sherry is a most pleasant and healthful wine; indeed in his opinion it is only a matter of a few years and the greater part of the wine in the world will be made from Oranges, for the product is equal to that made from the juice of the Grape, and the yield per acre considerably more. His argument is, that in consequence of this discovery, the planting of Orange groves in suitable localities in Queensland cannot be overdone. As endorsing these conclusions in the Melbourne *Leader* we find the following paragraph:—'It is stated the manufacture of Orange wine is developing into a very extensive business in Florida, where a magnificent American wine is being made in large quantities from the juice of the sweet Oranges, surpassing in purity any of the European wines. 'It is said to be the best tonic, medicinal or otherwise, that can be taken in the human system. It is nourishing, of agreeable flavour, and, what is more, a perfectly pure native wine.' No part of the fruit is used in the manufacture of the wine but the pulp of the perfectly ripe Oranges, and none of the wine bottled from the casks until it is at least three years old. In taste it is marvellously palatable, and contains but 8.64 per cent. of absolute alcohol, and slightly over 5 per cent. of sugar. Florida, filled with Orange presses, says the Philadelphia *Times*, will outrival the famous vineyards of France and Italy in time, for the manufacturers of this splendid wine are pushing ahead with new and improved machinery, are setting out countless orchards of the precious fruit, and investing thousands of dollars in the enterprise, which they are satisfied will soon become one of the greatest industries. The supply now is not at all equal to the demand."

Notices of Books.

The Larvæ of the British Butterflies and Moths. By (the late) William Buckler; edited by H. T. Stainton, F.R.S. Vol. i.: Butterflies. London: Ray Society, 1886.

We venture to think that among the many valuable contributions to the literature of natural history issued by the Ray Society, none will be found more popular than the proposed series of volumes of which the one before us is the first instalment. Many valuable works never see the light owing to the innate modesty of the writers. This was almost on the road to be a case in point. Mr. Buckler was an artist by profession, who devoted the last thirty years of his life to making exquisite coloured drawings of the larvæ of British Lepidoptera—at first as an amusement, but latterly with the idea of publishing the results. All his drawings were made with the greatest care and artistic skill, and in nearly all cases from minute careful watching of the life-history of his subject from egg to imago. His biological observations were published from time to time in the pages of the *Entomologist's Monthly Magazine* and elsewhere, but his life-like figures could not be reproduced. His decease, after a few days' illness, in January, 1884, seemed at first to extinguish all hopes of this being accomplished. As a quiet, plodding worker, he seldom appeared in public. The value of his published notes had long received due recognition, and there were a few intimate friends who had seen his drawings. It was indubitably desirable that overstrained modesty during life should not affect the chance of publication when the artist was no more. Acting on this idea, the Ray Society entered into negotiations with the legatee, with the result that it came into possession of the whole of the original drawings, and also of his MS. notes, many of which had never appeared in print. The Society has lost no time in utilising its acquisition.

To how many volumes the entire series may run it is at present almost impossible to say. We have the first volume before us. Gardeners and agriculturists too often know to their cost the ravages caused by caterpillars, and yet they group the whole, with the exception of a few notorious delinquents, under the comprehensive term "grub." The present volume treats only on the butterflies, and yet we find fully 250 figures on the seventeen plates. We are all tolerably familiar with the larvæ of such things as the "large white" (Pieris brassicæ), "small white" (P. rapæ), "small tortoiseshell" (Vanessa urticæ), and some others. But how many have ever seen or recognised those of the "green-veined white" (P. napi), the "orange-tip" (Anthocaris cardamines), or the "clouded-yellow" (Colias Edusa)?, to say nothing of the "swallow-tail" (Papilio machaon), or the "Camberwell Beauty" (Vanessa Antiopa)? It speaks wonders for Mr. Buckler's care and diligencc, that amongst our limited number of native butterflies (as distinct from moths) the larvæ of those not noticed in this volume may be counted on the fingers of one hand.

Those few who have had the privilege of seeing Mr. Buckler's original drawings will testify as to the scrupulous care taken in every minute detail. And it is possible that one reason why he did not publish them during his life-time resulted from a nervous apprehension that they might not be reproduced to his satisfaction. He has passed beyond the power of being critical, and we venture to think he might even have been lenient had he seen the plates in this volume.

Mr. Buckler, during his lifetime, had a valuable coadjutor in the Rev. J. Hellins (formerly chaplain of the county jail at Exeter), who, faithful to the memory of his deceased friend, has followed up and supplemented several subjects that would otherwise have been left incomplete. That the editing of a posthumous work on this subject has been undertaken by Mr. Stainton is sufficient guarantee that it has received, and will receive, careful supervision. The Ray Society, through its Secretary (the Rev. Professor Wiltshire, Granville Park, Blackheath), may be congratulated on the initial volume of a series that will prove of the greatest value to all who are interested in caterpillars.

The Bulb Garden.

TIME OF FLOWERING OF CAPE BULBS.

In Mr. Watson's article (p. 136) on Cape bulbs he says, "The same plant will flower in the same month all the world over." Having read the article carefully through, I am still at a loss to know whether this means the same month absolutely or the same month relatively—that is to say, allowing for opposite seasons in the south temperate zone. I have never been in the southern hemisphere, so I do not know in what seasons those plants which belong to it, and which we can cultivate successfully in England, flower when at home; but I share what is, I think, the general impression, that a plant which flowers at the Cape in autumn—say, October—will flower here in spring—say, April; and that if it cannot perform this necessary adaptation of itself to our spring or autumn, it perishes. This, I say, is the general impression, and as it is a subject in which I feel some interest, I lately wrote to a friend—a lady now living near Valparaiso, whom I knew to have sent for an importation of Dutch bulbs and Rose trees, to ask how they had behaved under their changed conditions. Her letter was so instructive to me, that I send an extract from it, in hopes that it may interest others:—"Our Hyacinths were from Carter's, and arrived about the middle of December, 1883, packed in paper bags of charcoal, and were immediately planted out, but not watered, so that they were kept quite dry till the first rain in the middle of April, which was only a shower. The wet season set in in May, and they began to show above-gound, being in full bloom by the middle of August. After the leaves had dried up they were taken out of the ground in November, and were kept till the middle of March in a dry place, when the new bulbs were separated from the original ones, and all planted out. The second year's bloom (in August, our early spring) were much finer than the first. I never saw finer Hyacinths anywhere; they were immense. With the Hyacinths we got 100 Tuberoses; these were treated in the same way as the Hyacinths, but were watered at once. They flowered in March or April, which, for Chili, is late, as they usually flower in January, the height of summer here. This year (December 5, 1885) they have now been above-ground a month, and in another month will be in full flower. We also got a quantity of Lilies—lancifolium and auratum. The greater part of these arrived rotten, but the sound ones flowered beautifully in January of last year. Miss North was with us, and remarked what fine blooms they were. We got about 200 Rose trees. These were packed dry without earth, and arrived about the middle of summer (December or January). Out of these about fifty survived. These were put into the ground at once, close together, and watered. At the end of June, in the middle of the rainy season, they were planted out. The first year they hardly flowered at all; but this year, at our proper season—that is, August—they flowered in great quantities, and with flowers finer and better than I have ever seen in England—Catherine Mermont especially." *C. Wolley Dod, Edge Hall, Malpas, Feb. 2.*

NATIONAL AURICULA SOCIETY.

Referring to the remarks of Mr. Brockbank on this subject at p. 180, it is in my recollection that his opinion was very freely expressed at the luncheon of this Society in April last. He referred to the proposed Primula Conference as being quite unnecessary, and also to the prizes in the Society's schedule as being badly arranged (although there had been no alteration to speak of from the first, the exhibition being the ninth). I could not approve of his remarks, nor did he receive support at the meeting. He wrote to me subsequently suggesting alterations, to consist of increasing the prizes, but giving no hint as to how the funds were to be obtained except by reducing the prizes in other classes—"robbing Peter to pay Paul." His reiterated suggestions seemed to me to be so unreasonable that I ventured to inquire whether he was supported by any of the leading Northern subscribers. His reply confirmed my suspicions. He could not say he had any support, nor had he any at the meeting in London, but he still continued to agitate, and brought the matter before the annual meeting of the Northern society, held at Manchester. I would like to observe here that the schedules were not in the hands of the members at that time, and that Mr. Brockbank contrived to produce an erroneous impression as to the slight alterations in the schedule. A resolution was passed, and the carrying out of the terms of that resolution was left with Mr. Barlow and the Rev. F. D. Horner, with whom I am in communication. Mr. Brockbank has, therefore, no official responsibility, and is merely promulgating his own views. This he has, I admit, a perfect right to do. Whether it is in good taste for him to do so, after the matter was left in other hands, I do not pretend to judge. I will, however, point out how impossible it was to deal with the schedule as suggested. The classes referred to are the following, taken from the recently-issued schedule:—

AURICULAS.

Class A. Twelve dissimilar, 80s., 60s., 40s., 30s., 20s.
,, B. Six dissimilar, 40s., 30s., 20s., 15s., 10s.
,, C. Four dissimilar, 25s., 20s., 15s., 10s., 7s. 6d.
,, D. Two dissimilar, 15s., 12s. 6d., 10s., 7s. 6d., 5s.
,, E. Single specimen, green-edged, 9s., 8s., 7s., 6s., 5s., 4s., 3s.
,, F. ,, ,, grey-edged, 9s., 8s., 7s., 6s., 5s., 4s., 3s.
,, G. ,, ,, white-edged, 9s., 8s., 7s., 6s., 5s. 4s., 3s.
,, H. ,, ,, selfs, 9s., 8s., 7s., 6s., 5s., 4s., 3s.
,, I. Fifty plants, not less than twenty varieties (may include alpines), 100s., 80s., 60s., 40s.

Note.—One truss only may be shown in Auriculas; one or more in alpines.

It is proposed by Mr. Brockbank to withdraw the first and fourth prizes in Class I., which would leave £7, he says, to augment the prizes in Classes C, D, E, F, G, and H. Those who have an intimate knowledge of the working of the Society know this to be impossible. For this reason, when the Society was first established a number of gentlemen gave large subscriptions to make an exhibition that would be attractive to the general public, and a class for fifty had been previously tried with success, so that it found a place in the programme. Some of these generous friends have reduced or withheld their subscriptions, and I am prepared to say that if such a scheme as Mr. Brockbank proposes had been adopted two subscribers of £5 each would have reduced their subscriptions to £1 1s. each. In that case a real difficulty would have to be faced. We are told the sum of £7 would enlarge the classes as proposed. There is but one way out of the difficulty, but it does not seem to have occurred to Mr. Brockbank. Let him raise the small sum required on his own responsibility. I will gladly give an extra sovereign towards this object—Mr. Brockbank by his own subscription and that of a few friends could surely find the rest. After all I do not admit that the prizes are badly arranged. The interests of the small growers, of whom, I believe, Mr. Brockbank considers himself one, are well cared for—better than they are in the Northern schedule, or in any other known to me. *J. Douglas, Hon. Sec.*

Florists' Flowers.

GROWING LARGE FLOWERS OF CHRYSANTHEMUMS, AND HOW TO DO IT.

It is my pleasure to tell exactly how I grew the very fine flowers shown at the different exhibitions of the past month, and I am confident it will open up a profitable field, if those interested in growing cut flowers of Chrysanthemums will do likewise. It is well known that no plant is subjected to such bad treatment as the Chrysanthemum has been at the hands of those who ought to know better. The cry is, "Oh, they don't pay!" And why? Simply because they are abused. The general treatment has been to plant them out some time when all other things have been taken care of, often in a poor piece of ground, not farther apart than 18 inches, never caring more for them, except perhaps to hoe out a few weeds. Then some time in October they are ruthlessly dug up, packed close together in frames, and then they are supposed to give flowers in perfection, which they, as a matter of course, never do. The cry then goes up, "They are not worth troubling with."

I had this year six plants of Comte de Germiny

with fifty-four flowers, none less than 5½ inches in diameter. Six plants of grandiflorum with sixty flowers equally as large, an average of nine and ten respectively for each plant. For any and all of these flowers I was offered 15 cents each. These are only examples, many others having even more and equally as fine flowers.

The treatment given was as follows:—After June 20 one of our 100 by 11 feet houses was emptied, the benches taken down, and a foot of good soil enriched with about one-third of rotten horse-manure was placed on either side, leaving the pathway as it was when the benches were in place. Each bed of soil was 4 feet 6 inches wide, running the entire length of the house. On June 27 thrifty plants from 4-inch pots were planted in five rows, the plants about 10 inches apart in the row, and the rows a foot apart, so that there were exactly 1000 plants in the house, 500 on each side. The plants were tied to stakes about 3 feet long, the surface of the beds being 4 feet below the wall plates. The plants as they grew were tied up to the stakes. The sashes were not removed, but the house was slightly shaded with whitewash, and air was given at every other one. The sashes are hung at bottom, and lifted from ridge generally about a foot.

Twice during the summer a thin sprinkling of tobacco stems was placed among the plants, which prevented all insects from appearing. Twice, just before the flowers began to open, they were fumigated, as some few green-flies had appeared. There was not a spot of mildew to be seen at any time, and to-day the leaves are as green and vigorous to the base as when planted out. By the middle of August the plants touched the glass. They were then bent down and tied one over the other about 18 inches from the glass, as is done with Roses on front benches. Again at the end of September they were tied down, previous to which thinning of buds had been done, of which there were on many plants from fifty to sixty. The average number of buds left on each was about ten, as by counting when in flower there were about 5000 blooms on one side of the house; they were syringed on every bright day from the time of planting until the colour began to show. The beds were well soaked twice a week, and two good waterings of manure-water from the horse stable, in strength about the colour of strong tea, was given in October. The plants were never pinched back, and many grew to be from 7 to 9 feet high.

The different purposes for which the Chrysanthemum is used makes it quite a task for those not well acquainted with the various kinds to select the best for a given purpose. I append a list which will help to a knowledge on this point. I have selected the best varieties suitable for cut flowers for florists' use, beginning with the earliest and ending with the latest flowering:—

White.—Japanese: Mdme. Desgrange, Lady Selbourne, President Cleveland, Blanche Neige, Mdme. Lacroix, Elaine, Fantaisie, Jessica, Moonlight, Ceres, Annie Thorpe, Christmas Eve, Mrs. C. Carey. Chinese: Sœur Melanie, La Vierge, Mdme. Moynet, Mrs. G. Rundle, Diana, Lady St. Clair (same as Luna), Felicity or Mrs. Forsyth, Mdlle. Tezier, Mrs. N. Hallock, Virginalis. Pompon: La Petite Marie, Princess Meletia, La Desirée, Mdlle. Marthe.

Yellow.—Japanese: Golden Mdme. Desgrange, Golden Gloire de Rayonante, Frizou, Gloriosum, Mrs. R. Brett, Grandiflorum (this is being distributed as Temple of Solomon, which is a reflexed flower of a deeper shade), Mrs. Mencke, Thunberg. Chinese: Gloria Mundi, Mr. Bunn, Geo. Glenny, Mrs. Dixon (C. H. Glover), Lord Alcester, Golden Queen of England. Pompon: General Canrobert, Fiberta, Golden Marthe, Eugene Lanjaulet, Souvenir de Jersey, Orange Beauty.

Bronze and Chrome-yellow.—Japanese: Early Red Dragon, Incomparable, Bras Rouge, Comte de Germiny, Etincelle, Emblem, Mrs. Wheeler, Lord Byron, Mons. Lemoine, Wm. Robinson, H. Waterer, M. Desbrieux. Chinese: M. Roux, L'Africaine, Gladstone, Mr. Brunlees, Nil Desperandum, Cherub, Barbara. Pompon: Arbre de Noel, Brunette, Fred Marronet, Lucrece.

Amaranth, Purple or Plum-colour.—Japanese: Julius Scharff, Beauté des Jardins, Fleur Parfait, Mdme. de Sevin, Roseum pictum, President Garfield, Dr. Walcott, Nuit d'Antomne, Purple King. Chinese: Prince of Wales, Lord Derby, Dr. Sharpe, Refulgens, Progne. Pompon: Amaranthina, Anastasia, Capt. Nemo, President Salamon, Perle des Beautés.

Blush, Pink, and Slightly Shaded Rose colour.—Japanese: M. Plancheron, Bouquet Fait, Brise du Matin, Admiration, Souvenir de Japon, Belle Paul, Fenand Feral, Wenonah, Minnie Miller, Manhattan, Sarnia. Chinese: Tragedie, Alfred Salter, Jeanne d'Arc, Venus, Mrs. M. Morgan, Lady Talfourd. Pompon: Anais, Model of Perfection.

Deep Crimson, Red and Dark.—Japanese: Fr. Delaux, Colibri, Pietro Diaz, Juvena, M. Moussillac, Tokio, Jupiter, Magnificent, Cullingfordii, Mons. L. Barthere, Mr. John Laing, Mrs. Vannaman, Julius Cæsar. Chinese: Robert Walcott (fine), King of the Crimsons, G. Stevens, Julia Lagravère, Salteri Alfonso. Pompon: Amphilla, Bob, Mrs. Campbell.

Bear in mind that by taking the first and last in each section, and as many from the centre as desired, the season from beginning to end will be thoroughly covered. *John Thorpe, in "The American Florist."*

THE CHRYSANTHEMUM.

The foundation of the exhibition specimens must now be laid, and the plants kept steadily growing in the greenhouse or any house from which frost can be excluded. At the principal exhibitions it is essential that the specimen plants have one main stem only, which should be discernible clearly 1 or 2 inches above the surface of the ground. The plants should be two years old. I have before stated that the best way to obtain plants is to look out for them shortly after the blooms have been cut from those plants which have only been allowed to grow a few for exhibition. They have clear straight stems a yard or more in length. A tuft of growth will sprout out from these near the base. The stem has to be cut over above the growths, and the plant taken out and repotted in a 6 or 7-inch pot. This should be done after the flowering season. It is now time to give them their second shift into 8 or 9-inch pots, using good potting soil, and keeping the plants quite close to the glass.

As the shoots push out they must be pinched back, merely taking the points of the growths out with the fingers. It is also necessary to tie them out. This can be done by fastening a piece of tarred string under the rims of the pots, and tying the growths to it. The object is to train the plants into the form of compact specimens, and the foundation for this must be laid now. The cuttings of the pompon varieties, which were put in during November, can be formed into specimen plants in this manner. They want good treatment during the spring, and the strong plants may be turned out in May. Mrs. Rundle, and the yellow sports from it, George Glenny and Mrs. Dixon, may be treated in this way. The plants to produce large blooms should now be rooted and growing freely in cold frames, the lights of which ought to be removed whenever the weather is fine; there is no such hurry to grow these on rapidly—a sturdy compact growth is best. *E. G.*

THE CINERARIA.

I have taken to grow this class of plants to a much larger extent than heretofore. They have been so much improved during the last few years, that a most brilliant display can be made with them from Christmas to the end of April, or even longer, and they can even be had well in flower a month earlier. I clear out the Chrysanthemums from the greenhouse, and fill it with Cinerarias, so that a plentiful supply of plants can be obtained for the conservatory or house decoration during those months. They are very easily grown if they can be kept free from greenfly. My plants are in all stages of development. Some are in full flower, while others are being shifted into their flowering-pots, a process which may be performed in any stage of their growth. Plants intended for exhibition, say in April, should now be in their flowering-pots. Eight-inch pots will do very well for large specimens. I have a few scores of large specimens in 8-inch pots, and the growths are now being trained out; this is necessary to admit light to the centre. When the large outer leaves are too much crowded together a few of them may be removed to allow the full development of the others; any specially good varieties may be raised nearer the glass than the general run of the ordinary stock. Mildew is at this season sometimes quite as troublesome as greenfly, but if destroyed in their earliest stages no harm is done to the plants. *J. D.*

HOME CORRESPONDENCE.

Outdoor Fruit Growing in South Lancashire.—I have read with interest Mr. Turner's letter on this subject (p. 150), and as I reside within six miles of Manchester I know a little of the district of which he speaks. In his communication he refers chiefly to Apple culture, on which head I venture to pen you a few lines. Mr. Turner calls attention to the absence of local fruit at the great show in St. James' Hall last autumn. But the reason for this is not far to seek, as they would have but little chance of success against such produce as was exhibited by the Messrs. Bunyard, Kent, or such as could be brought by others from the South. No one will dispute with Mr. Turner the beauty of the Apple tree and the orchards when in blossom; but if the fruit will not hold their own in the market, scant ceremony will be given by most cultivators to the ornamental properties of the tree. The uprooting of the old orchards in my opinion is only part of the progress of the times in fruit growing. I need scarcely say that as a rule the produce of this neighbourhood in Apples cannot compete against what can be grown in the South of England for quality. The only point for success that seems to me open to suit this part is the best selection of the early culinary kinds, if they are meant to pay. By this means the fruit will be marketed before the American crop can be placed against them. Grenadier is certainly a good early sort to grow, and with Lord Suffield, Cellini, Lord Grosvenor, Stirling Castle, Ringer, and Hawthornden, are some of the best kinds in this respect with which I am acquainted. A good number of inferior kinds are grown in this district as there are in many other parts of the country and the sooner these are replaced by the best kinds an improved state of things is sure to follow. I will venture to suggest that if each provincial horticultural society in autumn were to offer liberal prizes for say the best six kinds or for collections of Apples named at their shows, it would tend very much to bring the best sorts to the front and to popularise them for more extensive planting throughout the country. *R. M., Cheadle, Cheshire.*

Some Palms for a Cool House.—Cocos Weddelliana is generally regarded as a stove subject, but here it stands well in our fernery, where the temperature during winter is seldom above 45°, and often on frosty nights drops 5° or 10° lower. In a higher temperature plants of it are very liable to be spoiled by red-spider, but in a cool atmosphere they remain fresh and green the year round. Areca lutescens, which is considered a much hardier Palm than the one mentioned, is dead already, and I have tried it again and again, and find it will not endure cold like the others. Chamærops Fortunei is quite hardy in a sheltered spot, where we have several plants out, one of which flowered last year. For outdoor ferneries this Palm is valuable, as, when placed in a proper position, it forms a very striking object, the most suitable place for it being a raised knoll in loose soil near water, or where it can be kept moist at the roots. *J. S.*

Gloriosa superba.—A glorious thing, to be sure, hence its name, and one of the most useful stove climbers, as well as the most easy to cultivate that could be grown. Why so very few gardeners take it in hand is hard to understand. The bulbs are cheap, and if about half-a-dozen are grown in a 13-inch pot they would make a beautiful object, or if trained up a pillar, or against the back wall of an ordinary stove, it has a pretty effect. To grow it well the bulbs should be potted about the middle of March, in a compost of two parts good fibry loam, one part peat, one part well pulverised cow-manure broken up roughly, and a sprinkling of silver-sand and charcoal. The pots should be well drained, and the compost filled in to within 3 inches of the top; then place the bulbs regularly over the surface, with the crowns a little elevated, and cover up to within half an inch of the rim. Very little water is required until the stems appear above the surface, which will be in about five weeks' time after being placed in heat. Water should be gradually increased as the pot fills with roots, and if an occasional dose of weak liquid manure be given, all the better; an abundance of flowers will be the result, most useful for vases and all kinds of dinner-table decorations, for which purpose it is

well adapted. In November the plants will be somewhat exhausted, and the stems show signs of ripening off, when water should be withheld by degrees until the stems may be removed altogether; then turn the new bulbs out of the pot, place them in a shallow box, covered with silver-sand, and keep dry in a temperature not below 60°, there to remain until the usual time of potting comes round. Purchasers should be careful to have the true variety, as there is a spurious one sold under the name of superba with scarcely any colour. Gloriosa Plantii is also very inferior. *George Smith*, 146, *Clifton Street, Old Trafford, Manchester.*

Celosia pyramidalis coccinea.—This is an effective decorative plant, the scarlet plumes of which are very telling when associated with dwarf flowering plants and Fern Pteris tremula. It may be had in flower pretty well all the year through by sowing a pinch of seed in January, and again in August. As soon as the seedling plants appear through the soil, the pan containing them should be placed on a shelf near the glass to ensure a sturdy growth, and as soon as the little plants are large enough to handle they should be pricked out in well-drained pans or boxes about 2 inches from plant to plant in soil consisting of three parts light sandy loam and one of leaf-mould, watered, and again be placed in heat near the glass, and shaded from bright sunshine until the roots have taken the soil, when it should be discontinued. These plants will afterwards lift with nice balls of soil adhering to their roots, to be potted in 48 and 32-sized pots, and should be moved before they become crowded in the pans and boxes. After this the plants should be kept close for a few days until the roots have pushed into the fresh soil, after which they should have sufficient fresh air admitted to prevent them from making a weakly growth, and should be grown on into flowering plants without experiencing any check during the various stages of growth. *H. W. W.*

Chrysanthemum Boule de Neige.—Having obtained last spring from Mr. Owen, Floral Nurseries, Maidenhead, fifty cuttings of the new white Chrysanthemum Boule de Neige, I can speak most highly of it as being one of the best late whites grown for market growers, florists, or gentlemen's gardeners requiring quantities of cut bloom at Christmas. Either planted in the open ground or grown in pots, it requires no support, being of a dwarf habit. Taken indoors in October it commences to bloom at Christmas, each plant bearing from four to five dozen blooms, suitable either for church or drawing-room decoration, the blooms being pure white, reflexed. Those who grow it one season will increase it very much the next. I know of no variety that will give the same quantity of bloom in so small a space. It has obtained two First-class Certificates, and must not be confounded with the Japanese variety being sent out under that name. *J. Hamlin, Bletchley Nursery, Bucks.*

The Horticultural Veterans of Thirty Years ago.—Mr. Peed does well to recall the memory of some of the more notable of those at p. 151. Truly there were cultural giants in those days—men full of faith and of power, whose practical achievements have seldom been equalled, never excelled, in modern times. I had the privilege of meeting not a few of those named by Mr. Peed, and of seeing their products long, long ago, at the great Chiswick shows, and the memory of the men and their doings has proved the stimulus of my life. I was a young man when I first visited Chiswick, and, like most provincial young men, doubtless thought more highly of myself and provincial doings than I ought to have thought. But the first Chiswick show, and the converse with some of its leading exhibitors, nipped these fancies in the bud, and has kept me at the feet of the wisest and the best in the profession through a long life. But I cannot help remarking that to a great extent we seem to have lost the concentrated enthusiasm of such plantsmen as those named by Mr. Peed. Not a few of them seemed possessed by their plants. In and for them they almost lived, moved, and had their being. Each great exhibition was looked forward to and prepared for as a great battle, the issues of which were looked upon as almost matters of life and death to the professional reputations of the great plantsmen. Nor was this enthusiasm at white-heat confined to plantsmen; fruit growers were equally in earnest, and it was a sight to see such men as Barnes, of Bicton; Mills, of Gunnersbury; Paxton, of Chatsworth; Spencer, of Bowood; Fleming, of Trentham, and many others, setting up their Pine-apples, Peaches, and Grapes: and these are but a few prominent figure-heads among the great fruit growers that lived and worked abreast of many of the older plantsmen; whilst as a cultivator, botanist, and writer, good honest Donald Beaton, so long the ruling spirit at Shrubland Park, and such a familiar figure as a juror at the early London exhibitions, was a whole host of knowledge and enthusiasm in himself. He was indeed a great light to many of us younger men, and never wearied in his endeavours to fill the young with his rich stores of knowledge, and fire them with his enthusiasm. Most, though not all of these cultural giants have left us. While, however, Mr. Thomas Baines remains to us, though of a later date than most of those named, the race of great plantsmen will not become extinct. But most of them have gone past recall. But were Mr. Peed, Mr. Baines, and others who admired their deeds and must feel something akin to reverence for their memory, to give us a brief record of their struggles and successes, it could not fail to stimulate some of the younger men amongst us to emulate their enthusiasm, and mayhap match their achievements. *D. T. F.*

American Blight.—It will be well for your correspondent, "L. W.," to try the preventive I mentioned in these pages a year or two ago, as having answered so well in my own case. This consisted of simply placing a layer of soot all round the bole of each tree. Soot is so abundant generally that a goodly layer of it might be so used. It was placed in contact with the boles; subsequently rain came and gave to it a hardened surface, and it remained as placed all through the summer. I inferred that as the parent insects hybernate in the ground beneath the tree and come forth to reascend it about the month of May they found the soot at such time too objectionable either to go through or crawl over, and therefore avoided the trees. When trees are infested with the insects I have used crude paraffin with a painter's brush over the infested parts. It takes a severe remedy at such a time to dislodge the insect, and no perceptible injury seemed to be done to the trees. *William Earley.* [The insect-wounded parts should be well brushed out previous to applying the remedy. ED.]

Aëranthus Leonis.—In "J. D.'s" remarks on the above he appeared to suggest that the treatment recommended by Mr. Williams is not quite correct, and suggests the addition of peat. I have ascertained that the plant figured in the *Album* was grown exactly as stated, viz., with charcoal, sphagnum, and plenty of crocks. It was freely watered and hung close to the glass in the Cattleya-house from the time of importation to its flowering. As the plant was one of the first shown at Kensington, ten others under the same treatment blooming somewhat later, I do not think the treatment can be far wrong; at the same time six others were potted with peat in addition, but they certainly have not progressed as well as those first mentioned, as not one of them has yet shown bloom, neither have they rooted so freely. Several plants are again showing spikes apparently much stronger, one showing seven buds as against four. Doubtless, when thoroughly established they will become more like the plate published by you. The time has, in my opinion, been too short to fully learn the best mode of treating this acquisition, and to those who have not the opportunity of visiting other collections your paper might afford a ready method of exchanging notes on the success or failure of Aëranthus Leonis, thus rendering valuable information to all. *St. George.*

Lælia anceps.—Mr. Douglas made some statements last week in the *Gardeners' Chronicle* respecting the specimen which I sent to the committee meeting of the Royal Horticultural Society last month, which are misleading. He says:—"The back bulbs had not been removed for at least six years." Surely this must have been a slip of the pen, for six such bulbs have been cut off during the past three years. This could have been easily discovered on examining the specimen. But he says also that the plant was "exhibited to illustrate the pruning system, which it failed to do, because it had not been pruned." I must endeavour to refute this charge. The specimen was really sent up to obtain whatever award the committee might be pleased to give it. And as I hold the opinion that good cultivation requires the removal of old leafless bulbs I had removed all such except one from this specimen, and also from its parent (if I may use that term). I stated this on a card sent with the plant. The committee awarded a Cultural Commendation, of which Mr. Douglas approved, and I am satisfied, my point being gained. The removal of the old bulbs is not a new discovery of mine, for I have practised it for over twenty years on the same Orchids and on this Lælia for thirteen years. But it is not yet twelve months since writers in these pages condemned the practice in very strong terms. I need, therefore, notice the remarks of Mr. Douglas on that subject no further. *N. Blandford.*

Life is Sweet.—Here is something for a young gardeners' debating club. About eight years ago I cut down some Elders (S. nigra) close to the ground, and leaving the roots in the soil. Some branches of one had been laid on the top of a dry stone dyke. Gradually all the bark fell off, but still there appeared a little tuft of green leaves. Last summer, a beast grazing in the adjoining field ate off the leaves, and I thought life was gone; but before autumn the little green hopes had renewed themselves, though of smaller size. Here is a branch of a tree which has lain eight years entirely detached from the earth, and is still putting forth green leaves. Is it dead, or is it alive? The secret is this. The leaves arise from a short stalk growing out of a node; and from the base of this node there issues what must have been a vascular bundle, now covered with a fresh bark, going down quite detached from the branch, into the crevice made by the furcation of another limb of the branch. This bundle is about 8 inches long. I presume it must perform the functions of a root, and find some moisture in the crevice. But no part touches the ground; the branch is lying horizontally on the top of the wall. Is it dead, or is it alive? [Alive.] *A. S. W.*

Eucharis amazonica Planted Out.—In your last week's issue, at p. 181, Mr. Macdonald seems to have grave doubts as to the truth of my statement respecting growing Eucharis successfully planted out, which I cannot allow to pass unnoticed. He is not obliged to adopt this system if it does not suit his ideas, but why he should so condemn it without having given it a trial I am quite at a loss to understand. I have given it a fair trial of nine years, which ought to speak for itself; and I still maintain that it is the best way of growing them for cutting purposes, whatever Mr. Macdonald may say to the contrary. Some of my gardening friends have seen these in full bloom, and some few have adopted this system of growing them. I have also good healthy specimens that flower freely in pots for house furnishing, but they do not yield the quantity of bloom that those planted out do. I had no intention of leading any one to suppose that they had not been thinned out for nine years, as he will see if he refers to my notes. I meant to say that they had not been transplanted: the small bulbs have been drawn out and a top-dressing of fresh soil applied, as I stated before; and while they continue in their present state of good health I have no intention of disturbing them. I maintain that the same bulbs will bloom twice and occasionally thrice in the year grown in this way. They are growing in a plant stove in borders 12 inches wide by 7 or 8 inches deep of soil, with good drainage, close to the hot-water pipes, and are in the best of health. They have their periods of rest, as those in pots have, by withholding water and syringing sparingly. I have to supply a large demand for cut flowers for a nobleman's family, when in residence here, London, and other places, and they can always appreciate a large quantity of Eucharis flowers at any time of the year, and consequently can scarcely have too many of them. *Edward Ward, Hewell Gardens, Bromsgrove.*

—— In reply to Mr. Macdonald's doubts on this subject in your issue of last week, p. 181, I can fully endorse all that my brother stated, Eucharis having been grown by myself and my father before me in these gardens. I can only say that they grow and bloom far more freely treated in this way than when in pots. *A. Ward, Stoke Edith Gardens, Hereford.*

Reports of Societies.

ROYAL HORTICULTURAL: February 9

Scientific Committee.

Dr. M. T. Masters in the chair. Present: Rev. G. Henslow, G. S. Boulger, Dr. Lowe, R. J. Lynch, K. McLachlan, A. D. Michael, J. O'Brien, F. P. Pascoe, A. H. Smee, Hon. and Rev. J. T. Boscawen, G. F. Wilson.

Camellias and the Frost.

The Hon. and Rev. J. T. Boscawen exhibited sprays of plants grown in the open, and which had been subjected to ten or more degrees of frost, in which the second and third year's leaves were browned, but last year's were perfectly green and untouched. The same fact had been often before noticed at Lamorran, and at Pentilly—a much milder locality than the former. The cause was presumed to be the relatively lessened vitality of the older leaves, though normally they remain on from three to four years. Dr. Lowe alluded to an instance of a plant (a single-flowered kind) which had been much injured in transit, and was planted early in the summer. It threw out foliage, which has stood all the frost of the present winter. Dr. Masters alluded to the fact that some young Lime trees transplanted last autumn, and which had shed their leaves, threw out fresh ones, which likewise had withstood the frost. Both these facts, therefore, would seem to corroborate the view that the vitality of the young foliage was so strong as to resist the effects of the late frost, to which the older leaves of two years had succumbed.

Peach-wood Injured.

Mr. Wilson exhibited a specimen of wood in which the dissolution had occurred between certain years' growths, similar to the so-called "shaky timber."

Catasetum tabulare.

Mr. O'Brien exhibited a blossom of this flower, remarkable for its resemblance to the opened mouth of a snake, the two "antennæ" resembling the fangs, while a thick tongue-like elevation occurred down the middle of the labellum.

Phalænopsis Stuartiana.

He exhibited a spray of this variety raised by Major Lendy, to show the permanency of the peculiarity of the petals commencing to assume the characters of the labellum in bearing a similar, though much reduced process on the centre, and by being more or less spotted instead of pure white, as in the original form.

Aspidium falcatum.

He showed fronds of this species, raised from spores of a sport, with a yellowish-green tint, and which had preserved this peculiarity. It was raised by Mr. Naylor of Roxeth, Harrow.

Euonymus japonicus with Cocci.

Mr. Maclachlan exhibited leaves attacked by and covered with minute white cases of Chionaspis Euonymi. It is said to prove very destructive at Montpellier, and elsewhere in South Europe. The majority of cases were of males; very few of those of females being present amongst them.

Haricot Attacked by Aleyrodes.

He also showed leaves of this plant badly attacked, and which was said to almost threaten the extinction of the Haricot abroad. We have one species on the Cabbage and others on other plants. (See figs. 41—43.) The best remedy, he thought, would be Pyrethrum powder thrown on the under-side of the leaf, which alone appeared to be attacked.

Leaves and Dew.

Mr. Smee read an interesting communication on some observations he had made during nineteen days upon the relative amount of dew deposited on leaves of different plants last summer. He observed the Quince, Syringa, Brussels Sprouts, Peach, Rose, Mulberry, Evening Primrose, and Dahlia, at seven in the evening and again at nine in the morning. It appeared that the leaves of the Quince and Mulberry are always the last to be coated with dew, and are never very wet at any time. Dahlias and Brussels Sprouts become coated with dew sooner than any other plants; while in the former, drops of dew hang from the points of every leaf. The leaves of the Peach, Rose, and Evening Primrose are never so wet as those of the Dahlia, but always had more moisture deposited on them than had those of the Quince and Mulberry. Mr. Smee also exhibited a table giving the atmospheric conditions in his garden on the days of his observations. The plants were all similarly situated as to exposure, and were, as far as practicable, growing in close proximity to one another.

Colletia bictonensis on C. spinosa.

Mr. Burbidge sent a specimen showing the specific identity of Colletia cruciata (bictonensis) and C. spinosa. The very interesting history attaching to these plants is given in *Gardeners' Chronicle*, Feb. 23, 1878, from which our fig. 40 is taken.

Banksia australis Raised from Seed.

Mr. Henslow exhibited a flowering spike from a plant raised from seed which had been kept twenty years. The plant was at present about 3 feet high.

Plants Exhibited.

Mr. T. J. Lynch brought five specimens of Juncus acutus. It was remarked that butterflies occasionally impale themselves on the sharp points of the erect leaves. He also showed sprays of the uncommon scarlet Salvia boliviana, Acacia cyclopis, remarkable for the long scarlet funicle which is wrapped round the seed; this ultimately uncoils, and the seed is thereby suspended out of the legume. It was suggested that this might tend to mature the seed in the sun, or to attract birds. Euphorbia punicea, with leaves gradually passing into coloured bracts, as in Poinsettia, Acacia platyptera, with remarkably pale-coloured yellow flowers.

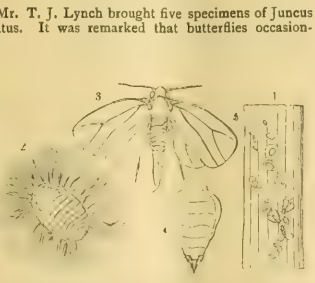


Fig. 41.—Aleyrodes cocois: from the cocoa-nut palm.



Fig. 42.—Aleyrodes.

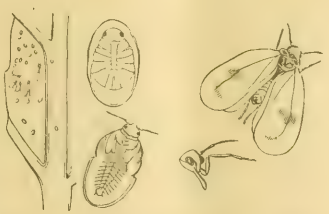


Fig. 43.—Aleyrodes proletella: from the cabbage.

Floral Committee.

Present: G. F. Wilson, Esq., in the chair; Dr. Lowe, and Messrs. J. Douglas, B. Kellock, E. Hill, J. O'Brien, H. M. Pollett, J. Dominy, H. Ballantine, A. Lendy, R. Dean, W. Holmes, H. Herbst, W. Wilks, H. Bennett, G. Duffield, J. Laing, J. Walker, G. Paul, T. Baines, H. Turner, and H. Cannell.

Evidences of the return of another season were visible in the handsome collections of Cyclamen; to be especially noticed were those hardy species from Mr. Ware's nursery, and likewise the species of Iris from the same home of good hardy things. A few Orchids were drawn from their warm houses to figure in the ungenial atmosphere of the conservatory at South Kensington.

Mr. Ballantine, gr. to Baron Schroder, The Dell, Egham, showed Cattleya Trianæ Schroderiana, a large plant, with four flowers of great beauty, the rich purple lip and orange-coloured throat being very noticeable points. From the same garden came Cattleya Trianæ Russelliana, having thirteen fine large flowers conspicuous for their rich colours.

Mr. Noakes, gr. to Dr. Duke, The Glen, Lewisham, brought a plant of Cattleya Lawrenceana, with one or two blooms open; a C. Dukeana, a pale form, with the tube of a deeper tint, the colour of the lip suffusing neighbouring surfaces.

From the select collection of H. M. Pollett, Esq., Fernside, Bickley, came a Cattleya Measuresiana, with three flowers, not by any means a flower to excite any enthusiasm; and Odontoglossum Schillerianum, also a very fine variety of C. Trianæ.

Mr. Haywood, of Woodhatch Lodge, Reigate, sent a quantity of cut blooms of various Orchids, viz., Cattleya Trianæ, of small size, having pale coloured petals and sepals and a well tinted lip; C. T. virginalis, almost a pure white flower, there being merely an orange stain in the throat; C. T. Countess, is a prettily frilled-lipped variety, with much rich colour; C. T. Bellina, a small pale flesh-coloured variety, the purple patch on the lip being triangular in shape; C. T. Juno, a beautiful form, having deep coloured markings.

Mr. J. Douglas, gr., Great Gearies, showed a four-branched spike of Odontoglossum cirrosum, receiving a Cultural Commendation.

Mr. Jenkins, gr. to Mr. Measures, Camberwell, showed a new species of Cypripedium from Borneo. The flowers are generally of a coppery hue, intermixed with some green, the dorsal petal being of that colour; the flowers are borne on a stalk of about 20 inches in height, and the foliage as seen was dwarf, erect, and spotted with whitish-green circular spots on a dark green ground. From the same garden was observed Cattleya Trianæ Ernestii, interesting for the markings which are both uncommon and pleasing, the petals being tipped with rosy-purple, and the sepals have a central stripe of the same colour, the lip being of a richer tint.

G. F. Wilson, Esq., Weybridge, showed a good spike of Phaius tuberculosus, obtaining a Cultural Commendation.

Messrs. Heath & Co., Cheltenham, showed a pretty group of Odontoglossum Roezlii, amongst them being two perfectly white forms. The plants were well flowered. A Bronze Banksian Medal was bestowed. The same exhibitor sent a new species of Ficus, with dark green acuminate leaves; and Arum palæstinum, a plant with green foliage, and a dark velvety-brown spadix and spathe.

Nevile Wyatt, Esq., Bath House, Cheltenham, showed a bloom of Cattleya Percivaliana.

Mr. Thomas Ware, Hale Farm, Tottenham, showed Iris reticulata, I. r. cyanea, the latter a pale blue, and still rare; I. stylosa, also a pale blue; two forms of Crocus Imperati, C. I. longifolia being decidedly the brighter. Snowdrops were shown in variety, including Galanthus Elwesii, G. plicatus, and G. latifolius; the hardy Cyclamens, as C. Atkinsi, C. A. purpureum, C. A. alba, C. coum roseum, C. c. album; Primula erosa, P. floribunda, the pure white Narcissus monophyllum, a gem to grow at this season in a frost-free frame, came likewise from Mr. T. Ware.

Messrs. Collins & Gabriel, 39, Waterloo Road, London, brought for this period of the year that which may be called a large collection of varieties of Narcissus, receiving a Silver Banksian Medal for them. We noticed princeps, incomparabilis plena, poeticus ornatus, corbularia in variety, triandrus, pallida præcox, albus, aurantius, and several others.

The St. George's Nursery Company, Hanwell (manager, Mr. Smith), exhibited a group of Cyclamen of more than usual merit, to which was awarded a Silver Banksian Medal.

Mr. C. Turner, Royal Nurseries, Slough, exhibited twenty-five large well grown Cyclamen, of a good type of white—a Bronze Banksian Medal being awarded.

From Messrs. Cannell & Sons, Swanley, there were two boxes of Primula blooms, showing well the marked advance made in form and colour in these favourite flowers. Some Primulas in pots were likewise shown by this firm, one of which, P. sinensis Improvement, was considered to be the best. It is identical in colour with Swanley Red, but it is a larger bloom than that kind.

Primulas in pots were brought from the Royal Horticultural Society's gardens, Chiswick, to illustrate the differences that are exhibited by plants raised from identical varieties by seed. The best forms were of good quality, whilst a few reverted to types that were the common ones of twenty-five years ago. Single flowered Camellia blooms in white, red, and striped forms, were shown, with their foliage, by C. Scrase Dickens, Esq., Coolhurst, Horsham.

Messrs. P. Barr & Son, Covent Garden, exhibited Galanthus Elwesii, very pure in colour, and a small collection of Hellebores—Mrs. Tyerman, a much spotted variety of H. guttatus, was the handsomest. The others were H. guttatus, H. g. subpunctatus and H. colchicus var., the last-named having rich purple blooms.

Mr. F. Ross, gr. to Sir G. Macleay, Pendell Court, Bletchingley, showed a fine specimen of Bromelia macrodosa, measuring 3 feet in diameter, measured across the mass of foliage. The plant is conspicuous for its pendent cherry-red bracts, on a stalk 1 foot in length, the yellowish small flowers being inconspicuous.

A few Cinerarias from Mr. J. James, Woodside, and Mr. Woolford, East Thorpe, Reading, conclude the floral exhibits.

FIRST-CLASS CERTIFICATES.

To Messrs. Barr & Son, for Galanthus Elwesii.

To Messrs. H. Cannell & Sons for Primula Improvement.

To Mr. Ballantine, for Cattleya Trianæ Schroderiana.

To Messrs. Heath & Son, for Arum palæstinum.

To R. H. Measures, Esq , for Cattleya Trianæ Ernestii.

To Mr. T. S. Ware, for Galanthus Elwesii, Primula floribunda, and for Iris reticulata cyanea.

Fruit Committee.

Present: Harry Veitch, Esq., in the chair; Messrs. T. B. Haywood, R. D. Blackmore, James Smith, J. Woodbridge, W. Denning, J. Willard, G. T. Miles, Harrison Weir, P. Crowley, J. Bennett, Wm. Paul, G. Bunyard, and R. Hogg.

The chief feature of this department consisted of three collections of Apples from Messrs. G. Bunyard & Co., Maidstone, who sent 100 dishes; from Messrs. T. Rivers & Son, Sawbridgeworth, who sent a collection of 150 dishes; and from Messrs. J. Cheal & Sons, Crawley, Sussex, who exhibited about 70 dishes of Apples and one or two of Pears. It was to be remarked how well several varieties had been kept, such as Stirling Castle, which usually soon goes off; Cox's Pomona, Lord Derby, Tower of Glamis, Warner's King, Cellini, King of the Pippins, Calville Blanche, Manx Codlin, Blenheim Orange, Yellow Ingestre, besides several other equally noteworthy sorts. The collections which came from Messrs. G. Bunyard & Co. and Messrs. J. Cheal & Sons were noticeable on account of the size and fine condition of the fruit, while that of Messrs. T. Rivers & Sons was interesting on account of the great number of peculiar varieties which were shown by this firm. The committee awarded a Silver Banksian Medal for each of these collections. Other exhibits came from Mr. J. Wells. Fern Hill, Windsor Forest, who showed two dishes of Pears, Catillac; the fruits were from two trees grown on different soils—one on clay, and the other on a light sandy soil; the fruit from the latter tree was of a fine golden colour, with one side bright red, and had a more tender flesh than those from the former tree, which were of an almost uniform green colour. We should imagine that the one tree had more exposure to the sun from being on higher ground, or having fewer leaves on its branches, for it hardly seems possible that soil could make so vast a difference as the two fruits exhibited. The committee desired to know on what stocks the trees were, and awarded a Vote of Thanks. From the same person came a basket of Cooper's Black Grape grafted on Trentham Black, to show its keeping qualities. These bunches, which the exhibitor stated had only been cut the night before the show, were of a clean appearance, and well preserved. Mr. Wells obtained Votes of Thanks for both these exhibits. A Pear, Bergamotte d'Esperen, was also shown by Mr. Wells, but was overripe. Mr. Draper, Seaham Hall Gardens, Sunderland, sent a Kale, Draper's Seedling, which was referred to Chiswick for trial.

Seedling Apples were exhibited by Messrs. C. and J. W. Townsend, Fordham; E. Collins, Stourport; and J. Corderoy; and named varieties were shown by Messrs. G. Bunyard & Co., who sent Smart's Prince Arthur and Jacob's Apple; Mr. R. Dean, Ealing, Hambledon Deux Ans; and Mr. J. Crowley, Didcot, Golden Drop. None were thought to be worthy of recognition by the committee.

The Annual Meeting.

The annual meeting of the Society was held on Tuesday afternoon, the 9th inst., in the Albert Hall, Sir Trevor Lawrence, M.P., the President, in the chair. There was a fair attendance of members.

The CHAIRMAN, commenting on the report printed at p. 199, said there was a serious curtailment of the privileges of past years, inasmuch, as the tickets of admission were not now transferable. He believed that that was the only difference in the rules, but of course the difference was of very considerable importance. The delay in communicating the decision of the Commissioners had not been due to the Council of the Royal Horticultural Society. Several alternative propositions had been placed before the Council of the Royal Horticultural Society by the Commissioners of the Exhibition. He believed that the explanation of the matter was that in past years, especially last year, having regard to the very serious expense which the Commissioners had to incur in the maintenance of the gardens, and the exceedingly unfortunate nature of the autumn, the Commissioners were anxious to carry out the Exhibition this year on as economical a scale as possible. Of course, they referred the matter to their Finance Committee, which body did not feel that it was able to recommend that tickets given to the Fellows of the Royal Horticultural Society should be transferable, as in past years. Acting on behalf of the Fellows, the Council had done its utmost to shake the determination of the Commissioners, but without success.

THE INTERNATIONAL EXHIBITION.

The Council of the Royal Horticultural Society summoned two meetings in the autumn of last year, to consider proposals which had been placed before them with regard to the holding of a great International Horticultural Exhibition and Conference in the year 1887. He believed it was universally felt that very serious financial responsibilities would devolve upon the Society if it undertook the carrying out of such a scheme. At the same time, the horticulturists throughout the land expressed their most anxious desire that there should be an International Horticultural Exhibition and Conference in 1887, it being twenty years since the last took place in this country, during which time the progress in horticulture here had been enormous. If it had been possible to arrange such an exhibition and conference on a satisfactory financial basis, the Council had reason to believe that they would have had the support of the entire body of professional and amateur horticulturists throughout the length and breadth of the kingdom. He thought the matter might be considered as in abeyance only, and by no means abandoned. He thought there might be ways by which the financial difficulties might be overcome. The Council, however, did not consider themselves in a position to undertake such a scheme unless some other institution undertook what he might call the public entertainment, in the way of illuminations, bright colours, bands, and fountains, which the people were now accustomed to see.

THE YEAR'S WORK.

With regard to the past he thought he might say that the Orchid Conference held last May had been a great success, and nothing had been more remarkable in the way of skilful horticulture than the advance in connection with the natural order of Orchids, both in number and variety; and he believed it would have been impossible to have got together in any part of the world such a collection of Orchids as was there shown. A very large number of Orchids were shown in fruit, and he dare say that many members of the Society had since that time seen portraits of the fructification of Orchids in several horticultural journals. When it was considered how rapidly all parts of the tropics were being investigated with a view to the collection of natural species of Orchids, the raising of artificial varieties was what they rejoiced to see. At the Conference a number of interesting papers were read, including three communications from Professor Reichenbach, and a valuable memoir on the hybridisation of Orchids by Mr. H. Veitch, based on original observations. The Orchids were seen by H.R.H. the Prince of Wales, the Duke and Duchess of Edinburgh, and a very large number of Royal and distinguished personages. He believed the shows of Orchids and other flowers formed a very prominent and attractive feature to the Exhibition of last year. Then they had a very successful Pear Conference, at Chiswick, following the Apple Conference, and he thought they could claim a certain degree of national importance for this exhibition.

SMALL FARMS.

In these days the attention of persons who cultivated the soil was being more and more directed to the cultivation of vegetables, and endeavours were being made to supply the place of other crops which no longer held their own against foreign competition in this country. He thought it was almost a misfortune that the Society was not also able to interest itself in dairy farming and poultry farming. These were subjects which were of very great importance at the present time, and if there was some society in a prominent position more able to interest itself exclusively in the study of them than the Royal Horticultural Society could do, it would be a great advantage to the country.

THE PEAR CONGRESS.

With regard to the Pear Conference, he believed it was a very great success, and the collection of Pears was of a very remarkable kind. The season, fortunately, was very favourable for the production of Pears. The report of Mr. Barron would be a very valuable addition.

THIS YEAR'S WORK.

The Society had been doing all it could to help the Colonial and Indian Exhibition, which was to be held during this year, by taking charge of any Ferns or other plants that might be entrusted to it, and by doing everything in their power to bring them into a state for exhibition. A great deal of labour and expense had been gone to, and it was possible to bring them to a good state. It would be exceedingly difficult for any other Society to have undertaken the work which this Society had been able to do, and he thought it would be found that the Society had done good service in thus assisting the forthcoming Exhibition.

Then they were to have a Primula Conference in April next, around which a great deal of interest centered both here and abroad. He was sorry nothing had been done with regard to the question of nomenclature of Orchids. The subject was one of great intricacy, but the present system was exceedingly faulty. He did not see any advantage in calling plants after private individuals.

The series of Exhibitions which had been held in the Royal Horticultural Gardens, he believed, absolutely terminated this year. So far as he was aware there was no definite or even indefinite idea with regard to the future disposal of the gardens. In fact, they were being so encroached upon by buildings in various directions, that he believed that before many years were passed the gardens would be cut through by roads. However that might be, it was not a position for a society like theirs, that had any regard for its dignity and usefulness, to continue to occupy. He believed that the interest in horticulture in the kingdom, and the number of persons who took a real and serious interest in the study, was increasing every year. In no part of the world that he was acquainted with was there so much done with horticulture as in this country, and if their Society were established on a more satisfactory basis, he believed that the horticultural interest in this country was amply sufficient to support and maintain it in a way which would be creditable to horticultural science. Owing to their connection with South Kensington they were more or less at the beck and call of everybody. The Council, or certainly the large majority of the members, were dissatisfied with the present position, and they would be glad to hear any suggestions from the gentlemen or ladies present in order to place the Society upon a thoroughly satisfactory basis for the future. He did not entertain the slightest doubt that the known vitality of the Society was so great that it would overcome all difficulties which had fallen upon it owing to its connection with South Kensington. Before sitting down he would mention another matter of interest.

THE LIVERPOOL SHOW.

The Council had arranged for the provincial show to take place this year at Liverpool, and they had received an invitation from the Mayor and Corporation of Liverpool, who had placed the Botanic Gardens, and he believed a park, at their disposal. They had reason to believe that the show would be a great success.

Mr. LIGGINS said he should like to ask, before the report was adopted, how it was that the Assistant-Secretary had been appointed, as he had been given to understand that the Society could not afford a salary. He thought some explanation was necessary.

The CHAIRMAN said he was glad to be able to give a perfectly satisfactory answer. They found that the work of the Society accumulated so rapidly that it was absolutely necessary that the Secretary, who, he would remind them, was unpaid, should have assistance. The larger part of the salary of the Assistant-Secretary had been subscribed by members of the Council and their friends, so that, although they had the advantage of the services of the Assistant-Secretary, the burden which fell on the Society was a very small one.

The Rev. WOLLEY DOD moved the adoption of the report.

Mr. E R. JOHNSON seconded the motion,

The CHAIRMAN here announced the result of the scrutiny, and added in regard to the auditors that the Society was very much indebted to them for their services, which were unpaid by the Society. He would like to be allowed to convey the acknowledgements of the Council for the services rendered by Major Mason, who retired from the office of Secretary and did not seek re-election. Before he sat down he should like to say a word as to what the last speaker had said about small farming, as he thought he must have been misunderstood. It was a pity that there was not a society to take in hand the small farming industries of the country. The hands of the Royal Horticultural Society were abundantly filled in dealing with the scientific aspects of the questions brought before the Council, and he should be sorry to see the Society undertake anything else. The adoption of the report had been proposed and seconded, and he would couple with it a vote of thanks to the auditors and the retiring Secretary.

The report was adopted unanimously.

The CHAIRMAN said he could not sit down without expressing the grateful sense the Society entertained of the services of their Superintendent, Mr. Barron. Mr. Barron was essentially the right man in the right place, and it was quite impossible to overrate his services.

Mr. BOWYER asked if the arrangement as to the non-transference of tickets was final? If so, it was exceedingly unfair to those who, like himself, had been induced to become members, and had paid their money. He did not blame the President in any way, but he thought a decided stand should be made against such action.

The CHAIRMAN said the Council had felt that very strongly, and had represented the matter to the Commissioners of the Colonial and Indian Exhibition. They were absolutely immovable, and the matter was disposed of on entirely financial considerations. The Council did its utmost to get the Commissioners to reconsider their decision.

TICKETS OF ADMISSION.

The SECRETARY (Major Mason) explained that every effort was made to get the old privilege restored, and he could assure them that it was the earnest desire of the members of the Council to have the transferable tickets again. He thanked them for their acknowledgment of his past services, and testified to the admirable and energetic services rendered by Mr. Dick. He was quite sure that the Society under its present officers must thrive.

Mr. SMEE said he would like to move that it be an instruction to the Council that they should, at as early a date as possible, get clear from the Royal Commissioners at South Kensington, and obtain elsewhere suitable premises to hold their fortnightly shows.

The CHAIRMAN observed that the matter would not be lost sight of.

A hearty vote of thanks was then accorded to the President, and the compliment having been briefly acknowledged the meeting separated.

MANCHESTER HORTICULTURAL IMPROVEMENT SOCIETY.

CULTURE OF ORCHIDS.—The fortnightly meeting of this Society was held on the evening of February 4, in the Memorial Hall, Mr. Bruce Findlay, the President, in the chair. There was a large attendance.

Mr. W. Swan, the ex-secretary of the Society, read a paper on "Orchids and Orchid Culture." He said that he had given this class of plants considerable attention. He described to the meeting the mode of growth, structure, form of the flowers, and organs of fertilisation of Orchids, and then went on

to speak of the process of hybridisation, giving some of the results obtained by a persistent course of such interesting labour.

HYBRID ORCHIDS.

In looking over some statements and memoranda which he had made at various times he found that there are no less than 100 named hybrids in various collections at the present time. The greater number of these have come from the famous establishment of Messrs. Veitch at Chelsea, but at the same time many good things have sprung from other sources, the raisers of which in his judgment deserve much credit for attempting such labour, which, in some instances, have been rewarded with marked success. He mentioned three distinct batches of Dendrobiums which have appeared in this neighbourhood. The first, Ainsworthii, is now known to most people as a most beautiful and desirable as well as a valuable Orchid. Of the second batch, Leechianum, perhaps he ought to say little, but when it has been sufficiently increased, so that it may be sent out by those who have it now, it will prove itself to be far in advance of anything that has yet appeared, and will be eagerly sought after. He had had the pleasure of more than once seeing another batch of Dendrobium seedlings which have been raised in the Manchester district. He had no permission to speak of them further than this, that his heartiest congratulations were now given to the fortunate raiser, and he trusted that that gentleman may have the pleasure of watching and growing them for some time to come, so that by-and-bye he may have the delight of gazing upon a new and beautiful addition to this already rich and charming class of plants.

CULTURE.

But whether one is fortunate in raising and growing seedlings, whether one has a collection of plants that are established, grow in their regular season, and flower, or should one have to deal with newly imported plants, the course of treatment pursued is in a certain sense pretty much the same all round. Not that little seedlings must have the same treatment that should be given to newly-imported Cattleyas, or that a collection of Phalænopsis should be treated as one managed a batch of Dendrobiums. But still there is a sense in which cultivators must pursue a course of treatment somewhat similar to each other. People often spoke of the months of December, January, and February as the resting season, as though a cessation of growth and activity had taken place in the whole or greater part of the collection. This he considered to be a mistake; true, a few plants appear to be at rest, seem to be dormant, but activity and development are always present, although the changes, being less rapid and marked, do not strike us so forcibly as the more quickly-formed leaves and bulbs of the summer months. It is possible to have blooms of Dendrobiums always present in our houses, and where cut flowers are much in demand there is no class of plants that will give such variety and beauty as a select and well-grown group of these. Of course, to bring about this result much care and attention are necessary. Mr. Swan gave some practical hints as to the cultivation of Orchids. He was sure of this—that many grand specimens of useful and hardy species had been grown on the old-fashioned method, namely, by cutting out old and useless bulbs. He was quite willing to admit that good plants had, in some instances, been grown where severe pruning has been practised. He advised cultivators to be cautious in the use of the pruning knife. He did not advise an indiscriminate use of it, but on the other hand he did not set himself entirely against it. He also recommended a more discriminating use of the syringe. He impressed upon the meeting the absolute necessity for considerable care and discernment in the kind of soil procured for the plants. The moss should be living, free from litter, and such as will be most likely to grow when used amongst the plants. The best peat should be obtained, such as is full of Fern rhizomes and roots. The pots should be always clean when potting, and if they are quite new they should be dipped or watered once or twice before using them. The crocks also must be quite clean and free from any confervæ that may have adhered to them. But with every possible care and treatment some plants do not make the desired progress, nor are such favourable results obtained as the treatment given would lead one to hope would be the case. This probably arises from the fact that the conditions under which they grow in their native habitat are so imperfectly known to us that we often attempt to ensure success by adopting methods which are entirely opposite to the requirements of the plants. When this is the case the position of the plant in the house should be changed.

AN ORCHID SOCIETY.

Some discussion has taken place quite recently in the gardening papers as to the desirability of forming an Orchid society. Such an association might do much to bring growers and those who have a special fondness for Orchids occasionally into the company of each other. It might perhaps put a definite value on various plants when placed on an exhibition stage; he meant value from an exhibiting point of view. He, however, was not anxious to express very decided views upon the matter further than this, that if such a society be formed it should have a very broad basis. A fair number of growers from this district should be found among its members and also on the committee. He would hope also that as much as possible would be done to prevent such a society being ruled altogether by those residing in the metropolitan counties, and the opinion of country members should be accepted as readily as those in the South. *Manchester City News.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 10, 1886.

MONTH AND DAY.	BAROMETER: Mean reading reduced to 32° Fahr.	BAROMETER: Departure from Average of 16 years.	TEMPERATURE OF THE AIR: Highest.	TEMPERATURE OF THE AIR: Lowest.	TEMPERATURE OF THE AIR: Range.	TEMPERATURE OF THE AIR: Mean for Day.	TEMPERATURE OF THE AIR: Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 7th Edition: Humidity. Sat = 100	WIND: Average Direction.	RAINFALL.
Feb.	In.	In.	°	°	°	°	°	°			In.
4	29.99	+0.23	39.1	32.0	7.1	35.6	−3.3	33.9	94	N.W.	0.02
5	29.97	+0.21	35.2	30.4	4.8	33.0	−6.0	29.1	85	N.W.	0.00
6	30.00	+0.23	37.3	26.0	11.3	31.5	−7.6	27.4	83	N.; N.W.	0.00
7	30.31	+0.55	35.0	24.5	10.5	30.2	−8.9	21.0	67	E.; N.E.	0.00
8	30.50	+0.74	34.3	23.0	11.3	28.6	−10.5	27.3	93	E.	0.00
9	30.42	+0.72	33.0	20.0	13.0	26.5	−12.6	24.0	84	E.	0.00
10	30.26	+0.48	29.2	20.3	8.9	25.5	−13.5	24.5	93	Log	0.00
Mean	30.22	+0.45	34.7	25.2	9.5	30.1	−8.9	26.7	86	E.; N.W.	0.02

Feb. 4.—Dull day.
— 5.—Dull day.
— 6.—Fine bright morning, dull afternoon.
— 7.—Fine day, dull.
— 8.—Fine bright day.
— 9. Dull day, misty.
— 10.—Dense fog all day and night.

LONDON: *Atmospheric Pressure.*—During the week ending February 6, the reading of the barometer at the level of the sea decreased from 29.52 inches at the beginning of the week to 29.07 inches by 1 P.M. on January 31, increased to 29.64 inches by 5 P.M. on February 2, decreased to 29.54 inches by 9 A.M. on February 3, increased to 30.24 inches by 9 A.M, decreased to 30.08 inches by 5 P.M. on the 5th, and was 30.21 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.74 inches, being 0.11 inch higher than last week, and 0.21 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 46°.5, on January 31; on February 5 the highest temperature was 35°.2. The mean of the seven high day temperatures was 39°.6.

The lowest temperature was 26°, on February 6; on January 31 the lowest temperature was 35°. The mean of the seven low night temperatures was 31°.4.

The greatest range of temperature in one day was 11°.5, on January 31; the smallest, on February 3, was 4°.3. The mean of the seven daily ranges was 8°.2.

The mean temperatures were, on Jan. 31st, 41°.3; on February 1st, 36°.9; on the 2d, 36°.3; on the 3d, 33°.7; on the 4th, 35°.6; on the 5th, 33°; and on the 6th, 31°.5; and these were all below their averages by (excepting January 31, which was 2°.8 above) by 1°.7, 1°.9, 5°.1, 3°.3, 6°, and 7°.6 respectively.

The mean temperature of the week was 35°.5, being 0°.1 lower than last week, and 3°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 61°, on the 6th. The mean of the seven readings was 53°.8.

The lowest reading of a minimum thermometer placed on grass was 24°.2, on February 6. The mean of the seven readings was 29°.5.

Rain.—Rain fell on three days, to the amount of 0.49 inch.

ENGLAND: *Temperature.*—During the week ending February 6, the highest temperatures were 52° at Truro, 49°.5 at Plymouth, 46°.5 at Blackheath; the highest at Sunderland was 36°, at Newcastle 39°, at Bradford 40°.2. The general mean was 43°.5.

The lowest temperatures were 21°.5 at Cambridge, 22°.6 at Wolverhampton, 23° at Sheffield; the lowest at Leeds was 31°, at Liverpool 30°.8, at Newcastle 29°. The general mean was 26°.4.

The greatest ranges were 28° at Truro, 24°.7 at Plymouth, 23°.3 at Cambridge; the least ranges were 8° at Sunderland, 10° at Newcastle, 11°.1 at Liverpool. The general mean was 17°.1.

The mean of the seven high day temperatures was highest at Truro, 47°.4, at Plymouth 45°.9, at Bristol 42°.9; and was lowest at Sunderland, 33°.8, at Newcastle 35°.6, at Wolverhampton 38°.3. The general mean was 40°.1.

The mean of the seven low night temperatures was highest at Truro, 37°.1, at Plymouth 33°.9, at Bristol 33°.2; and was lowest at Wolverhampton, 28°.2, at Hull 24°.7, at Sheffield, 29°.7. The general mean was 31°.7.

The mean daily range was greatest at Plymouth, 12°, at Cambridge 10°.8, at Truro and Hull 10°.3; and was least at Sunderland, 4°, at Newcastle 5°.5, at Liverpool 6°.7. The general mean was 8°.4.

The mean temperature was highest at Truro, 42°, at Plymouth 39°.6, at Bristol 37°.7; and was lowest at Sunderland, 31°.5, at Newcastle 32°.6, at Wolverhampton 32°.9. The general mean was 35°.6.

Rain.—The largest falls were 1.17 inch at Plymouth, 0.95 inch at Bristol, 0.94 inch at Truro. The smallest falls were 0.01 inch at Newcastle, 0.02 inch at Sunderland and 0.11 inch at Cambridge. The general mean fall was 0.44 inch.

SCOTLAND: *Temperature.*—During the week ending February 6, the highest temperature was 41°.8, at Paisley; at Greenock the highest temperaturature was 38°.7. The general mean was 40°.3.

The lowest temperature in the week was 11°, at Glasgow; at Aberdeen the lowest temperature was 24°.6. The general mean was 17°.9.

The mean temperature was highest at Aberdeen, 33°; and lowest at Perth, 28°.6. The general mean was 31°.2.

Rain.—The largest fall was 0.58 inch, at Paisley; the smallest fall was 0.09 inch, at Edinburgh. The general mean fall was 0.23 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, February 8, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been fairer than that reported for some time past, especially over the southern and eastern parts of the kingdom. Some snow, sleet, or rain has again fallen in most places, but, excepting over Ireland, the amount has been small.

The *temperature* has been below the mean in all districts, the deficit ranging from 2° in Ireland to 5° or 6° over the whole of England. At all our more western and northern stations a considerable rise had taken place by the end of the period, while in the south and east of England the thermometer had fallen. The maxima, which were recorded on the 2d over our south-eastern districts and on the 8th elsewhere, ranged from 40° in "England, E." and "England, N.W.," to 55° in "Scotland, E.," and 56° in "Ireland, S." The minima, which were registered on the 7th or 8th in the south-east of England, and on various dates in the other parts of the country, ranged from 15° in "Scotland, W." and "England, N.W.," and 18° in "Scotland, E." to 24° in "England, E.," and 30° in the "Channel Islands." The minima recorded over Ireland and in some parts of Scotland during the night of the 7th—8th were as high as from 43° to 48°.

Rainfall has been a little more than the mean in Ireland, but less over England and Scotland.

Bright sunshine has been more prevalent than of late in most districts, the percentage of the possible

amount of duration ranging from 15 in "Ireland N.," 17 in "Ireland S.," and 19 in "Scotland W." and the "Midland Counties," to 37 in "England E.," 48 in "Scotland E.," and 60 in the "Channel Islands."

Depressions observed.—The distribution of pressure has been subject to considerable changes. At the opening of the period a depression lay over Norway, the barometer being highest over the Bay of Biscay, while on the following day an elongated shallow depression was passing in a south-easterly direction over England. On the 5th a depression skirted our extreme western and north-western coasts, while a well-defined subsidary disturbance moved southerly from the south of Ireland to the Bay of Biscay. During the end of the period a large area of high pressure had been formed over the south of Scandinavia, Denmark, Germany, the Netherlands, and the south-east of England. Northerly to north-westerly winds were general until the 5th, when southerly breezes set in on our extreme western coasts, and variable or northerly airs over the greater part of England.

Enquiries.

"He that questioneth much shall learn much."—BACON.

PEAT MOSS AS A MANURE.—Can any of our correspondents inform W. M. B. respecting the value of peat moss as a manure after being used in the stable—if it will be as good as straw manure?

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

ABRAHAM MUNTING: *J. C. T.* The botanist named was Professor of Botany at Gröningen in Holland. He died in 1683. Your volume is the second edition. We should be greatly obliged for the opportunity of seeing it.

MR. BUCHANAN: *E. W.* We have not heard of or from him since he left for Queensland.

CARPET BEDDING: *P. P. P.* We cannot enumerate all the plants used in this kind of gardening. Get a nurseryman's list of these plants; you will there find the height, colour, and other particulars given, that will be of service to you.

COCOA BEANS INJURED BY MOTH: *W. Marshall.* The Cocoa moth was figured and described in our columns for June 20, 1885.

CORRECTION.—On p. 179, 1st column, of our last issue, instead of "These three vegetables grow by a rule of thumb," read "They grow by a rule of thumb."

DEAD ROOTS OF NECTARINE: *D. P.* Found dead. Impossible to say why without further information.

GREEN HYACINTH: *G. Y.* Your specimen is very curious—more curious than beautiful perhaps. The parts of the flower have the nature of leaves, and for a time are precisely like leaves, then colouring matter is added, and other changes occur—or do not occur, as the case may be, and the leaves become petals. Your Hyacinth is thus an instance of arrest of development characterised by the non-formation of colouring matter; but what checked its formation we do not know.

INSECTS.—The minute insects found in your pots of the Maidenhair Ferns are very young woodlice which have been bred in rotting vegetable matter. Gas-tar water with lime and soot, and strong soap-suds will kill them. *I. O. W.*—*W. R.* Your Tomato leaves are infested with a few green aphides, a few extremely minute white mites, and a large number of the larvæ of an apparently distinct and smaller species of the mealy white Aleyrodes, which suck the juices of plants. Another species, not uncommon in greenhouses, is figured by us, with its preparatory state, under the name of A. vaporariorum, in *Gardeners' Chronicle*, 1856, p. 852. *I. O. W.* (See figs. 41, 42, and 43, p. 213.)

MICE IN GREENHOUSES: *J. P.* As other means of catching them fail, try a cat.

MUSHROOM: *G. B.* Often figured in the *Gardeners' Chronicle.*

NAMES OF FRUIT: *T. Clark.* Blenheim Orange.—*T. Mayes.* 1, Dumelow's Seedling; 2, Beauty of Kent.—*W. Cuthbush & Son.* 1, Dumelow's Seedling; 4, Sturmer Pippin; others not recognised.

NAMES OF PLANTS.—*Rob.* Pittosporum Tobira.—*S. N. and J. J.* 1, Mesembryanthemum cordifolium var; 2, Aloe margaritacea; 3, Sedum carneum variegatum; 4, Mesembryanthemum sp.; 5, Cypripedium villosum; 6, Dracæna, not recognised. *Fernz.*—1, Davallia sp.; 2, Onychium lucidum; 4, Adiantum cuneatum; 6, Asplenium marinum. You send more than six specimens—all bad specimens—scarcely recognisable. Two of them bear the same number.—*R. A.* Cypripedium Boxallii.

NAMES OF TREES: *A. D. W.* 1, Libocedrus chilensis; 2, probably a Juniper. Send it to some nursery foreman where these plants are grown.

ROMAN HYACINTHS AND SNOWDROPS: *R. H. S.* The bulbs appear as if they had been started before sufficient roots were developed to fully support them.

STRIKING CUTTINGS OF YOUNG WOOD IN TROPICAL LANDS WITHOUT BOTTOM-HEAT: *Cinchona.* It will be necessary to prepare beds of sandy soil raised slightly, and sloping from the middle to the sides. The drainage should be good, and the site should enjoy partial shade, as without this last cuttings would become exhausted, and would perish in great numbers. It would be requisite to apply reed-shading in the middle of the day.

TUBEROSE FLOWERS TURNING YELLOW AND FALLING: *H. H.* The temperature has been too high for starting the bulbs, and perhaps you have given water too early, or in greater quantities than was requisite.

CATALOGUES RECEIVED.

VILMORIN-ANDRIEUX & Co., 4, Quai de la Megisserie, Paris—General Seed Catalogue.

JOHNSON & STOKES, Philadelphia, U.S.A. — Farm Manual and Seed Catalogue.

DAVID TOYNE, 15, Bridge Street, Hull—Seed Catalogue and Amateur's Guide.

JOHN HOUSE, 9, Church Street, Peterborough—Vegetable and Flower Seeds.

COMMUNICATIONS RECEIVED.—Dr. Bonavia.—D. T. F.—W. T. T. D.—A. E. S.—W. F. B.—E. W. S.—Dr. Murie.—H. E., Ryde.—W. M., Ely.—H. E.—A. B., too late for insertion.—W. M.—T. P. & Son.—O. T.—W. C.—A. D.—J. F.—J. D. C.—Richardson & Co., next week.—W. B. G.—H. E.—Hogg & Wood.

DIED, on Wednesday, the 3d inst., MR. H. BOLLER, of the Woodfield Nursery, Harrow Road, who was well known as a grower of Cacti. Mr. Boller will be remembered by the collections of small Cacti which he was accustomed to exhibit at flower shows.

Markets.

COVENT GARDEN, February 11.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

BOTH the wholesale and retail trades of our market have been completely paralysed through the riotous proceedings of the past few days. We have therefore no remarks to make. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0-	3 0	Lemons, per case	8 0-	10 0
— Canadian, barrl.	10-	14 0	Pine-apples, Eng., lb.	1 0-	..
Grapes, per lb.	1 6-	4 6	— St. Michael, each	2 6-	8 0
Kent Cobs, 100 lb.	30 0-	..	Pears, per dozen	1 0-	2 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0-	..	Mushrooms, punnet	1 0-	1 6
Asparagus, Eng., 100	9 0-	..	Mustard and Cress, do.	4-	..
— French, bundle	18 0-	25 0	Onions, per bushel	4 0-	..
Beans, Kidney, lb.	2 0-	..	Parsley, dozen bunch	2 0-	3 0
Beet, red, per dozen	1 0-	2 0	Parsnips, per dozen	1 0-	..
Broccoli Sprts., bush.	3 0-	..	Potatos, per cwt	4 0-	5 0
Capsicums, per doz.	0 6-	..	,, kidney, per cwt	4 0-	5 0
Carrots, per bunch	0 6-	..	Salsafy, per bundle	0 9-	..
Cauliflowers, per doz.	2 0-	3 0	Savoys, per dozen	2 0-	..
Celeriac, per root	0 3-	..	Scorzonera, p. bundle	1 0-	..
Celery, per bundle	1 6-	2 0	Seakale, punnet	2 6-	..
Coleworts, doz. bunch	4 0-	6 0	Shallots, per pound	0 3-	0 9
Cucumbers, each	1 0-	1 6	Spinach, per bushel	4 0-	6 0
Endive, per dozen	1 0-	2 0	Sprouts, per pound	0 6-	..
Herbs, per bunch	0 2-	..	Sprue, bundle	1 0-	..
Leeks, per bunch	0 3-	0 4	Tomatos, per lb.	1 6-	2 6
Lettuce, per dozen	1 0-	1 6	Turnips, bunch	0 6-	..
Mint, green, bunch	0 4-	..			

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0-	18 0	Ficus elastica, each	1 6-	7 0
Arbor vitæ (golden), per dozen	6 0-	18 0	Ferns, in variety, per dozen	4 0-	18 0
— (common) dozen	6 0-	12 0	Foliage Plants, various, each	2 0-	10 0
Arum Lilies, dozen	12 0-	18 0	Genistas, per dozen	0-	15 0
Azaleas, per doz.	24 0-	42 0	Hyacinths, per doz.	6 0-	9 0
Begonias, per dozen	6 0-	12 0	Lilies in clumps, or pots, per dozen	18 0-	30 0
Bouvardias, doz	12 0-	18 0	Marguerite Daisy, per dozen	8 0-	12 0
Cinerarias, per doz.	10 0-	12 0	Myrtles, per dozen	6 0-	12 0
Cyclamen, 12 pots	12 0-	24 0	Palms in var., each	2 6-	21 0
Cyperus, per dozen	4 0-	12 0	Pelargoniums, scarlet, per dozen	6 0-	9 0
Daffodils, per dozen	9 0-	12 0	Primulas, single, 12 pots	4 0-	6 0
Dracæna terminalis, per dozen	30 0-	60 0	Solanums, per dozen	8 0-	12 0
— viridis, per doz.	12 0-	24 0	Tulips, 12 pots	6 0-	9 0
Ericas, various, doz.	12 0-	24 0			
Euonymus, in var., per dozen	6 0-	18 0			
Evergreens, in var., per dozen	6 0-	24 0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0-	1 6	Marguerites, 12 bun.	4 0-	8 0
Arum Lilies, 12 blms.	4 0-	9 0	Mignonnette, 12 bun.	4 0-	9 0
Azalea, 12 sprays	0 6-	1 0	Pelargoniums, per 12 trusses	1 0-	1 6
Bouvardias, per bun.	0 6-	1 0	— scarlet, 12 trusses	9-	1 0
Camellias, 12 blms.	2 0-	4 0	Primula, double, per bunch	1 0-	1 6
Carnations, 12 blms.	1 0-	3 0	— single, per bunch	4-	0 6
Chrysanth., 12 blms.	2 0-	4 0	Roses (indoor), doz.	3 0-	9 0
— 12 bunches	9 0-	18 0	Cyclamen, doz. blms.	4 0-	0 6
Cyclamen, doz. blms.	4 0-	0 6	Daffodils, per bunch	1 0-	2 0
Daffodils, per bunch	1 0-	2 0	Epiphyllum, 12 blms.	0 6-	1 0
Epiphyllum, 12 blms.	0 6-	1 0	Eucharis, per dozen	4 0-	6 0
Eucharis, per dozen	4 0-	6 0	Gardenias, 12 blooms	12 0-	36 0
Gardenias, 12 blooms	12 0-	36 0	Hyacinths, Rom., 12 sprays	0 9-	1 6
Hyacinths, Rom., 12 sprays	0 9-	1 6	Tulips, doz. blooms	0 9-	1 0
— red, 12 blooms	1 0-	2 0	Violets, 12 bunches	1 0-	1 6
Lilac, French, bunch	2 0-	7 0	— Czar, Fr., bunch	1 6-	2 6
Lily-of-the-Valley, 12 sprays	0 9-	1 6	— Parme, French, per bunch	4 0-	6 0

SEEDS.

LONDON: *Feb.* 10.—Messrs. John Shaw & Sons, Seed Merchants, of 37, Mark Lane, write that no great activity yet marks the seed trade. Rather more inquiry is shown, however, and in view of the light stocks and low prices prevailing, the outlook is regarded as healthy. America is still taking Clover seed from Europe. There is no important change to be noted in the value of any description of farm seeds. Very cheap rates are asked for blue boiling Peas and Haricot Beans: a substantial rise is anticipated if the cold weather continues. Higher prices are asked for feeding Linseed. Hemp and Canary seed sell slowly on former terms. There is a good trade for Rape seed.

CORN.

MARK LANE: *Feb.* 8.—English Wheat did not meet a ready sale at last week's currencies, but sales were not pressed at any decline although freely offered. Foreign Wheats were firmly held. Flour moved very indifferently, at prices hardly up to last Monday for ordinary grades. Grinding Barley was firm and quite 3*d.* dearer. Beans were rather dearer and Peas firm. Oats sold slowly, holders in many cases requiring 3*d.* advance on the rates of this day week.

Feb. 10.—There was not much change in the trade today; nevertheless, the tone was fairly steady all round. Wheat and flour supported late rates. Barley upheld late values. Beans and Peas moved off in small lots at previous rates, and Oats were without appreciable change.

Average prices of corn for the week ending Feb. 6: —Wheat, 29*s.* 9*d.*; Barley, 29*s.* 3*d.*; Oats, 18*s.* 10*d.* For the corresponding period last year:—Wheat, 33*s.* 9*d.*; Barley, 32*s.* 5*d.*; Oats, 20*s.* 11*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Feb.* 10.—Fair supplies of fruit and vegetables, with a good demand. Quotations:—Apples, 2*s.* 6*d.* to 6*s.* per sieve; Savoys, 4*s.* to 10*s.* per tally; Cauliflowers 5*s.* to 10*s.* do.; Beetroots, 3*s.* to 3*s.* 6*d.* do.; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve; Brussels Sprouts, 3*s.* to 4*s.* 6*d.* do.; Sprouting Broccoli, 2*s.* 6*d.* to 3*s.* do.; bunch Greens, 3*s.* to 5*s.* per dozen bunches; do. Turnips, 3*s.* to 4*s.* do.; do. Carrots, 2*s.* to 2*s.* 6*d.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Celery, 5*s.* to 9*s.* per dozen bundles; Onions, 4*s.* 6*d.* to 5*s.* per cwt.; Carrots, 20*s.* to 40*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 22*s.* 6*d.* to 27*s.* 6*d.* do.; and Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD: *Feb.* 9.—The market has been well supplied with all kinds of produce, and a fair trade transacted at the undermentioned prices:—Savoys, 7*s.* 6*d.* to 9*s.* per tally; red Cabbages, 1*s.* 6*d.* per dozen; bunch Greens, 3*s.* do.; Sprouts, 3*s.* to 4*s.* per sieve; Mangels, 21*s.* to 22*s.* per ton; Swedes, 23*s.* to 25*s.* do.; Turnips, 30*s.* to 60*s.* do.; Carrots, cattle feeding, 20*s.* to 26*s.* do.; do. household, 30*s.* to 42*s.* do.; Onions, 100*s.* to 110*s.* do.; Apples, 2*s.* 6*d.* to 4*s.* per bushel; Celery, 6*d.* to 1*s.* per roll; Horseradish, 10*d.* to 1*s.* per bundle.

POTATOS.

BOROUGH AND SPITALFIELDS: *Feb.* 9.—The market was rather firmer for best samples, but no improvement in the general demand. Quotations:—Regents, 70*s.* to 115*s.*; Magnum Bonums, 50*s.* to 100*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Feb.* 10.—Trade has been dull, with large quantities on hand. Quotations:—Magnums, 50*s.* to 75*s.*; Regents, 50*s.* to 65*s.*; Victorias, 50*s.* to 65*s.*; and Champions, 50*s.* to 60*s.* per ton.

STRATFORD: *Feb.* 9.—Quotations:—Magnums, 60*s.* to 75*s.*; and Champions, 45*s.* to 55*s.* per ton.

Imports.—The imports into London last week consisted of 238 bags from Hamburg, 320 bags 135 sacks from Boulogne, 311 boxes 109 casks from Malta, 220 sacks from St. Nazaire, and 21 casks from Rotterdam.

HAY.

CUMBERLAND (Regent's Park): *Feb.* 9.—Large supplies of both hay and Clover, trade remaining the same. Quotations:—Clover, best, 90*s.* to 105*s.*; seconds, 70*s.* to 90*s.*; hay, best, 75*s.* to 90*s.*; seconds, 62*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Feb.* 9.—Quotations:—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* to 36*s.* per load.

THE

GARDENERS' CHRONICLE

(Established 1841)

CONTAINS ARTICLES ON ALL DEPARTMENTS OF

GARDENING, PRACTICAL AND SCIENTIFIC,

REPORTS OF EXHIBITIONS,

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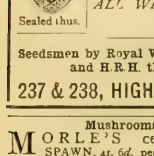
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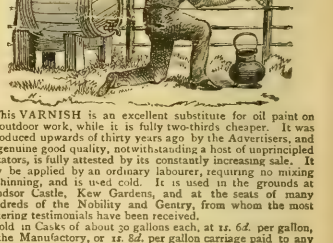
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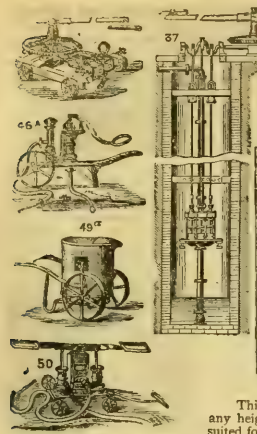
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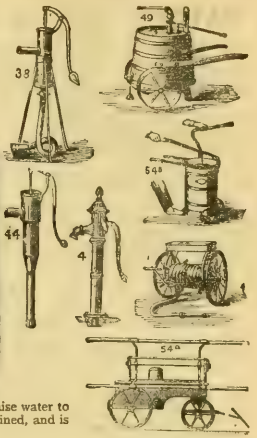


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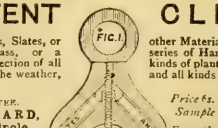
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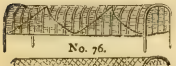

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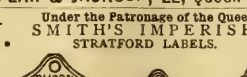
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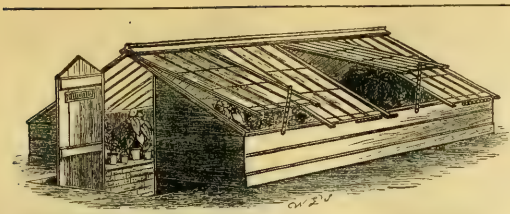
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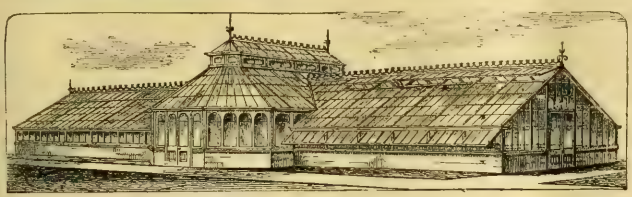
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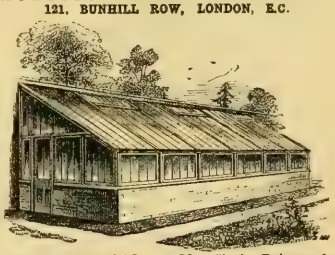
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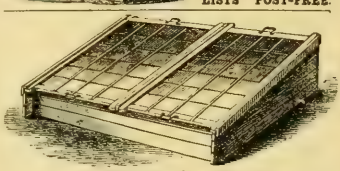
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FOR SALE, Two handsome Plants of DRACÆNA INDIVISA (together or separate) in boxes. Height 15 feet from ground. Also some fine pans of LÆLIA ANCEPS, in grand health, dark variety. Full particulars on application to

W. J. IRELAND, Headfort Gardens, Kells, Co. Meath.

PAUL'S, WALTHAM CROSS.—SEEDS, ROSES, EVERGREENS, TREES, SHRUBS, CLIMBING PLANTS, FRUIT TEEES, GRAPE VINES, CAMELLIAS, BULBS, &c., of the best quality, and low in price. See Priced Descriptive CATALOGUES, free by post.

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross.

LILIUM AURATUM.—Good, plump, sound Bulbs, 6s., 9s., 12s., 18s., and 24s. per dozen; extra strong, 30s. and 42s. per dozen. All other good LILIES at equally low prices.

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

OFFER of DAHLIA TUBERS is now ready, and may be had upon application to

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

TUBEROUS BEGONIAS.—Our Collection of Named Varieties is pronounced by the highest authorities to be one of the finest in the United Kingdom. CATALOGUES free. Prices most moderate.

MORLEY AND CO., Preston.

LOVEL'S STRAWBERRY PLANTS.

Price, 2s. 6d. per 100, 10s. per 500, 17s. 6d. per 1000.

LIST of Varieties Free. Sample of Plants, 3d.

W. LOVEL AND SON, Strawberry Growers, Driffield.

CUT FLOWERS—FERN.—We are open to Receive Consignments of above for Sale on Commission.

THOMSON'S, Central Avenue, Market Hall, Birmingham.

WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers and Trade references.

Floral Commission Agency.

A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of choice CUT FLOWERS in any quantity. A. Hill having had a large personal experience as Salesman in Covent Garden Flower Market for many years, is thus enabled to obtain the Highest Market Prices. Account Sales sent daily. Bankers' and good Trade references. All Consignments to be addressed as above. Boxes, Baskets, and Labels supplied.

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH AND BARNHAM. ACCOUNT SALES sent daily, and CHEQUES forwarded weekly. BANKERS and TRADE REFERENCES. BASKETS and LABELS supplied.

Cut Flowers.

WILLIAM DENMAN, Covent Garden, W.C., has a good DEMAND for EUCHARIS, GARDENIAS, CAMELLIAS, NARCISSUS, ROSES, MAIDENHAIR FERN, &c

WANTED, LARGE PLANTS of Decorative Character, and also TALL THIN PLANTS, of 16 to 20 feet high, for Conservatory. Will be PURCHASED or EXCHANGED for others by

E. G. HENDERSON AND SON, Maida Vale, London, N.W.

WANTED TO PURCHASE, for Cash, DAHLIA TUBERS, Whites and Reds; Old Stools of CHRYSANTHEMUMS, mostly Whites; Dwarf ROSES of Général Jacqueminot. Send quantity, names, and prices to G. UNDERWOOD, Bell's Hill, High Barnet.

WANTED, Two TREE FERNS or PALMS—a nice pair, 7 feet high. Also two dozen HARDY GREENHOUSE FERNS. 8 to 10-inch pots, with price.

WILLIAM, *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

WANTED, a quantity of PINES, Plants or Suckers. State quantity and lowest cash price to M. A., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

White Cut Flowers.

EUCHARIS MASTERSII and SANDERII. These useful new free-flowering Eucharis can be offered, in good Bulbs, by the dozen or hundred, by

Mr. WILLIAM BULL, Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

LARCH, strong transplanted, 2½ to 3 feet; FIR, Scotch, strong transplanted, 18 to 24 inches. Both true native. Special prices on application.

LITTLE AND BALLANTYNE, Carlisle.

GLOXINIA BULBS, mixed, at 6s., 9s., and 12s. per dozen. TREE CHRYSANTHEMUM Cuttings, from all the leading kinds, at 1s. 6d. per dozen.

C. PERKINS, Florist, Budleigh Salterton, Devon.

LAING AND CO.'S BEGONIA SEED.—Gold Medal Strain from Prize Plants. All warranted. New Crop. Sealed packets. Choice mixed, from single varieties, 1s. and 2s. 6d per packet; 5s. and 10s. extra large packets; from double varieties, 2s. 6d. and 5s. per packet. Collections—12 named varieties, separate, 7s. 6d.; 6 named varieties, separate, 4s.

Seedsmen and Florists, Forest Hill, S.E.

CHOICE FLOWER SEEDS for 1886. ONE FARTHING A PACKET!

AGENTS WANTED EVERYWHERE. Specimen Parcel of Eighty-four different Packets post-free, 1s. 9d.

LLOYD BOOTH, Flower Seed Merchant, Loudwater, High Wycombe.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.

The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Street, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

LARCH, 1-yr. 1-yr., 5s. 6d.; 1 to 1½ foot, 10s. 6d.; 1½ to 2 feet, 16s.; 2 to 3 feet, 20s.; 3 to 4 feet, 25s.; 4 to 5 feet, 32s. 6d. per 1000. Nett cash. Ground wanted. Trade prices on application. Apply at once.

The Nurseries, Llanybyther.

100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.

RICHARD SMITH AND CO., Nurserymen and Seed Meschants, Worcester.

PRIVET.—A Large Stock of exceedingly fine bushy oval-leaved Privet, 4 to 6 feet high. Price on application to

T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

PHŒNIX RUPICOLA.—New Seed just received of this beautiful Greenhouse PALM. Price per 1000 or 10,000 on application to

Mr. WILLIAM BULL, Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

CHRYSANTHEMUMS.—A splendid Collection, including every variety in each section which can be considered worth cultivating.

LIST of Varieties and Prices on application to

THOS. S. WARE, Hale Farm Nurseries, Tottenham, London.

CLEMATIS JACKMANNI ALBA (Noble). The White Jackmanni.

The Raiser will distribute the above at the Reduced Price of 5s. each. The value of strong 2-yr. old Plants will be well understood by all.

CHARLES NOBLE, Bagshot.

A few thousand MANETTIS at a Clearance Price. Other Nursery Stock (see Advertisement).

HAMPTON COURT BLACK HAMBURGH VINES.—Extra strong Fruiting Canes of the above, and all other leading varieties, at greatly reduced prices.

T. JACKSON AND SON, Nurseries, Kingston-on Thames, and Royal Kitchen Gardens, Hampton Court.

GRAPES THIS YEAR.—Grand Fruiting Canes, 7s. 6d., 10s. 6d., and 12s. 6d.; also Planting Canes, 3s. 6d. and 5s. Perfectly ripened without bottom-heat. JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

RASPBERRY CANES and CURRANT TREES.—For the famous Carter's Prolific RASPBERRY CANES, Naples Black and Dutch Red CURRANT TREES, apply for wholesale prices to

ALBERT BATH, Sevenoaks, Kent.

CHOICE STOCKS of SEED POTATOS, most of the leading varieties, in quantities of a Sack and upwards. Purchasers of large quantities treated liberally.

JOHN DAY, Jun., Sandwich, Kent.

Seed Potatos.

H. AND F. SHARPE will be pleased to make Special Offers of their choice selected stocks of SEED POTATOS, comprising all the best kinds in cultivation. Purchasers of a quantity treated liberally.

Seed Growing Establishment, Wisbech.

SEED POTATOS.—Sutton's Early Regents and Fiftyfold. Guaranteed true. Also ESCHALOTS, cheap. TAYLOR, Moor Green, Nottingham.

SALES BY AUCTION.

Monday Next.—(Sale No. 7096.

1050 grand Bulbs of LILIUM AURATUM and other LILIES just received from Japan in the finest possible condition; two consignments of PLANTS from New Jersey; rare LILIES and CASOCHORTI, from California; FREESIA REFRACTA ALBA from the Cape; 300 EUCHARIS AMAZONICA, TUBEROSES, GLADIOLI, &c.

MR. J. C. STEVENS will SELL the above by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, February 22, at half past 12 o'Clock, precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next—(Sale No. 7098.)

ROSES, FRUIT TREES, BORDER PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, February 24, at half-past 12 o'Clock precisely, several hundred first-class Standard and Dwarf ROSES, including all the leading varieties; Pyramid and Dwarf-trained FRUIT TREES of sorts; BEDDING PLANTS in quantity; Home-grown LILIUMS, GLADIOLI, TUBEROSES, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7099.)

The THIRD PORTION of the extensive COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, February 24, at half-past 12 o'Clock precisely (instead of March 4, as previously announced), without the least reserve, the third portion of the above Collection, including fine plants of CATTLEYA MENDELI (grand variety); C. TRIANÆ, C. MOSSIÆ, C. WARNERI; ODONTOGLOSSUM ALEXANDRÆ, O. ROSSI MAJUS, O. VEXILLARIUM, LÆLIA ELEGANS; fine specimen VANDA TRICOLOR; CYPRIPEDIUMS, MASDEVALLIAS, &c. Also a quantity of ORCHIDS IN FLOWER from other Collections, including a magnificent hybrid Odontoglossum, with dark brown spots on yellow ground.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7100.)

ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, February 25, at half-past 12 o'Clock precisely, a small COLLECTION of ESTABLISHED ORCHIDS, the property of a Gentleman giving up their culture, including fine plants of Cypripedium insigne Maulei (one with 25 breaks), fine pans of Cœlogyne cristata, Dendrobium clavatum (extra dark var.), splendid form of Odontoglossum Alexandræ, &c. A few STOVE PLANTS, 150 ARAUCARIAS (fine plants) from the Azores, &c.

On view morning of Sale, and Catalogues had.

Thursday Next—(Sale No. 7100)

A fine lot of ODONTOGLOSSUM ALEXANDRÆ (best type) of Messrs. Shuttleworth, Carder & Co.; an importation of SACCOLABIUMS, DENDROBES, of sorts, and other East-Indian ORCHIDS; fine plants of STENORHYNCHUS SPECIOSA, &c.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, February 25.

On view morning of Sale, and Catalogues had.

Tuesday Next.

SPECIAL SALE of ORCHIDS in FLOWER.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, February 23, at half-past 12 o'Clock precisely, the large number of nearly 400 lots of ORCHIDS in FLOWER, from various collections. Amongst numerous others may be mentioned:—

Cœlogyne cristata alba, a grand plant	Odontoglossum Wilckeanum, grand variety of flowers
„ cristata, Chatsworth variety, splendid specimen	Lælia anceps (white)
Cattleya Warneri	Angræcum sesquipedale
„ Trianæ, several	Dendrobium Wardianum
Odontoglossum Rossi majus, many fine varieties	„ Ainsworthii
„ Alexandræ, in quantity	Phalænopsis amabilis, splendid variety of plant
„ fine hybrids	Cattleya Eldorado splendens
	Lælia peduncularis, large mass

On view morning of Sale, and Catalogues had.

Tuesday Next.

CŒLOGYNE CRISTATA ALBA, very large plant, with several Growths and Flower-spikes.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions to include in their SPECIAL SALE of FLOWERING ORCHIDS, on TUESDAY NEXT, February 23, a very large plant of CŒLOGYNE CRISTATA HOLOLEUCA (ALBA), as above.

On view morning of Sale, and Catalogues had.

Wednesday Next.

4000 splendid Bulbs of LILIUM AURATUM and numerous distinct varieties of IRIS, received from Japan in very fine condition; LILIUMS and CALOCHORTI from California; CAMELLIAS, AZALEAS, PALMS, &c., from Belgium; 400 Standard and other ROSES, all named and selected; FRUIT TREES from an English Nursery, 300 CARNATIONS and PICOTEES, and a general assortment of hardy English grown LILIES and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, February 24, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

Tooting, S.W.—*Re* Rees.

CHOICE COLLECTION of HERBACEOUS PLANTS.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, The Exotic Nursery, Tooting, S.W., on FRIDAY NEXT, February 26, at 12 o'Clock precisely, without the least reserve, the first portion of the valuable and well-known Collection of HERBACEOUS PLANTS, created by Mr. Robert Parker, who formerly occupied this Nursery, consisting of fine collections of Iris, Pæonies and many others.

May be viewed the day prior to Sale. Catalogues may be had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C.; and Leytonstone, E.

IN LIQUIDATION.

Hereford.—Cranston's Nurseries, King's Acre.

GREAT UNRESERVED SALE of the First Portion of the valuable NURSERY STOCK, by order of the Liquidator of Cranston's Nursery and Seed Co. (Limited).

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises so widely known as Cranston's Nurseries, King's Acre, Hereford, on TUESDAY and WEDNESDAY, February 23 and 24, at 12 o'Clock precisely each day, without reserve, the First Portion of the extensive and valuable NURSERY STOCK, which is in fine condition for removal, comprising a great variety of splendid Specimen Conifers, Portugal Laurels, Common and other Laurels, in large quantities; 3000 Standard Apples and Pears, in all the leading sorts; Gooseberries, Currants; 5000 Standard Ornamental Trees, including fine Thorns, Limes, and Purple Beech; 100,000 Larch and Scotch Firs, 3 to 5 feet; Ash, Willows, Deciduous and Flowering Shrubs, and quantities of other stock too numerous to mention in an advertisement.

May now be viewed. Catalogues may be had on the Premises; or of the Auctioneers and Valuers, 67 and 68, Cheapside, London, E.C.; and Leytonstone.

N.B. Further Sales will take place during the year, which will be duly announced.

Friday Next.

CATTLEYA SCHOFIELDIANA.

2000 ODONTOGLOSSUM ALEXANDRÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, February 26, at half-past 12 o'Clock precisely, a very fine Importation of this rare and superb CATTLEYA. The flowers are 6 inches across, sepals and petals orange-yellow, heavily spotted crimson-purple; lip deep majenta-purple, relieved in the centre with yellow.

Also a beautiful VANDA, in the way of Hookerii, Lælia species—dried flowers resemble a large form of L. xanthina; a large lot of CALANTHE REGNIERII, in fine health; a new and very distinct looking SACCOLABIUM; a splendid lot of CATTLEYA SCHILLERIANA and WARNERI; 2000 ODONTOGLOSSUM ALEXANDRÆ, from hitherto unsearched mountains; a fine lot of the very rare GALEANDRA BAUERI; several SOBRALIAS, and many other Importations.

On view morning of Sale, and Catalogues had.

Friday Next.

2000 ODONTOGLOSSUM ALEXANDRÆ.

MESSRS. PROTHEROE AND MORRIS beg to call special attention to the above large number of ODONTOGLOSSUM ALEXANDRÆ in their ORCHID SALE of FRIDAY NEXT, from Mr. F. Sander, collected in hitherto unsearched mountains.

Hendon, N.W.—To Gentlemen, Builders, and others.

Unreserved Sale of well grown Nursery Stock.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. James Wright to SELL by AUCTION, on the Premises, The Bell Lane Nursery, Hendon, N.W., a mile from Hendon and Finchley Stations, on MONDAY, March 1, at 12 o'Clock precisely, 6000 PRIVET, 2 to 4 feet; 4000 LAURELS, 2 to 4 feet; Standard and Dwarf ROSES, APPLES, and PEARS; 3000 Currants; 500 Portugal LAURELS, 2 to 3 feet; English and Irish YEWS; 2000 Lombardy POPLARS, 10 to 12 feet; 1000 CHESTNUTS, 10 to 12 feet; 1000 LIMES, 10 to 12 feet; and a large variety of CONIFERÆ and EVERGREEN SHRUBS in the borders; the whole in excellent condition for removal.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Wandsworth Common, S.W.

Two days' UNRESERVED SALE of unusually well-grown NURSERY STOCK, by order of Mr. Robert Neal.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Nurseries, Trinity Road, Wandsworth Common, S.W. (twelve minutes' walk from Clapham Junction and Wandsworth Common stations), on TUESDAY and WEDNESDAY, March 2 and 3, at 12 o'Clock precisely each day, a large quantity of beautifully grown NURSERY STOCK, in excellent condition for removal, including thousands of Cupressus, Thuias, Retinosporas, and other Conifers for effective planting; 1000 Cedrus Deodara, 3 to 8 feet; 1000 Aucubas, 2 to 3 feet; large Wellingtonias, 2 to 10 feet, grown in pots, 1000 Laurels, 5000 Privets, 1000 named Rhododendrons, 2 to 4 feet; 200 Standard ditto, 2000 Seedling varieties, 2 to 4 feet; 1000 Yews, 3 to 5 feet; 400 Golden ditto, 3 to 4 feet; 2000 Green Euonymus, 1 to 3 feet; 500 Golden ditto, 2 to 3 feet; 2000 Standard Ornamental Weeping Ash, 1000 Fine Planes, 14 to 16 feet; 1000 Virginian Creepers, 8 to 10 feet; 1000 Climbers of sorts; 1000 Pyramid and Trained Fruit Trees, and other Stock.

May now be viewed. Catalogues may be had on the Premises, and of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C., and Leytonstone.

Hammersmith, W.

Expiration of Lease. Without Reserve. Five minutes' walk from three Railway Stations.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Greetham & Cook to SELL by AUCTION, on the Premises, The Wellesley Nursery, Paddenswick Road, Goldhawk Road, Hammersmith, W., on THURSDAY, March 4, at 12 o'Clock precisely, the erections of Twelve GREENHOUSES, STAGING, BRICKWORK, loose LIGHTS, 4000 feet of Hot-water PIPING, principally 4-inch; Ten BOILERS, the whole of the STOVE and GREENHOUSE PLANTS, thousands of Geraniums and Calceolarias, large heaps of MANURE and Potting MOULD, POTS, and numerous other items.

May be viewed the day prior and morning of Sale. Catalogues had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Kingston, S.W.

By Order of the executors of the late Mr. George Jackson, Without Reserve.—CLEARANCE SALE of the whole of the beautifully grown NURSERY STOCK at these branch Nurseries, the Land being sold for Building.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Kingston Hill Nurseries, Kingston, Surrey, close to Norbiton Railway Station, on THURSDAY and FRIDAY, March 4 and 5, at 12 o'Clock precisely each day, the whole of the valuable and well-grown NURSERY STOCK, in splendid condition for removal, consisting of a very fine lot of specimen Conifers and Evergreens, 1500 Rhododendrons, 2 to 4 feet; 1500 common Laurels, 2 to 5 feet; 1000 Standard and Dwarf Roses; 500 magnificent Green Hollies, 3 to 10 feet; and 800 Tree Box, 3 to 6 feet, unusually fine; 5000 Euonymus and Aucubas, 1000 Forest Trees in variety, Ivies in pots, 2000 Fruit Trees, and other Stock.

May be viewed any day prior to the Sale. Catalogues may be had at either of Messrs. Jackson's Nurseries at Kingston; and of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.; and Leytonstone.

Important Sale of Shrubs, Fruit Trees, Forest TREES, &c., at

MESSRS. JOHN STEWART AND SONS' Nurseries, Broughty Ferry, on WEDNESDAY, THURSDAY, and FRIDAY, March 3, 4, and 5.

On Wednesday—Specimen Shrubs, &c. Thursday—Shrubs, Roses, and Fruit Trees. Friday—Forest Trees, &c. Sale each day at 11 A.M. Catalogues on application to the Exposers.

A. MONCUR, Auctioneer.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the REVISED CATALOGUE of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

The Vineyard, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

WANTED, One or Two Acres of GARDEN GROUND, near a Railway Station.

Apply to W. S., 401, Kinnerton Street, Belgrave Street, London, S.W.

WANTED, TO RENT, a convenient DWELLING-HOUSE and 6 or 8 VINERIES or PLANT HOUSES, near London and convenient by rail.

Address W. R., Windsor Villa, Essex Road, Enfield.

Surrey, about Twenty Miles from London.

TO BE SOLD, with possession, a First-class FREEHOLD MARKET GARDEN of 20 Acres (cropped with Fruit and other Trees), adapted for Building, with modern Dwelling-house, Forcing-house, Ranges of Pits, &c. Excellent opportunity, owner relinquishing in consequence of ill-health

Apply to PROTHEROE AND MORRIS, 67 and 68, Cheapside, London, E.C.

London.—To Market Growers.

TO BE SOLD, at a low price, a compact MARKET NURSERY, with about 25,000 feet of Glass, all heated. Stabling and Residence. Long Lease, and within easy distance of Covent Garden.

Apply to PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

To Florists and Others.

FOR IMMEDIATE DISPOSAL, the Lease of GLASS ERECTIONS, SHEDS, &c., of a most convenient and compact Business; twelve miles from London, and joining a Railway Station on the North Kent line. Price, all at £350.

Apply to FLORIST, *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

To Nurserymen and others.

FOR IMMEDIATE DISPOSAL, as a going concern, the old and lucrative BUSINESS of Messrs. G. and W. YATES, Nurserymen and Florists, who are relinquishing this branch of trade in order to entirely devote their attention to their well-known established and increasing Wholesale and Retail Seed Business. There are upwards of eight acres of good fertile Land (well stocked with selected Shrubs and Trees adapted to the locality), which may be had on long lease at a low rent, and known as "Green Lane Nurseries," situate at Heaton Norris, five miles from Manchester, and one mile from Stockport, Lancashire, by road or rail. The Glass, Plants, Houses (nine in number), Pits, Stable, Sheds, &c., are replete with all modern requirements for a first-class trade, which has been successfully carried on for over twenty years. The Stove and Greenhouse Plants optional.

The inspection of intending purchasers is invited.

Portion of the money may remain on mortgage.

G. AND W. YATES, Seed Merchants and Nurserymen, Market Place, Manchester.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 67 and 68, Cheapside, London, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

To Landed Proprietors, &c.

A. MCINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

215, Listria Park, Stamford Hill, N.

RHODODENDRONS WHOLESALE SPECIAL OFFER.

50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.
5,000 HYBRIDUM and CATAWBIENSE.
3,000 NAMED VARIETIES, the Choicest Sorts.
GREEN HOLLIES, RHODODENDRON, BRIER, and GRIFFERÆI STOCKS, selected for Working.

For prices and particulars, address:—

FOREMAN, Birch Nursery, King's Thorn, near Hereford.

FOR SALE, 40,000 well-rooted Plants of GENISTAS, at 6s. per 100, sent by post or otherwise for cash only; 3000 in 5-inch pots, set with bud, 21s. and 25s. per 100. Post-office Orders payable at Leyton Green.

T. BALDWIN AND SON,

Edith Nursery, Burchall Road, Leyton.

ABIES DOUGLASII.—2-yr. 2-yr. Transplanted, about 9 to 15 inches, at 50s. per 1000. Planters, please note the above, and take advantage of the opportunity of forming forests of this grand Conifer, which we can offer by the 100,000.

MORRISON BROTHERS, Nurseries, Aberdeen.

PALMS.—A few hundred splendidly grown Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, Areca lutescens, and Euterpe edulis 12 inches high, 4s. per dozen, 25s. per 100. Latania borbonica, Seaforthia elegans, and Euterpe edulis, 20 inches high, 12s. per dozen; less quantity, 1s. 3d. each. Twelve beautiful FERNS for 3s. Packages and Parcels post-free.
GARDENER, Holly Lodge, Stamford Hill, London, N.

Seed Potatos.

JOSIAH H. BATH, York Street, Borough Market, S.E. offers the following varieties :—

Old Ashleaf.	Fortyfold.
Rivers' Royal Ashleaf.	York Regent.
Myatt's Ashleaf.	Dunbar Regent.
Snowflake.	Paterson's Victoria.
Beauty of Hebron.	Redskin Flourball.
White Elephant.	Walker's Regent.
Early Rose.	Early Don.
Schoolmaster.	Reading Hero.
Dalmahoy.	Scotch Champion.

And other leading varieties. Prices on application.

EAST LOTHIAN STOCKS.

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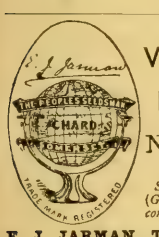
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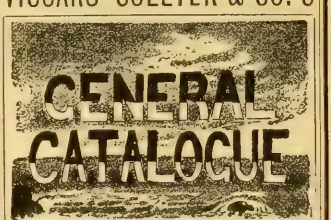
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THE
Gardeners' Chronicle.
SATURDAY, FEBRUARY 20, 1886.

NOTES FROM AN IRISH GARDEN.

JANUARY 12.—After all, the snow has not come to us, though falling heavily in other parts of the country. We have been passed by with only sharp frosts and showers of hail, which whitened the ground for a time. Now are those gold nuggets, the winter Aconites, to be found in the old garden border, not yet over-ground, but showing as small brown-gold lumps ere they uplift into dainty little burnished gold cups set on their little jaunty green frilled saucers. I often feel that the unfolded bud stage of our flowers is the time at which they are most attractive, at least to our imagination. The blossom is there, we know and feel, but the deliciousness of expectancy or hope unfulfilled is ours, and the passing away of the bloom yet distant.

Under the shelter of an Aucuba the first-birth leaves of Anemone apennina are appearing in their deep red-brown attire, slowly thence to change with the lengthening days to dim green, and later still, when the sky-blue blossoms are expanding, to form a bright green cushion beneath the cloud of starry blossoms. When fully exposed to sunshine the cloudy blue of this Anemone pales. It is a true wood nymph, and only happy in shadowy coolness. Our last storm fell heavily on the little hedge of Rosemary near the Violets. When the branches attain any size and become heavy the wind has an ugly trick of rocking them until they snap at the base, and one is not aware of the harm done till the tips of the shoots begin to droop and wither. I am trying to guard against this evil by having stout sticks thrust down through the centre of the hedge, so low as to be invisible, yet high enough to prevent the rocking of the branches. Few perhaps are aware how like incense swung from a censer are the fumes from a lighted branch of Rosemary borne through a room.

As I sit at breakfast and look out into the little wood (if the word can be applied to a clump of trees that can only grow as the storm wills, and that is a little at the side away from the storm, and not at all on the windward side), there is a sight which quite scoffs at "the winter of our discontent"—gold and yellow Primroses, set in the short green grass beneath the trees. There are the Oxlip Primroses and Polyanthuses; they are so constant in their blossoming that we are scarcely ever without them, save in mid-summer. I am amused at the manner in which a bunch of these Primroses is received;—the burst of gladness that exclaims, "What! real Primroses in the month of January?"—then the doubtful, "But are they wild?" that follows, and the loss of interest when I answer, "No, they are from the garden;" the truth being that I gather them in the garden to spare the blossoms in the wood that bid me "Good-morning" so brightly each day. This of the Primroses shows that it is ever the association of flowers, the touch of

human interest yet dearer still, that makes some blossoms more precious to us than others. Who that looks on the first Primrose of the year does not feel again the soft wind blowing, the delicious warmth, the fragrant air, the joy of life and light, as they started once some spring day long past to gather the earliest Primroses by sheltered banks, or in the distant copse, with bright companions whose sunny smile yet ripples back over the sea of Time, though they themselves have passed from sight.

In these dark days how eagerly one welcomes every touch of light or colour in the landscape. The stunted tree stems are usually dim and unnoticeable, but to-day after a night's rain they are quite a little picture in themselves, for over them a soft lichen has crept like lacework, rent and broken here and there by the notches of the bark. The stems are shining in the morning light, for they are still wet with the rain that has rendered them of a deep brown colour. Whether the lichen is grey, or blue, or green, one can hardly tell, for each time one looks it seems of a different shade; but the harmony is exquisite between the dark brown glistening stems and the pale blue-green tracery that clings to them. No doubt were the meadows gay with blossoms, the little pallid lichen would be unnoticed, but to-day it is beautiful.

February 12.—The first breath of spring came to us four days ago, after a month which severe frosts, bitter winds, and showers of snow, made long and cold. The change now is as sudden as it is delightful. Soft air, warm sunshine, song of birds, and waking of flowers! The Snowdrops are at their prettiest stage. The flower-stalks have sprung up, but the leaves are yet short and little visible, so that, opening wide in the sunshine, the snowy petals seem like wings, and the blossoms to be hovering over the dark earth as if too pure to belong to it. A very pretty permanent spring border for a bed, is Erica carnea with Snowdrops coming up through the more open branches of the Heath. Snowdrops appear to flourish alike contentedly in all soils and positions, never more lovely than in the grass, where they hang like pearls, their own foliage at first quite concealed, but if in autumn a good thatch of leaf-mould, or old manure be laid over them, where they keep house together, the difference in size and vigour of the blossoms is very apparent the following spring. The Rush Lily, Sisyrinchium grandiflorum, is well in bloom. It has been with us the first flower of the New Year, and has braved the frost and snow without harm. At present its rich purple bells are dangling above the garden Aconites, but soon Narcissus odorus Heminalis will bear it company, and having the same Rush-like foliage and drooping habit of blossom, they associate well together. There is a marked difference in the robustness of the Sisyrinchium, since I have given it good rich loam, almost inclined to stiffness, instead of light peaty soil. Now, the flower-stems shoot up strongly a foot high, and a good clump with a couple of dozen blossoms open together, and swaying in the gentle breeze, as they are to-day, is a refreshing sight. Several such clumps placed together, with the old yellow hose-in-hose Polyanthus among them, makes a very pretty grouping. The Hepaticas are peeping out of their little leafy nests. Iris reticulata and I. reticulata Krelagei are both in blossom. Planted together at the same time, I. r. Krelagei only preceded its companion by two days.

The Daffodils are late with us this spring. Generally they are in bloom by the first or second week in February, but their flower-heads are only now leaning aside previous to bending downwards, after which, on the first soft day that comes, they are sure to open their treasure chamber.

The only fresh green leaves to be seen are those on the Tartarian Honeysuckle, that most presumptuous of shrubs, whose forwardness no amount of snubbing year by year from frost and bitter winds can ever teach to be more patient. Every spring the first new leaves are shrivelled up by the cold, and still each December it begins to bud again with as great assurance. *L. A. L.*

New Garden Plants.

GONIOPHLEBIUM CAUDICEPS, *Moore, n. sp.*

FRONDS simple, coriaceous, glabrous, oblong-lanceolate, tapered below, so as to form a narrow wing extending about one-third down the slender stipes, the apex drawn out into a narrow attenuated point or tail; the lamina about 6 inches long and an inch or rather more in breadth, seated at rather distant intervals on a slender rhizome about as thick as a crow-quill, the rhizome furnished with scattered appressed scales of variable form, dark brown in the centre, and of a paler brown and glandular at the edge; veins pinnate, running out parallel from the costa nearly to the margin, and connected by veinlets which meet at an acute angle, and produce an excurrent veinlet at the apex (as in typical Goniophlebium), these veins being evident on the upper surface as if marked out by a graver; the marginal veinlet-terminate in club-shaped apices; sori round, naked, situate in the costal areola, and produced on the lowest veinlet, which is free, thus forming a line near the costa, sometimes also on the first excurrent veinlet, and then forming a second line exterior to and parallel with the first, Hab. Formosa.

This is an elegant dwarf Fern, with simple glabrous, bright green fronds of firm texture, produced on long slender creeping rhizomes, on account of which it is well adapted for basket culture, under which mode of treatment it would form a nice companion to G. glaucophyllum. It was imported by Mr. B. S. Williams, of Upper Holloway, from the island of Formosa, and requires a stove temperature for its successful cultivation. The rhizomes, which are about as thick as a crow-quill, are green, sparingly furnished with appressed scales of variable form—roundish, oblong, or ovate—each having a dark brown centre, and a pale brown glandular edge. The fronds, which spring from a scaly protuberance on the rhizome at distinct points, are more widely separate on the free-growing parts of the rhizome, and are often produced in pairs nearly but not quite opposite. The slender stipe is from 2 to 4 inches long, its upper half margined by a narrow wing produced downwards from the lamina of the frond, which is about 6 inches long, and an inch or more in breadth; its form is oblong lanceolate, tapered below into the wing already mentioned, and running out into a long attenuate point, to which allusion is made in the name here adopted. The fronds have a glabrous surface of a bright green above, and are but slightly paler beneath, and they have this peculiarity—that the venation is distinctly inscribed on the upper side as if marked by a style or graver. The venation shows a costa which is slightly prominent above and more distinctly so beneath, from which proceed the pinnate veins running out in parallel lines almost to the edge, the veinules meeting at an acute angle between them, and throwing off an excurrent veinlet from the apex of the angle after the normal pattern of the venation on the genus Goniophlebium. The sori are round, large, yellowish-brown, produced on the free veinlet of the costal areoles, and thus forming a line beside the costa, a second row being sometimes developed outside the first on the lowest excurrent veinlet. The sori extend the whole length of the frond except a short space near the base and the apex. The free ends of the veins terminate just within the narrowly membranous margin in small club-shaped apices. This Fern bears a rather striking first-sight resemblance to the Polypodium Griffithianum of Hooker (Pleopeltis Griffithiana, mihi); but the venation of that plant, as figured in the *Century of Ferns*, t. 51, is altogether different, and the scales of the rhizome are more numerous and squarrose instead of being appressed as in the present species. *T. Moore.*

LÆLIA ELEGANS, *Rchb. f.*

I have received from Messrs. J. Veitch & Sons an uncommonly fine flower of this. It has both sepals and petals very dark purple, with a hue of I cannot say what—that same curious purple we admire in the Cleistes. The lip is shaped nearly as in the var. Houtteana, which I have only seen from Mr. Van Houtte and Mr. William Lee. It is well known that there is usually a purple broad line running from the mid-lobe towards the base of the lip underneath. This is very brilliant in the flower at hand. Messrs. Veitch inform me that this beauty comes from Mr. Ingram, of Elstead, who would appear to have a very fine collection. *H. G. Rchb. f.*

BARKERIA ELEGANS (*Knes. West.*), *var.* NOBILIOR.

There is no end to our getting new impressions even from old and well known plants. I thought I had seen enough of Barkeria elegans in the most distinct shades, some fine varieties having been lately kindly sent me by Mr. Philbrick, amongst them a very pale one. Now Sir Trevor Lawrence has sent me a variety with a flower of unusual size and surpassing others by a nearly black-purple spot on the lip, such as I have never seen before. Only an assiduous comparison convinced me that it was really B. elegans, but certainly var. nobilior. *H. G. Rchb. f.*

Orchid Notes and Gleanings.

ORCHIDS AT ILSINGTON HOUSE, PUDDLETOWN.

I WAS at this pretty place—where Mr. Brymer's collection of Orchids is well grown by his energetic gardener, Mr. Powell—on the 6th inst. A note on certain of his plants is worth sending in for publication, seeing that some rather discouraging notices of certain plants have been made of late. Vanda cœrulea here is hung up high in the Cattleya-house in baskets with little only of organic matter around them. The best plant has been here fourteen years, and now bears sixteen spotless leaves and the roots are like cigars on a long scale. I think this plant as well as the others that bear it company afford evidence of good culture, and should satisfy even Mr. James Anderson's query of a little while ago as to its culture of seven or eight years ago (if I remember right). Cattleya Dominiana also was beside it in high air, on Tree Fern blocks in baskets, eight years old and doing like a weed—another evidence of the right way to grow it. Angræcum Leonis on the stage below, with new leaves and roots, was pushing an English spike in perfection. The Dalkeith variety of Vanda tricolor was represented by a fine plant with two grand thick stems. Lælia anceps Dawsoni just opening; L. anceps, the new white variety, established on Tree Fern stems, has made growths nearly equal to the old ones, it has not yet bloomed, though doing well. Cattleya Lawrenceana is just pushing its spikes, and has grown like a weed, on a Tree Fern, in a basket or pot—all alike; every plant but one tiny scrap has a sheath on every lead; roots and growth are fine, and the large piece on a Tree Fern stem is beautiful. It is as yet a splendid grower, and Mr. Brymer stands a good chance of being the first to bloom it, as he did C. Sanderiana, to which I now refer. His large plant of this species has seventy-two leaves and twenty-eight leads, and health to the tune of hardly a leafless bulb—a magnificent plant, the only one of its size, I believe, now in existence; it is also a very fine variety. His other plants of this pre-eminent Cattleya are well grown and in splendid health, down to the smallest. They are growing on the south side of an east and west Cattleya-house and in conditions of temperature similar to my own, as described on p. 96 of the *Garden*, January 30, 1886. It is to be hoped more imports of this will arrive this year. Now as to two *rarae aves* in Cattleya Brymeriana and Lælia Amanda. Lælia Amanda is here to be seen as I presume it is nowhere else, Mr. Brymer having bought the large mass when it was sold some time since as Cattleya Rothschildiana; he has four or five pieces taken off it now in bud. They bloom twice a year with him, and the large plant has about thirty leads or more. If any one wants this (and the real thing), and can persuade the owner and plant to separate, here is the place to come to. C. Brymeriana, another original piece, is here too, and

also some pieces taken off it; and these are all doing splendidly. I have seen plants sold in and out of bloom as C. Brymerianana, but that in bloom was as much like the real thing as a good broad C. intermedia, of which here is a fine large specimen plant.

There are two specimens of C. Skinneri here, worth a long journey to see when in bloom—the one which took the Veitch Memorial Prize at the Botanic show in 1884, and another half as large again (about 3 feet square), with nearly forty sheaths now on it. C. Gaskelliana and C. Trianæ, and all the general run, are here doing well. One of the latter has two spikes of four buds each, but there were very few C. Trianæ in bloom. Of these I hope to write later on. Our late friend's name is well commemorated in C. Percivalliana, there not being a thin, bad variety present out of eight or ten in bloom; the lips were blazing in the sun. (Here let me say I purpose sending you an analysis of the grand collection formed by him, to record his efforts for Orchid culture, as a little encouragement to any one who is now commencing, and has the will and means to carry it to the extent he did, and may they be rewarded with such success as he was!) The dinner at the sale of his collection must have been a sad one—it would have been to me.

Lælia purpurata is well represented by fine plants, and standing out among them is one of the very old imported plants, which is thin habited and yellowish in its looks, but is of the grand type the old importations contained.

But to resume. In the cool houses, which are lean-to on a north wall, an Odontoglossum Alexandræ is luxuriating, though we at Rosefield personally like a shaded southern side to the house, and shaded by something thinner than a wall. Mr. Brymer has been singularly fortunate in blooming O. Andersonianum and O. Ruckerianum; out of his imported plants of O. Alexandræ he has quite a number. Masdevallia ignea superba (? Boddaert's var.) was in bloom, with immense highly coloured flowers, and a fine plant of M. Davisii will be a sight in time—forty or fifty leads on it. Lycaste Skinneri has had fourteen buds on one bulb, as I counted them; they grow well. I omitted to notice Helcia sanguinolenta in the Cattleya-house, just opening. Mr. Brymer and his gardener are to be congratulated about the health of the collection. The only regretable thing is, there are no more collections hereabouts. *De B. Crawshay.*

Cypripedium Fairieanum.

A fine coloured plate of this beautiful species, from Bhotan, is given in the last number of the *Revue de l'Horticulture Belge*. The dorsal sepal has wavy margins, and is of a white colour, with purple veins and broad margins of the same colour. The petals are narrower and more pointed, turned up at the ends, and similarly coloured. The lip is olive-green, flushed with purple. M. Jules Hye grows the plant in a moderately warm house near the glass.

Orchids in Flower at Mr. Philbrick's.

The collection of Orchids in this place shows, as usual, fine flowering characteristics, and although the deep green colour of the plants seen in some places is here absent, the development of bloom spikes is all that could be wished. The plants at Oldfield are not in any way coddled, and free exposure to the sun under glass, when not found detrimental, is indulged in to a considerable extent, so that short growth of foliage and well-matured pseudobulbs are the result.

A few excellent examples of Cattleya Trianæ with deep coloured red lip were noticed, and an especially fine piece of C. Backhousiana, the distinctive feature of the purple feathering in the petals being very marked, as was also the deep plum-coloured lip.

The tall Lælia superbiens has a flower-stalk of 6 feet in height, surmounted with a few of its deep rosy-lilac flowers. L. albida had massive spikes of its creamy flowers; it has been in flower for several weeks, is still fresh and presentable L. pedunculatis is showing a few of its purplish blooms; it is a difficult subject, that persists under the best of treatment to open badly. Of other Lælias coming into flower were noticed Dawsoni, Percivalliana, and L. flava.

The fine strong examples of the Chatworth variety of Cœlogyne were showing plenty of the gold-coloured sheaths of flowers that will expand in a short period. C. Lemoniana was in bloom in quantity, some of the more robust having flowers of much larger size and greater substance—possibly the effects of recent subdivision.

Cypripedium Boxalli was remarkably vigorous. Some difference of marking in the dorsal petal was noticed, being quite black, with a green margin in some, and in others the black patch was replaced with dark spots thickly placed, the white margin of the normal form being present. C. villosum had ten blooms, and C. calurum was in good form. Several examples were observed of the pretty yellow flowered Oncidium cheirophorum. This species is so delightfully fragrant and free-flowering, that it should be found in every collection, and flowering from October onwards it is especially valuable. Odontoglossum pulchellum, of sky-blue colour, and finely scented, was found in abundance; on one plant eighteen spikes were counted. This is another of the less showy, but desirable kinds, which all who value fragrant blooms should have. It has the fault of not standing well in the cut state. O. roseum has six spikes of its cheerful coloured blooms.

The Phalænopsis-house is, although small, in great beauty, plants being crowded one over the other in what is quite profusion. The plants were in the best of health, which was fully shown by the quantity of the bloom and the length of the racemes. In bloom were Dayana, Sanderiana, Casta grandiflora—a very fine example of this fine white species; Stuartiana nobilis, P. speciosissima and citratum were showing for flower, the latter having a flower-stalk 18 inches long. The air of the house is kept in a suitably moist condition by a bed of gravel extending under the plants, and covered with a thick growth of Cyrtodeira fulgida. *M. W.*

Æranthus Leonis.

I am pleased to see further remarks on the culture of this plant at p. 212. It is quite certain that at the time the first flowers were produced under cultivation in this country the material in which they were grown could not have had much influence on them in any way. It requires time to ascertain the best methods of treatment of any plant; but it is interesting to be informed that the plant does better in sphagnum than in peat and sphagnum mixed. *J. Douglas.*

ROOTS OF PLANTS.

(*Concluded from p. 203.*)

Radish.—July 9 we examined the roots of a plant of the Grey Summer Turnip Radish, and also one of the London Particular Long Scarlet variety. The roots of both penetrated the soil a distance of 2 feet, while the branches extended on either side more than 21 inches, mingling with those from adjoining rows. The tap-root did not begin to branch much until some distance below the edible part. The branches at first were few in number, usually but two or three at the tap-root. These extended nearly horizontally, and ramified towards their extremities into many fibrous roots. The greater part of the feeding roots lay in the upper 8 inches of the soil.

Though the edible roots of these two varieties are quite different in form, their rooting habits show no difference. We see that the Radish is a rather shallow rooting plant, and that its roots extend horizontally for a considerable distance. It is evident, therefore, that unless the soil contains abundant available plant food, the rows should not be planted as closely as the small size of the edible root might suggest; also, that stirring the soil deeply between the rows, as the plants advance toward maturity, must lacerate the fibrous roots.

Beet.

On September 16 we examined the roots of a plant of the Extra Long Dark Blood Beet. The main root was smooth and symmetrical to the depth of 8 inches, below which it divided into several branches, which were quite thick at first, but rapidly tapered to the size of a stalk of Timothy-grass, tapering gradually thereafter until they became fibrous roots. One of the longer ones extended 2 feet downward, while horizontal branches, which were mostly shallow in the soil, extended a distance of 2½ feet. The small fibrous roots seen on the surface of Beet roots after they are pulled seem to have very little office, as they penetrate the soil scarcely half an inch. The feeding roots chiefly proceed from the tap-root, below the thickened portion. Fibrous roots from the branches often extend upward apparently to the surface of the ground.

The root system of the Eclipse Beet, which is a Turnip-rooted variety, growing largely above-ground, is precisely similar in kind but slightly less extensive. We traced the roots downward about 22 inches, and horizontally a distance of 2 feet.

We thus see that the Beet plant draws its nourishment from an area of 12 to 20 square feet, and hence it is evident that where size of root is desired the plants must be given plenty of room.

Swiss Chard.

The root system of the Swiss Chard is decidedly more extensive than that of the garden Beet. On September 16 we traced a branch from a plant of Beck's Seakale Chard, horizontally, a distance of 3½ feet, and the tap-root, at the depth of 2 feet, was of the thickness of a Wheat straw. The tap-root and larger branches were thick and fleshy near the surface, the former regularly tapering as it extended downward, giving rise to branches on all sides. Some of the latter were three-fourths of an inch in diameter, the larger ones starting about 4 inches below the surface. Fibrous roots were numerous in the upper layers of the soil.

The Chard is a plant of the Beet family in which the foliage instead of the root has been developed through selection. It is interesting to observe that, with a decided increase of foliage over the common garden Beet, we have a corresponding extension of roots.

Parsnip.

In the Parsnip the tap-root is very long, and tapers very slowly after the first few inches in depth. In a plant of the Long Hollow Crown variety, examined September 17, we traced the tap-root downward a distance of 30 inches, beyond which it was too delicate to follow. Branches leave the tap-root throughout its length, many starting out below the clay line. One of these, at a depth of 2 feet, we followed a distance of 7 inches through very stiff clay. The fibrous roots in the upper layers of the soil are numerous but short, the longest ones appearing to extend but about 14 inches from the main root. Considering the proportion of the roots that lie deep in the soil, the Parsnip is a deep-rooting plant.

Carrot.

The root system of the Carrot, as compared with that of the Beet, is very small. September 16 we examined the roots of a plant each of the French Forcing and Long Red Altrincham varieties. Of both the tap-root was small, and soon tapered into a filament. We traced it downward 16 inches, at which depth it was too delicate to follow further. The horizontal roots apparently extended little more than a foot. The fibrous roots chiefly proceeded from the tap-root, though a few started from near the base of the thickened part. These extended both deep and shallow, some rising nearly or quite to the surface, while others apparently penetrated as deeply as did the tap-root.

It would appear from the slight extent of the horizontal roots in the Parsnip and Carrot that these would prosper under closer planting than the Beet can endure, though we believe it is usually recommended to plant the three at about the same distances.

The Beet and Carrot are biennials, forming their thickened roots the first season, and flowering and producing seed the second. In order to compare the roots of these plants in the first and second season of their growth, we examined, on September 17, the roots of a plant of each, that was set out in the spring to produce seed. The Beet in this case was of the Early Bassano variety, and the Carrot of the Long Orange. As the varieties were not identical with those examined of the first year's growth, the two may not be strictly comparable. We note, however, that the leading roots in the plants of the second year's growth extended quite as far as those in the first. The fibrous roots, however, appeared less numerous. They were certainly so in the Beet. In the plants grown directly from seed numerous fibres left the horizontal leaders and extended upward to the surface of the ground. Nothing of this kind appeared in the plants of the second year's growth.

The lower roots of the Carrot were developed to a greater extent in plants of the second year's growth than from those grown directly from seed.

How much of the stored material in thickene?

roots, like the Beet and Carrot, is used in the production of seed is an interesting question. We observed that the roots that had supported the flower-stem until the seed had formed and ripened were not materially different in appearance from others at the end of the first season's growth. A cross section of the root was entirely sound, and exhibited the concentric rings, as in the first season's growth. To give an indication of the amount of nourishment that had been consumed in forming the crop of seed, we tested the amount of sugar in a root of Bassano Beet that had produced a crop of seed, and one of the same variety at the end of the first year's growth. The former contained $5\frac{5}{10}$ per cent. of sugar, the latter very nearly 7 per cent., showing a difference in sugar content of about $1\frac{1}{10}$ per cent.

Musk Melon.

September 17 we examined the roots of a plant of the oblong netted Musk Melon. The plant had not made a very vigorous growth. The roots were for the most part very shallow in the soil, though we traced a single one to the depth of 16 inches. The main roots extended horizontally, and at a depth of 3 to 5 inches below the surface. We traced one of these a distance of 3 feet, which was as far as the longest stem reached. Short fibrous roots are, however, quite numerous at a depth of 8 or 10 inches.

It thus appears that the Musk Melon is a shallow rooting plant, but that its roots draw nourishment from a large area. This would seem to show that the method, so often practiced, of applying all the manure intended for this crop immediately beneath the hill, is not founded upon good judgment. Active manure in the hill may be very valuable as a stimulant to the young plants, but as the chief feeding ground of the roots is not beneath the hill, it would seem that a portion at least of the fertiliser should be applied for the benefit of those far-reaching roots that develope at the time the fruit is forming and maturing.

Cabbage.

The root system of the Cabbage is of the same kind as that of the Cauliflower, except that in the sample examined it was less extensive. On September 15 we washed out the roots of a finely headed plant of very early Etampes Cabbage. The tap-root extended to the depth of 20 inches, and the horizontal roots a distance on either side of about 18 inches. The fibrous roots lie chiefly in the upper layers of the soil, although they occasionally appeared at a considerable depth. Some of these rose upward apparently to the surface of the soil. It is entirely possible that had we chosen a plant of one of the larger growing late varieties, we should have found the root system more extensive.

Kohl Rabi.

The root system of the Kohl Rabi, as indicated by a plant of the early purple Vienna variety, examined September 15, is very similar in kind and in extent to that of the Cauliflower. We traced the tap-root to a depth of more than 2 feet, following it through 14 inches of a very compact clay. Owing to the delicacy of the root we were unable to reach the end. The horizontal roots extended 2 feet on either side. As in the Cauliflower and Cabbage, the fibrous roots were most numerous in the upper 8 inches of the soil.

From our observations made thus far, it appears that in the Cabbage family the extent of the roots bears a relation to the amount of the foliage. Thus in a plant of Cauliflower, of which the foliage was more abundant than that of the sample of Cabbage examined, the root system was decidedly more extensive. In a plant of Kale, having a still larger development of foliage, we found a correspondingly more extensive development of roots.

Although the members of the Cabbage family that we have examined may in one sense be considered as deep rooting plants, from the number of their fibrous roots that lie near the surface, it seems probable that, so far as methods of culture are concerned, they should be regarded as shallow rooters.

Celery.

October 9 we examined the roots of a plant of Boston Market Celery. We found the root system rather concentrated. The deeper roots extended scarcely more than 15 inches, while the horizontal ones reached no further. The fibrous roots were numerous. Many of these proceded from the tap-root just below the base of the leafstalks. Others grew out from the main roots, of which there were four in the plants examined. These were of about the thickness of a Wheat straw and tapered rapidly until they became fibrous. The fibrous roots did not rise into the soil placed about the leaf-stems for blanching.

General Observations.

It is entirely possible that the average farmer and gardener do not realise the extent of the area traversed by the roots of their crops. We are accustomed to think of a plant as obtaining its nourishment from a small area directly beneath the foliage, whereas, as appears from our observation, many plants seem to secure a large part of their food beyond the extent of their leaves. If this be true, it is obvious that the effects of hill manuring must be chiefly upon the young plant, and that where no fertiliser is applied beyond the limits of the hill, it seems probable that the plant receives little benefit from the manure at the time when it is completing its growth and maturing its seed.

What object is attained by the deeply penetrating roots of vegetables, as noted in the case of the Pea, Parsnip, &c., is an interesting question. Certainly they are not required for the purpose of sustaining the plant against wind. If they were in search of food they would hardly penetrate in this direction, for we have many examples in which the roots of plants have extended towards their food with a directness that seems almost like instinct. If they were seeking moisture, it would seem that they might secure it at lesser depth. The fact that the fibrous roots are almost always most numerous in the upper layers of the soil would seem to indicate that a dearth of moisture had not existed here. *Report of New York Agricultural Station.*

THE MUMMY PEA.

"H. P. A.," who makes enquiry from Ontario as to this variety, will find the history of this Pea given in full in our columns, 1873, p. 44, with a figure. The stems are fasciated, hence the name, Crown Pea, commonly applied. It is interesting to know that the Pea "does splendidly in Canada, and that it is the right Pea for the soil and the climate." This is valuable information, which is more than we can say of the legend as to its origin. We have specimens sent to us every summer, so we suppose it can be had of the seedsmen.



Fig. 44.—The mummy pea.

ORCHIDS FOR AMATEURS.

(*Continued from p.* 174.)

The genus Cœlogyne is divided by horticulturists very properly into two—Cœlogyne and Pleione—as these two sections of the botanical genus differ widely in habit. In the Cœlogynes the bulbs are perennial, and the leaves by which they are surmounted last at least two years, whilst in Pleione the leaves are deciduous, fall before the flowers are developed, and the bulbs of the preceding year shrivel and decay when the new growths are nearly completed. The genus Cœlogyne was formerly placed by Lindley amongst the Epidendræ; more lately it has been associated with the Malaxideæ, showing clearly that these two groups are very closely associated if even there is any ground for retaining the latter group. [In the *Genera Plantarum* Cœlogyne is placed in the Epidendreæ. Ed.] The Cœlogynes are all natives of tropical and sub-tropical Asia, and of the islands of the Eastern Archipelago. The perennial Cœlogynes require much the same treatment as the Dendrobes, a well marked period of rest and abundant heat and moisture during their term of growth. They are all more or less epiphytes, and do well in well-drained pans, planted in fibrous peat or sphagnum, but they need to be well elevated above the rim of the pot, and the layer of compost should not exceed three quarters of an inch in thickness for the smaller kinds such as C. cristata. When at rest they should have only enough water to prevent their bulbs shrivelling too much, although they ought to be allowed to become deeply corrugated before any moisture is given when they are resting. The extent to which the bulbs should be allowed to shrivel with advantage must be a matter of individual experience. The slender green roots suffer at once if too much moisture is allowed during their dormant stage.

Cœlogyne cristata.—When properly managed this is one of the most floriferous Orchids, but there is no chance of obtaining flowers unless the bulbs are large and the roots healthy. The pseudobulbs are very numerous, 2 inches in length, oval, pale green, and semi-transparent. Each is surmounted by a pair of

dark green, strap-like leaves. The bulbs are surrounded by leaf-like brown scales, from the axils of which the flower-stems are produced in spring. The flowers are borne in racemes, each bearing from four to eight flowers; each flower is over 2 inches in diameter; they are pure white, except the labellum. The labellum is very large, and three-lobed, with five parallel ridges in the throat; the grooves between these ridges are of a dark orange-yellow colour. Several varieties of this plant are much esteemed; the Chatsworth variety has larger flowers than the usual form; C. cristata Lemoniana has a very bright pale yellow disc instead of the deep orange-yellow of the ordinary form; and C. cristata hololeuca or alba has the labellum pure white. This plant is very rare, and always commands a very high price in the market. C. cristata is a native of the Himalayas; it grows at an altitude of from 4000 to 7000 feet, and therefore requires a moderate temperature; some succeed well with it in a warm greenhouse, but it needs to be kept growing in winter, or at least until the end of November. It flowers from January to April, according to the treatment it receives. Dr. Wallich states that this plant in the wild state grows on rocks and trees, and although of late it has always been cultivated in pans I believe that growing it on a block or log is well worthy of a trial. In former days it was grown in this way by Mr. Lyons, then an enthusiastic amateur, and he reports strongly in favour of this method of culture.

Cœlogyne corrugata.—The pseudobulbs are ovate and pointed, corrugated in lines, and of a dark green colour. The flowers of this species resemble those of an Odontoglossum, they are borne in racemes of five or six; the sepals and petals are very broad, flat, and pure white. The lip is three-lobed, the lateral lobes very round. The throat has three parallel raised lines, and is yellow, with orange streaks. This plant was introduced in 1863, but it appears to be very scarce now in collections. It is a very charming flower.

Cœlogyne ocellata.—This plant is closely allied to C. corrugata, but the bulbs are smaller and enclosed in brown bracts. The petals and sepals are narrower. The lip is three-lobed, and the lateral lobes enclose the column. It has four large ocellate spots on the lip, yellow, surrounded by a ring of orange. *B. T. L.*

(*To be continued.*)



FIG. 45.—GREAT APPLE ROSE: FRUITS SCARLET.

ROSA POMIFERA.

Of late the Japanese Rose, R. rugosa, has been received with favour, not only for its massive foliage and bold flower, but also for its noble fruits. But we need not go so far as Japan to find similar qualities. Parkinson knew nothing of Japan, but he had taste enough to perceive the beauties of the "Great Apple Rose." The specimen from which our illustration (fig. 45) was taken was found in the Devil's Glen, Co. Wicklow, and drawn by Mr. Burbidge. Mr. Baker (*Journ. Linn. Soc.* xi., 210) says:—"It is an old favourite in gardens, but seems to possess no fair claim to be considered British." Parkinson, however, thought it wild, and so did Ray—if, indeed, he did not confound with it R. mollissima. In any case, the flowers and fruit are both beautiful.

PLANTS ON THE RIVIERA.

The English who winter along this coast have recently been receiving from home many dismal accounts of the state of the weather, which appears to have been unusually inclement even for January; under such circumstances one is inclined to ask, Is it a benevolent act to publish a list of over 500 species of plants blossoming in the open air at a place thirty hours distant by rail, to be read by those compelled to endure the full rigour of a northern winter? Leaving you to decide this point I would observe that we have been by no means free of bad weather. Snow in immense quantities has fallen in the Alpes Maritimes, and at both Cannes and Nice rather sharp frost has prevailed for days together, so that the injury wrought there, as also at Bordighera, Alassio, and other points on the coast, has not been small. Here I have not marked more than 3° Cent. of frost on the coldest night, and the tenderest plants are practically uninjured. The autumnal rains did not fall in sufficient quantity till nearly the end of October, but the fall since then has been ample. The Olive crop is good on the low-lying lands, but poor where there has been insufficient moisture. The Phylloxera defies the efforts of the Italian Government to stamp it out, and its presence has been recognised in 200 places in this district alone.

The growing of Roses for sending at this time of year to the North has proved so profitable that in some places the peasants are cutting down their Olive trees and substituting that culture. Hard times in commerce and the depression in all that pertains to agriculture, not only in England, but in other countries, have had an immense effect on the Riviera, which is so dependent on its winter visitors; hotel keeping is at a discount, and owners of villas thankfully accept half what they formerly asked. Monte Carlo alone flourishes, and over 400,000 visitors per annum attest the combined attractions of gambling, pigeon-shooting, first-class music, one of the loveliest gardens in Europe, and a delightful climate. *Thomas Hanbury, La Mortola, February 2.*

List of 316 Plants flowering in the Open Air in Mr. Thomas Hanbury's garden at La Mortola, Ventimiglia, Italy, during the month of January, 1886:—

Aberia Caffra, mascula et fœmina
Abutilon hybridum Darwinii
,, ,, Thompsonii fol var.
,, ,, ,, flore-pleno
,, ,, plur. var.
,, striatum
,, venosum
,, vexillarium
,, ,, striatum
Acacia albicans
,, argyrophylla
,, bidentata
,, botryoides
,, dealbata
,, floribunda
,, iteaphylla
,, latifolia
,, longissima
,, ,, pendula
,, lophantha
,, ,, gigantea
,, ovata
,, retinodes
,, Sophoræ
Achania Malvaviscus floribunda
Æonium cuneatum
Æschynanthus grandiflorus
Agathæa cœlestis
Agave yuccæfolia
Aloe arborescens
,, ciliaris
,, echinata
,, frutescens
,, virens
Alyssum maritimum
Amygdalus communis
Anthemis frutescens
,, ,, Etoile d'Or
,, ,, grandiflorum
Antholyza æthiopica
Anthurium cordatum
Antirrhinum majus, plur. var.
,, orontium
Anemone coronaria, plur. var.
,, hepatica
,, hortensis
,, pavonina
Aponogeton distachyum
Aralia dactylifera
,, guatemalensis
,, hederæfolia
,, papyrifera
,, pentaphylla
,, Sieboldi
,, umbraculifera
Arbutus Andrachne
,, Unedo
Arum Arisarum
Asclepias curassavica
Banksia australis
,, marcescens
,, verticillata
Begonia Bruantii
,, fragifolia
Begonia fuchsioides
,, maculata
,, obliqua
,, Rex, plur. var.
,, semperflorens
,, Uhinkii
,, xanthina
Bellis perennis, fl.-pl., plur. var.
,, rotundifolia
Berberis asiatica
Bignonia floribunda
,, jasminoides
Biota orientalis
,, ,, compacta
,, ,, aurea nana
,, ,, elegantissima
,, Pandorana
Boldoa fragrans
Borago officinalis
Bougainvillea glabra
,, spectabilis
,, ,, Wesseana
Bouvardia flavescens
,, hybrida var. alba plena
,, ,, ,, elegantissima
,, ,, ,, Dazzler
,, ,, ,, Houtteana
,, ,, ,, Nauduiu
,, ,, ,, The Bride
,, ,, ,, umbellata
,, Humboldtii
,, leiantha
,, longiflora
Buddleia americana
,, auriculata
,, madagascariensis
,, salicifolia
Bunias Cakile
Calempelis scaber
Calendula officinalis
,, ,, var. Météor
Callirhoe quadrivalvis
Camellia japonica, plur. var.
Campanula pyramidalis
Canarina Campanula
Canna indica, plur. var.
,, iridiflora
Carica cundinamarcensis
Cassia floribunda
Casuarina equisetifolia
,, quadrivalvis
,, stricta
Catha edulis
Ceratonia Siliqua
Cestrum aurantiacum
,, magnificum
,, Parqui
,, vespertinum
,, Warscewiczii
Cheiranthus Cheiri
,, incanus
,, mutabilis
Chimonanthus fragrans
Choisya ternata

Chorozema rotundifolium
Chrysanthemum coronarium
,, indicum
,, japonicum
Cineraria hybrida, plur. var.
,, platanifolia
Citrus, plur. spec. et var.
Clematis cirrosa
Coleus barbatus
Colletia cornuta
,, cruciata
,, horrida
Columnea longifolia
Convolvulus mauritanicus
Conyza glutinosa
Correa alba
,, Alexandrina
,, cardinalis
,, Colvillei
,, hybrida
,, speciosa
Corylus Avellana
Coronilla Emerus
,, pentaphylla
Cotyledon coruscans
,, luridum
,, macranthum
Crassula lactea
Crocus vernus
Cunonia capensis
Cuphea eminens
,, Galeottiana
,, platycentra
,, Roezlii
Cupressus Corneyana
,, elegans
,, excelsa
,, funebris
,, gracilis
,, Knightiana
,, Lambertiana
,, thurifera
,, torulosa
,, ,, majestica
Cyclamen persicum, plur. var.
Cyperus alternifolius
Cypripedium insigne
Cyrtanthera magnifica
,, polyantha
Dahlia imperialis
,, Maximiliana
Daphne indica
,, ,, var. marginata
,, hybrida
Datura candida var., fl.-pl.
Dianthus caryophyllus, fl.-pl., plur. var.
,, rupicola
Dipsopappus filifolius
Dipteracanthus squarrosus
Diotis maritima
Dodonæa Thunbergii
Echeveria carnata
,, clavifolia
,, colossea
,, fusifera
,, gibbiflora
,, imbricata
,, metallica
,, navicularis
,, pachyphytoides
,, retusa
,, subsessens
,, securifera
Echium fastuosum
Elæagnus undulata
Epacris Fireball
,, devoniensis
,, impressa carnea
,, hyacinthiflora
,, miniata
,, lunata
,, Queen Victoria
,, rubella
,, The Bride
,, Vesta
Ephedra altissima
,, monostachya
Epiphyllum truncatum
Erica australis
,, barbata
,, mediterranea
,, melanthe a
,, hirta
,, imperialis
,, versicolor
,, Wilmoreana
Eriobotrya japonica
Eriocephalus africanus
,, filifolius
,, umbellatus
Eucalyptus globulus
,, megacarpa
,, melaleuoxylon
,, sideroxylon
,, species
,, Verbena
Eupatorium micranthum
Euphorbia biglandulosa
,, Characias
,, clandestina
,, dendroides
,, Gerardiana
,, neriifolia
,, oxystegia
,, segetalis
,, splendens
,, veneta
Euryops spathaceus
,, virgineus
Faba major
Ficaria ranunculoides
Ficus repens
Fuchsia affinis
,, hybrida, plur. var.
Fumaria officinalis
Garuleum pinnatifidum
Gaillardia picta var. Lorenziana
Gasteria globosa
Genista monosperma
Globularia Alypum
Gnidia carinata
Gomphocarpus arborescens
Grevillea Banksii
,, longifolia
,, macrostachya
,, rupestris
,, Thelemannii splendens
Gypsophila muralis
Habrothamnus fascicularis
,, hybridus
,, magnificus
Hakea acanthophylla
,, eucalyptoides
,, pectinata
,, suaveolens
Halleria lucida
Hardenbergia ovata alba
,, ,, rosea
,, ,, violacea
Hedera algeriensis
Helichrysum bracteatum
,, rupestre
Heliotropium peruvianum, plur. var.
Hibiscus liliiflorus
Helleborus fœtidus
Hyacinthus orientalis, plur. var.
,, romanus
Hypericum canariense
,, patulum
Iberis semperflorens
Illicium religiosum
Iochroma coccineum
,, Tonelianum
,, tubulosum
Ionopsidium acaule
Iris pumila
,, persica
Isomeris arborea
Jasminum grandiflorum
,, nudiflorum
,, ochroleucum
,, triumphans
Justicia magnifica
Kennedya lucida
,, Fredwoodii
,, Comptoniana
Kleinia anteuphorbium
,, ficoides
,, nerifolia
,, nodosa
,, odora
,, repens
Lachenalia tricolor
Lantana Camara
,, Sellowii
Lasiandra macrantha
Lavandula multifida
,, pinnata
Lavatera arborea
,, olbia
Libonia floribunda
,, penrhosiensis
Linaria cymbalaria
,, maroccana hybrida
,, pilosa
Linosyris stellata
Linum trigynum
Loasa Wallisii
Lobelia Erinus
Lonicera caprifolium
Lopezia macrophylla
,, miniata
Lotus Jacobæus
,, hybridus
,, luteus
Lycium afrum
Mahonia Beali
Mammillaria discolor
Maurandya Barclayana
Medicago arborea
Melianthus Trimenianus
Mesembryanthemum aureum
,, Cooperi
,, emarginatum
,, filamentosum
,, linguæforme
,, spinulosum
,, violaceum
Moricandia arvensis
Muhlenbeckia nummularifolia
Musa Ensete
Narcissus aureus
,, papyraceus
,, Tazzetta
,, ,, fl.-pl.
Neja falcata
Nicotiana glauca
,, virginiana
,, ,, var.
Olea fragrans
Opuntia subulata
Oreopanax species
Osteospermum moniliferum
Othonna Albanasiæ
,, carnosa
,, trinervia
Oxalis rosea flore alba
,, cernua
Pachyphytum bracteosum
Passerina hirsuta
Passiflora hybrida Imperatrice Eugénie
Pelargonium hederæfolium
,, ,, fl.-pl., plur. var.
,, ,, scarlet
,, quercifolium
,, ,, minor
,, zonale, plur. var.
,, ,, fl.-pl., plur. var.
Pentstemon gentianoides, plur. var.
Pentzia virgata
Phœnix canariensis
Phygelius capensis
Phylica ericoides
Physalis edulis
Pilocarpus pinnatifolius
Pimelea decussata
Pisum sativum
Pittosporum bracteolatum
Petunia hybrida, plur. var.
Plumbago capensis
Primula acaulis
,, Auricula
Primula sinensis, plur. var.
Polygala attenuata
,, Dalmaisiana
,, grandiflora
,, juniperina
,, virgata
,, Pourtalesii
Polygonum platycladon
,, repens
Pyrethrum Tchihatschewi
Reseda odorata grandiflora
Rhamnus alaternus
Raphiolepis indica
,, phæostemon
Rhus asiatica
,, viminalis
Ricinus hybridus
Rochea coccinea
,, falcata
Rosa Banksiæ lutea simplex
,, Fortuneana, fl.-pl.
,, bengalensis, plur. var.
,, bifera, plur. var.
,, indica odorata, plur. var.
,, Noisette Lamarck
Rosmarinus officinalis
Russelia juncea
Ruta divaricata
Salvia albo-cærulea
,, Bethelli
,, boliviana
,, cacaliæfolia
,, cærulescens
,, coccinea
,, confertiflora
,, discolor
,, dulcis
,, frutescens
,, gesneræflora
,, Grahamii
,, Heeriana
,, ianthina
,, involucrata
,, lanata
,, lantanæfolia
,, leonuroides
,, mexicana
,, nigrescens
,, paniculata
,, porphyrantha
,, princeps
,, pulchella
,, puncticalyx
,, semiatrata
,, splendens
Saxifraga crassifolia
Scabiosa maritima
Schinus Molle
Scutellaria scarlatina
Sempervivum arboreum
Senecio angulosus
,, crassifolius
,, deltoideus
,, longifolius
Senecio macroglossus
,, mikanioides
,, oxyriæfolius
,, pyramidatus
,, vulgaris
Sequoia sempervirens
Sida carpinifolia
,, mollis
Silene pendula
Sipania carnea
Siphocampylus nitidus
Solanum giganteum
,, jasminiflorum
,, grandiflorum
,, laciniatum
,, lanceolatum
,, marginatum
,, neriifolium
,, Pseudo-Capsicum var. Hendersonii
,, verbascifolium
,, Warscewiczii
Sparmannia africana
,, ,, fl.-pl.
,, palmata
Sphæralcea umbellata
Spiræa Reevesii, fl.-pl.
Statice latifolia
Sutherlandia frutescens floribunda
Tacsonia exoniensis
,, ignea
,, mollissima
,, pinnatistipula
,, tubiflora
Tecoma capensis
,, stans
Tempeltonia retusa
Teucrium fruticans
Thlaspi Bursa-pastoris
Thuia gigantea
Thunbergia coccinea
Tropæolum majus, plur. var.
,, peltaphyllum
Tussilago fragrans
Ulex europæus
Valeriana hortensis
Veronica Andersoni
,, salicifolia
,, speciosa
Viburnum suspensum
Vinca major
,, minor
Viola odorata
,, ,, The Czar
,, palmata
,, Wilsoni
Visnea Mocanera
Vittadenia trilobata
Volkameria japonica, fl.-pl.
Westringia grandiflora
Xanthochymus ovalifolius
Zinnia elegans nana, fl.-pl., plur. var.

Total, 516

HIMALAYAN PRIMROSES FROM SEED.

DR. KING of the Calcutta Gardens has succeeded during the past season in collecting from the Sikkim Himalayas seed of several species of Primrose as yet unknown in English gardens. Some of this has been kindly distributed amongst English gardeners by Mr. Thiselton Dyer, and by Dr. King himself [And by Dr. Duthie, of Saharunpur. ED.]. The seeds were collected at elevations varying from 11,000 to 15,000 feet, and judging from our experience of other plants, all may be expected to be hardy in England, though some are sure to prove more refractory than others in adapting themselves to their new conditions. As two or three of my friends have already written to me asking how these seeds should be treated, perhaps I may give a few hints derived from several years' practice.

All Primrose seed, as far as I know, germinates more slowly in proportion to the length of time during which it has been kept out of the ground. If sown as soon as it will shake out of the pod, and the soil is kept moist, it often comes up in a week; but if it has been kept dry for some months, it may sometimes remain dormant for long after being sown; the late Mr. Anderson-Henry, I think, recorded one instance in which a rare Primrose grew up after the seed had been in the ground three years; seed should not therefore be hastily condemned for not coming up. My rule is in all cases to sow Primrose seed as soon as ripe, or as soon as I get it, no matter what the season. It is better to sow in pans, which should be half filled with drainage. I never give any artificial heat, but put them in a frame, raising them so as to be close to the light. After sowing, the soil should never be allowed to get dry; sun-heat is good, but it should come through some shading material like tiffany, as young seedlings are liable to be burnt up if exposed to full sun later than March. Any kind of fungoid growth on the surface of the soil is bad both for the seed and the young plants. The Liverwort (Marchantia) is the worst of all. It is therefore very important that the soil should be sweet, and free from spores of fungus as far as possible. Whether these come from the air, the water, or the soil, I leave others to decide; but I think probably they come from all these sources. I have tried watering only with water which has been boiled, I have tried scalding and burning the soil, and laying a flat piece of glass over the surface; but I find the growth of lichens depends more upon the character of the soil than on the use or neglect of other precautions. The usual mixture of loam and sand and leaf-mould may be used for the under-soil, but an inch of the surface should be most carefully selected and prepared. The sweetest soil I can find for the purpose is newly dug fibrous loam (I take off 2 inches of the top and put it back, and use the next 4 inches) from an old pasture, dried and rubbed fine with the fingers, with enough silver-sand to prevent caking, but no leaf-mould or peat. I have tried the plan, so often recommended, of keeping the pans in the dark, and think it good if the pans are examined nearly every day, and removed directly the seed germinates; but as I have lost two or three lots of seedlings from their having been left growing in the dark for several days, the plan requires great watchfulness. I never cover even the larger Primrose seeds with soil—it is easier to see what they are doing if uncovered. When the seedlings are large enough to transplant—and if the seeds are sown late in summer, as soon as ripe, and they have been wintered, as they should be, out of the frost, they will be large enough in spring—I generally bring them on in large boxes, or in a store bed. Some kinds, such as denticulata and rosea, flower when a year old; others, as Stuarti, sikkimensis, and luteola, must be two years old before they flower. A large proportion of Primroses of all kinds do best as biennials, or rather reach their best flowering condition at their second flowering; after that some divide easily, and make good plants. P. rosea may be pulled to pieces, P. denticulata may be cut up, even dividing through the crown; and if done late in summer this treatment encourages late flowering, so desirable for the species, which often tries to flower in the middle of winter. Most of the kinds, however, never do well after division, and must be renewed from seed. I find all the sorts I have yet tried ripen seed here except P. Stuarti. I should also mention that the flower of some of the later flowering kinds is easily burnt up if they are exposed to mid-day sun. I find that P. sikkimensis and P. Stuarti for this reason do better in a north-east aspect than when facing south. The soil should be light, deep, rich, and well drained; even those kinds which are said to grow in very wet soil do better here on raised beds, which are regularly watered in dry weather, than if allowed to get their roots into the cold undrained clay. *C. W. Dod, Malpas, Cheshire.*

ORCHID PRUNING.

(*Concluded from p.* 172.)

DENDROBIUM.—There is great variety in this extensive genus, some of the species growing but a few inches in height, others reaching 6 and 8 feet or more. Some produce their blossoms from growths of only a few months old, while others do not commence to flower until they have been fully developed for as many years. There are some whose individual flowers last but a day or two, whilst others remain in a perfect state for twelve weeks; and though most of the species complete the growth of their bulbs in one season, there are others which require two or more years to mature their growths. Again, we may find some species that may be classed in one or another of the sections already treated on; but most of them differ in one important point, and for this reason I assign them a section almost their own. In Dendrobium some of the species continue to throw out bloom from the same pseudobulb for years in succession, or at intervals of several years.

A few species exhaust themselves in the first year they bloom, or produce a few flowers in the second year. I shall not now notice species and varieties which in this way differ so much from each other, these facts being known to most cultivators, and only mention them as bearing on the question of pruning, in all the other sections the bulb blooms but once; so that when it has bloomed we know it will never do so again. But here we have to ascertain whether it will bloom again before deciding to cut it out. This is really the only point claiming special attention, and it is here where the rule respecting bloom more forcibly applies. While we may cut away a three-year-old growth from D. nobile to improve the appearance of the plant without injury to its health,

we must not so treat D. bigibbum; for though we may improve the appearance, we should certainly cause injury to the plant, the latter species flowering from bulbs of five and six years old, while the former will be exhausted after flowering the third year, if not earlier. Again, two-year-old growth from D. Wardianum may be cut away with advantage, but if I cut out a ten-year-old growth from D. moschatum I should do wrong, for that growth may produce several spikes of bloom. But there is a time when the growths of every species do become exhausted; then, and not till then, do I recommend the use of the knife.

It will be observed that I have been dealing only with old exhausted growths, and that I advise the pruner to keep sufficiently far back, that their removal may be safely performed. The chief objects to be gained are neatness and pleasing appearance of the plant; another, however, is that the plant will not require so large a pot or pan. But notwithstanding all that I have said on the matter, there will be cultivators who would hesitate to take off these old growths; and there are others who will adopt pruning without quite understanding it, and cut away right or wrong. It is for the guidance of this class that I have ventured to state my reasons, and thus attempt to give a few simple aids by which the Orchid grower may tentatively act. *N. Blandford.*

Hardy Fruit Garden.

PEACH TREES.

Since the adoption of glass coverings for walls, principally in the southern parts of the country, as a safeguard against spring frosts, the outdoor cultivation of Peaches does not receive the same attention as it formerly did; nevertheless, there are still numbers of ardent growers of the fruit in the old style who take pride in a wall of fine trees; and well they may, for it requires more skill to produce a finely-coloured crop of fruit outdoors than under glass, excepting perhaps the first early crop. There are many cultural advantages secured when trees are under glass, which are not practically available for trees on walls; still, in favourable districts, no one need fail in attaining good results, providing the trees on walls receive a fair amount of attention at the proper time. One of the not unimportant cultural details is the retarding as much as possible the opening of the blossoms in spring. This in a great measure can be accomplished by allowing the young wood to remain unnailed to the wall until the blossoms are about to open. They can then (if carefully handled) be nailed or tied with the loss of but few flower-buds. As a further inducement to the flower-buds not to show their colour too early, tiffany blinds on rollers or otherwise may be brought into request during the sunny part of the day, as well as at night if frost does not threaten, until the blossoms are expending. The longer the opening of the blooms can safely be retarded, the greater the chances will be of securing a good set of fruit. If one only succeeds in keeping them back a week or ten days there will be something gained, and the increase of warmth will entice bees out of their hives, and thus assist the fertilisation of the blossoms. *R. H. Richards, Somerley.*

Plants and their Culture.

CAMELLIAS AND AZALEAS.

Where there is a good selection of early and late flowering varieties of the former there is little or no difficulty in keeping up a supply of blooms from the end of September till the early part of May, or later, where there are suitable northerly houses for retarding them; but it will be found that the blooms produced so late in the season will not last nearly so long as those that come on earlier, owing, of course, to the increase of warmth. Just after they have made their growth is the best time for potting the plants; if they are potted just after flowering it materially interferes with their growth, as the roots are then very brittle. Only those plants that have been grown in small pots for furnishing, and have got pot-bound, should be potted early. The soil should be good fibrous loam and peat in equal proportions, with a liberal quantity of silver-sand.

Azaleas, whether for exhibition or for the display in the conservatory late in the spring, are much benefited by having a north house, where they get plenty of light, with but a small amount of direct sun-light, as when the plants are grown in a house on a south aspect it is not easy with an increase of sun-heat to keep down the temperature sufficiently without having to give too much ventilation, which at that season is not advisable. *A. Evans, Lythe Hill, Haslemere.*

The Flower Garden.

POTTING AND PROPAGATION.

Push on with the propagation of bedding plants. Sow Antirrhinums, Verbena venosa and other Verbenas, also Carnations and Picotees. Pot up rooted cuttings as fast as they are fairly rooted. Be careful to save all the roots in lifting the cuttings, and see that the soil is warmed to the same degree as the house the cuttings are struck in. When potting do not ram the soil in the pots with the thumb, as many of the plants will thus have their tender roots stripped off, and a large percentage will have to make fresh roots after potting. The best plan is to place a little moss in the bottom of the pot. Then fill up about half full with compost. Take the rooted cutting in the left hand, and drop the roots on to the soil, then fill up to the top. Give it two or three raps on the potting bench, and pass the right thumb round to remove any rougher portions of the compost remaining. If possible the newly potted plants should remain in the same temperature in which they are struck for ten days or so, and then be hardened off gradually.

See that weeds are not allowed to run to seed on gravel walks. They have been vegetating rapidly under the late snows, there having been much frost previous to the snowfall. Box edging should be laid. Where necessary remove the gravel from the walks for a distance of about 20 inches from the Box. Dig out the old edging, then proceed to dig up the line of the intended edging. My plan is to dig out all the old soil, throw it on to the bed or border near at hand, wholly replacing it with soil from the beds, if advisable.

When well trodden, and all the stones raked out, take the levels, place pegs at each corner—in the cases of long edgings it is necessary to have several intermediate pegs—stretch the line where it is too long a distance to reach with the levelling rule, tread and afterwards beat the whole body of soil firm, making it also level. Then cut perpendicular with the spade, giving a sort of back stroke at the same time as the downward one. Pull the Box all to pieces, trim it to 6 inches in length, placing it thinly along in the notch, holding it with the back of the left hand, while with the right the soil is firmly packed against the Box, making it secure against the perpendicular edge. With the spade place the remaining portio of the soil alongside to within an inch of the top of the Box, afterwards make the line of Box firm with the foot. Cut away all superfluous soil and throw it on to the beds. Replace the gravel, rake it well, finishing the work with a heavy rolling. *Wm. M. Baillie.*

The Kitchen Garden.

GENERAL WORK.

Globe Artichokes, which were protected in the autumn by means of litter or leaves, should be looked over, and any that have become beaten down or decayed removed, the hearts of the plants cleared from rubbish, and a portion of the covering replaced. Should the state of the ground and weather permit, fill up all blanks in the autumn-planted Cabbage quarters, afterwards stirring the surface with a fork or hoe. Cauliflowers under hand-glasses will be benefited by a dusting of quick-lime, and the soil between them stirred with a small hand-fork. Continue to make sowings of early and second early varieties of Peas at distances to allow of a row or two between of Potatos, Spinach, or Cauliflower.

SOWING.

In a general way proportionate sowings every ten days or a fortnight will keep up a regular succession. Sow Seville Longpod, Johnson's, or any other approved variety of Broad Beans, in double lines, placing the seed from 4 to 6 inches apart, and 2 inches deep in the soil, and a distance of 3 feet between the rows. When ready, and thoroughly hardened off, plant out those recommended to be sown in boxes in a former Calendar, giving protection until they become established and commence growing. Vegetable Marrows.—Raise a few plants in heat for early framework, also Cucumbers for the same purpose. Herbs.—Make a small sowing of Sweet Basil in heat, and when ready prick out into pans or boxes for early use. Where the supply of Parsley is becoming short, take up from the open ground good strong roots, plant into boxes, and place in gentle heat. Shallots and Garlic divide and plant out in shallow drills 4 to 6 inches apart, and 9 inches apart, and if the situation be at all damp, on slightly raised beds; a good sprinkling of sifted coal-ashes over the surface should be applied before planting. Bring forward all arrears in ground-work, and take every opportunity of stirring the surface of all land intended for early sowings, particularly those for Onions, Parsnips, and Carrots. This operation is expeditiously and best performed in the morning during slight frosts, thereby destroying slugs and other insects, and attaining a good seed-bed. *John Austen, Witley Court.*

The Apiary.

LORD SUDELEY'S HONEY FARM.

It is now, I believe, some years since Lord Sudeley began to turn his attention particularly to fruit growing. He had some heavy land, and was advised to grow fruit upon it. This he did, utilising several hundred acres. Lord Sudeley knew that insects, especially bees, were very useful in carrying pollen from flower to flower, and he asked Mr. T. B. Blow if he thought it would pay to keep some bees for that purpose only. Mr. Blow at once said it would pay in more ways than one, and Sir J. D. Hooker corroborating this statement, some seventy hives of bees were placed near the fruit trees. These bees were in the old-fashioned straw skeps. They were very successful not only in setting the fruit, but afforded much surplus honey, so that Lord Sudeley at once turned his attention to keeping bees for profit as well as carrying pollen. His study of the modern system of beekeeping led him at once to see that it would pay him to set up more hives, and engage the services of an expert in the craft to look after them. He accordingly engaged Mr. White to attend to the bees. Finding that better results could be obtained from wooden hives, he had a large number made, all (or nearly all) of one pattern. The hives are all painted stone colour, and have flat roofs, sloping backwards. They are all plain and neat, as Lord Sudeley keeps nothing for show. The hives are placed in long rows near the largest plantation, and now yield a good return of first-class honey. Mr. White not being afraid of stings keeps the first cross between Ligurian and English bees. He was troubled once with that bee disease called Bacillus alvei, but he at once stamped it out by using the medicated syrup discovered and recommended by Mr. Cheshire at the Health Exhibition in 1884.

Of course, when hives are kept in such numbers it is well known that bees rob each other very much. It seems as though their motto was "Get honey, honestly if you can, oh, bees! but at any rate get it." Mr. White knows how to treat the thieves. He places a tube of perforated zinc, about 6 inches long and three quarters of an inch in diameter, in the entrance of the hives which are being robbed. This is very confusing to the robbers; but to make matters more complete he turns the hives of the robbers round for a short time. The result is that the robbers rush home with their stolen spoils, and give their heads a fearful bump against what they think is the entrance. Of course they cannot get in, so the honey is no more use to them than Gehazi's talents. This method of curing robbers will apply to other bees besides Lord Sudeley's. *Agnes.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 22	Sale of 7000 Lilium auratum, from Japan, and other Bulbs, at Stevens' Rooms.
TUESDAY,	Feb. 23	Special Sale of 500 Lots of Orchids in Flower, at Protheroe & Morris' Rooms. Clearance Sale of the First Portion of the Extensive Nursery Stock, at Cranston's Nursery, Hereford, by Protheroe & Morris (two days). Sale of the Third Portion of the Collection of Orchids formed by the late E. K. Harrison, Esq., at Stevens' Rooms.
WEDNESDAY,	Feb. 24	Sale of Roses, Fruit Trees, Border Plants, and Bulbs, at Stevens' Rooms. Sale of 4000 Lilium auratum, Iris, Roses, Plants, &c., at Protheroe & Morris' Rooms.
THURSDAY,	Feb. 25	Sale of Valuable Established and Imported Orchids, in great variety, at Stevens' Rooms. Meeting of the Société Botanique de France, at Paris.
FRIDAY,	Feb. 26	Great Sale of Odontoglossum crispum, and many other Orchids, at Protheroe & Morris' Rooms. Sale of Herbaceous Plants, at the Exotic Nursery, Tooting, by Protheroe & Morris.
SATURDAY,	Feb. 27	Royal Botanic Society: General Meeting, at 3.45 P.M. Sale of Roses, Fruit Trees, Border Plants and Bulbs, at Stevens' Rooms.

THOSE who, like ourselves, are thrown more or less in contact with young gardeners from foreign countries, must be struck rather painfully with the contrast that exists in the matter of education between the young gardeners of Germany, Belgium, Denmark, and other foreign countries, and those of our own country. Doubtless we see the best of the foreign gardeners—the idle and the careless are not sent or do not care to come over here, but still, when all allowances are made, the fact remains, that the picked foreign gardener is, as a rule, a better educated youth than his compeers of a corresponding class in this country. He has usually some knowledge of botany and physiology; he is master of at least the rudiments of chemistry; he can draw plans and sketch flowers; he knows a little of Latin, and speaks and writes more or less well some other language than his native tongue. Armed with these advantages he comes over here, sees what we have to show him, takes diligent notes of what he sees, works hard at the lowest pittance, disdaining neither the humblest occupation nor the lowest pay, and then, having obtained all we can give him, returns to his native land. If he stopped there and did not come into competition with British subjects we could have no other feeling than one of satisfaction that we had something worthy of his attention, and some share in his education. But owing to his superior qualifications he very naturally aspires to fill, and often succeeds in filling posts in India and the Colonies to which it might be expected that a British subject would naturally be appointed. One reason for this we have often pointed out, and that is that the average gardener has in this country little or no chance of educating himself to meet the requirements of the times. We do not overlook the advantages held out at Kew, we do not undervalue the good work done by the Science and Art Department nor by the Birkbeck Institute, but when all is told what is it by comparison with the number of gardeners? As a matter of fact we have not, as our neighbours have, Schools of Agriculture and Horticulture. When opportunity offers good men in fair proportion do come to the front. A few years ago the Society of Arts instituted examinations, and the Royal Horticultural Society went a little way—a very little way—towards the education of gardeners. The result was by no means discouraging, so far as it went. Out of the small numbers that availed themselves of the opportunity then offered, we know of two or three in India, and another in the West Indies holding good positions. We know of the director of a botanic garden, of the editor of a horticultural journal, and of the writer of approved text-books. Though the examples are not numerous the quality is excellent, and moreover we believe that each of these gentlemen would freely acknowledge that whatever measure of success has come to them has been due to a very considerable extent to their preliminary training.

Desirous, so far as in us lies, of furthering the progress of horticulture and the welfare of its practioners, and especially of those who are aspiring to take part in the work of the future, we have determined upon offering three prizes for competition by young gardeners. By young gardeners we mean men not over twenty-five or under eighteen years of age. The prizes are to consist of £10 to the most successful candidate, of £5 to the second, and of £2 to the third. The prizes will be offered for the best essay on some subject of cultural importance.

In deciding upon the nature of the subject, we have been guided by these considerations—first, that matters of purely practical routine may very well be left to take care of themselves. Daily work under a skilled practitioner will ensure familiarity with routine. Our desire is to encourage original observation, and a knowledge of the principles underlying all successful cultivation. A man, we will say, plants a Cabbage or a Potato set; he prunes a Vine, or layers a Pink; the routine part of the work is soon learnt, but how very few know anything of the reason why he does these things, or can give a reasonable explanation of them. He wants a good heart to his Cabbage; he wants a good crop of Potatos or Grapes; he wants to propagate his Pinks; and, in endeavouring to attain his end, he does certain things because he has been told to do so, or because he knows by experience that such and such results are likely to follow such and such practice. If, in addition to this practical knowledge, the outcome of experience, he become possessed, so far as may be, of the reasons why, he will be doubly armed. The knowledge why and how a Cabbage "hearts," why and how a tuber is produced, must surely be of direct advantage; and if it were not, surely the satisfaction experienced by the possession of such knowledge would be worth much. It is just this sort of knowledge, however, in which the rank and file of our gardeners are deficient—just this sort of knowledge which Germans and Danes and Belgians can and do get more readily than we do. We propose, therefore, as the subject of the prize, "Roots and their Work," considered especially with reference to the cultivation of various categories of plants useful or ornamental. We shall allow considerable latitude in the treatment of the subject, but we repeat that we are specially desirous of encouraging the faculty of accurate observation and of correct reasoning, and hence in awarding the prizes we shall lay far more stress on the evidence of actual personal observation than on the repetition of knowledge gained from a text-book. We do not of course forbid the use of books, but when used the fact should be stated and proper quotation marks appended. The award will be made by the Editor in conjunction with competent assistants.

Such, in general outline, is the scheme we propose. In a subsequent issue we shall print the definite conditions under which we offer the prizes.

—— DATURA SUAVEOLENS.—This formerly well known but now rather neglected plant is deserving of being reinstated in the place it used to hold as a decorative plant for the cool conservatory, and for warm positions in the open air. The plant seen in the illustration (fig. 46) occupies a telling site in the conservatory at Sidbury Manor, Sidmouth, Devon. According to the statement of Mr. J. H. STEVENS, the gardener, the plant flowered [beautifully three times in 1885, as is indeed shown in the figure—a reproduction from a photograph, and would have borne a fourth crop of bloom had it not been cut back. The plants are of the easiest culture, and flower profusely when several years old. Young specimens require to be pruned regularly after flowering to produce blooming spurs and shoots, and to keep them in due shape; but when old and root-bound in tubs and large pots little pruning is needed, the growth being then slow, and the production of flowers naturally abundant. Applications of diluted deer's dung, or of some of the approved kinds of powdered manures, will keep old plants in health for many years. The flowers are white.

—— THE ROYAL HORTICULTURAL SOCIETY.—We are officially requested to publish the following intimation:—"That, at the invitation of the Mayor and Corporation of Liverpool, this Society will hold a grand exhibition devoted to all branches of horticulture, including implements and appliances connected therewith, in the Botanic Gardens, Liverpool, from June 29 to July 5." We have in a previous number alluded to this matter, and given what particulars we could glean. The news will be hailed with delight by the fraternity.

—— INTERNATIONAL EXHIBITION OF CONEGLIANO.—We are requested to state that the opening of the exhibition of apparatus and other means for the destruction of parasitic fungi and insects, organised by the Royal School of Viticulture and Wine-making at Conegliano (Italy) has been deferred from March 2 to March 12. Applications on the part of exhibitors will be received up to the end of February. All implements, &c., must be sent in not later than March 10.

—— M. DE PANNEMAEKER.—We learn that this well-known artist, to whom the *Lindenia* and the *Illustration Horticole* owe so much of their attraction, has been nominated "Chevalier du Mérite Agricole" by the French Government. This will set some of our correspondents thinking why English artists and workers are left out in the cold. Mr. W. H. FITCH, Mr. W. G. SMITH, Mrs. DUFFIELD, Miss MUTRIE, and others that could be named, would be no unworthy companions for Mr. PANNEMAEKER.

—— PRIMULA PRÆNITENS (SINENSIS OF GARDENS).—We learn from Paris that among the specimens sent from the mountains of Yun-nan by the Abbé DELAVAY are examples of the wild form of this Primrose, the exact locality for which was previously unknown.

—— Mr. RODERICK FRASER.—This sometime valued correspondent of this journal, and late gardener at Upper Hall, Sidbury, Hereford, has commenced business as seedsman and florist at Malvern. We wish him every success.

—— SEEDS.—We learn from the seed report for 1886 of Messrs. HOGG & WOOD, of Coldstream, that the probable supplies of farm seeds for the coming season, with one or two exceptions, will be abundant, and that prices will generally rule similar to the low rates current last year.

—— THE SURVEYORS' INSTITUTION.—The next meeting will be held on Monday, February 22, when a paper will be read by Mr. WM. WOODWARD (Professional Associate), entitled "London Remodelled." The chair to be taken at 8 o'clock.

—— THE "HORTICULTURAL ART JOURNAL."—This is a new publication issued by Messrs. MENSING & STECHER, of Rochester, United States, and devoted to the production of coloured plates of flowers and fruits. The first plate we notice is Rose Marshall P. Wilder, a fine crimson H.P., a seedling from Général Jacqueminot, described as an improved Général Jacqueminot, and "undoubtedly the best American Rose yet offered," according to Messrs. ELLWANGER and BARRY. Shipper's Pride Plum is commented on as a never-failing cropper, the fruit of large size, and bearing packing well, whence the name. Rancocas Raspberry is an early, vigorous, and productive variety; Magara Grape, a variety hardy enough to endure the temperature of 35° below zero on the northern borders of Lake Ontario.

—— "SYLVAN WINTER" is the name of a handsome book lately issued by FRANCIS GEORGE HEATH (KEGAN, PAUL, TRENCH & Co., 1, Paternoster Square). The letterpress is not very original, being largely collected from many other writers. The type is much leaded, and the margins are wide. It is essentially a "pretty" book for a drawing-room table, as it is handsomely bound and profusely illustrated. The pictures are soft and pretty, but not of much scientific value. We admire the capital letters to the chapters, but they give an impression that the author in some cases wrote the opening sentences to suit the letters sketched by the artist; all the letters of the alphabet are used, and the X and Z must have been

difficult to fit in. All the many pictures are by F. G. SHORT.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—The prizes of a Silver Cup and Medal, to be awarded at the exhibition of the above Society in 1887, will be given by M. SIMON DELAUX, fils ainé, the founder and proprietor of what was formerly the firm of DELAUX & SON, but which is now carried on under his own name. Thus much is necessary to be stated, as another firm of DELAUX exists, also raisers of Chrysanthemums, and confusion might arise. It may be stated that the prizes would have been given in the current year, but for the melancholy fact that M. S. DELAUX has recently lost both his mother and brother.

—— BAILLON'S "DICTIONNAIRE DE BOTANIQUE" has reached its nineteenth part, bringing the work up to the word "Gonatorhodum." In addition to the account of the several families and genera, slight biographical details are given of deceased botanists, and a large number of vernacular or popular names, some of which might well be consigned to oblivion—*e.g.*, "French Grass," "Gaitres berry, Gill," and many others not in general use, or not sanctioned by associations. The illustrations, as usual, are excellent.

—— THE CORSICAN PINE AT KEW.—The specimen of this tree near the Kew Green entrance to the Royal Gardens, is an attractive object from a distance, as striking in its way as the tall brick shaft on the other side of the river. Mr. J. SMITH, the veteran ex-curator of the Royal Gardens, says in a recent number of the *Garden*, that this tree was brought by R. A. SALISBURY from the South of Europe in 1825, when a small plant. When SALISBURY gave this information the tree was about 20 feet high, so that it must have grown about a foot yearly.

—— BLOOM.—At the Linnean Society, Feb. 4, Mr. FRANCIS DARWIN read a paper "On the Relation between the Bloom on Leaves and the Distribution of the Stomata," the observations thereon having been commenced by his father and himself in 1878. Bloom on leaves is used by him to mean a coating of minute particles of a waxy character, which is removable by hot water or ether. But gradations occur from a distinct and appreciable greasiness, throwing off moisture, to such as are easily wetted. A large series of leaves of different groups of plants has been studied by him, and for convenience in the analysis of data he has divided them into four classes. Leaves of class 1 are devoid of bloom on both surfaces, and yield 54 per cent. which have no stomata on the upper surface; in class 2 bloom is deficient above but present below, whereof 83 per cent. contain stomata on the leaves' lower surface; class 3 possesses bloom above but none inferiorly on the leaves, and 100 per cent. of these have stomata on the upper surface; class 4 has leaves with bloom on both surfaces, 62 per cent. of them having stomata above. From such analysis and other facts and data given, Mr. DARWIN concludes that the accumulation of stomata accompanies that of bloom, and, other things being equal, that it is functionally protective against undue wetting by rain. The mealiness in Primulas is in some respects peculiar, but, as a rule, does not contradict the above generalisation.

—— WILD SOURCE OF TRUE LIMES.—Brigade Surgeon BONAVIA, of Etawah, in a communication to the Linnean Society, Feb. 4, asserts that the wild Citrus hystrix, DC., is the parent of Limo tuberosus, RUMPH., and Lima of Ceylon, and all their derivations—Limo agrestis, Limonis feri, Limonellus auriarius, and others; while also more distantly the parent of the cultivated true Limes of India, Ceylon, and other parts. The reason why the Lime has so persistently a winged petiole is that this is derivative from the immense winged petiole of its progenitor, Citrus hystrix.

—— PALERMO BOTANIC GARDEN.—Baron TODARO, the Director of this garden, publishes at intervals descriptions and coloured illustrations of the rarer and more interesting plants grown in it. In a part lately issued we find descriptive notices of the following plants, previously figured:—Aloe elegans, TODARO, which is the A. abyssinica var. Peacocki of BAKER. It was grown in the Palermo garden from seed collected in Abyssinia by SCHIMPER. Agave applanata, LEMAIRE, has been figured in our columns by BAKER, vol. vii.,



FIG. 46.—DATURA SUAVEOLENS. (SEE P. 240.)

p. 717, fig. 115. Figures of A. longisepala, TODARO, t. 31, and A. Williamsii, TODARO, t. 32, are given, the text to which, we presume, will follow.

—— PRIMULA CONFERENCE.—The following circular is being issued by Mr. JAS. DOUGLAS, the hon. secretary of the committee of the above Conference:—"I shall esteem it a great favour if you could kindly inform me at your early convenience whether you will be able to make an exhibition of Primulas, and to what extent, on April 20 and 21, in the conservatory of the Royal Horticultural Society. As a member of committee of the Primula Conference, I trust you will send a group of plants or in some other way contribute to the success of the exhibition." The Foreign Secretary has addressed a similar circular to foreign and colonial botanists, and has already received from India seeds of various species, which have been distributed among the leading Primula growers as far as circumstances permitted.

—— EDINBURGH INTERNATIONAL FORESTRY EXHIBITION.—At a meeting of the Executive Committee, held on Tuesday, the 16th inst., the affairs connected with the International Forestry Exhibition, held at Edinburgh in 1884, were wound up, and the Treasurer announced that a surplus of nearly £200 remained at the disposal of the committee. This it was unanimously agreed to hand over to the committee appointed to promote the establishment of a School of Forestry at Edinburgh, with the view of furthering that most desirable object. It was also agreed to hand over a large collection of rare and valuable specimens of woods and other forest products, &c., which had been presented to the committee by various exhibitors, to the Director of the Museum of Science and Arts, Edinburgh, for the purpose of forming a part of a Forestry Museum for the use of students of forestry at Edinburgh. These are steps in the right direction, and we hope soon to hear of active measures being taken by the Forestry School Committee to carry out the very needful object which they have in view.

—— MR. JAMES TIPPING, the able foreman of the fruit tree department of the nurseries of Messrs. F. & A. DICKSON & SONS, Upton, Chester, has relinquished his charge in consequence of somewhat failing health. He is well known in the trade as one of the most successful fruit tree growers in the country, having made Upton fruit trees famous for their excellence and the accuracy of their nomenclature; and he has enjoyed the confidence and esteem of his employers during the fifteen years he has held the charge. His numerous friends will heartily wish him speedy restoration to health and enjoyment of his well earned leisure.

—— GREEN MANURES.—We notice that the question of green manure is assuming importance on the continent of Europe, especially in places where the soil is sandy. The procedure is to sow some crop that does not require manuring, and when full grown to have the field rolled over, with the plough following, by which the entire crop is ploughed in. By this means, every four or five years a very large percentage of the fertilising agents are spread over the ground, by which the farmer is enabled to get a fine crop of Wheat with several crops of other cereals and grasses. Chemically, it is explained that it is the quantity of nitrogen in the succulent green plants that works the chief part of the benefit, while the decomposition of the fresh vegetable matter underground gives off carbonic acid gas which attacks the inert silicates and turns them into assimilable sorts. When the decomposition is complete, a capital manure is the result. In Saxony this is the usual method of manuring and fertilising the sandy soils in which the country abounds. Great efforts are being made in France to introduce this practice into the vast tracts of poor land. We would recommend this to the notice of our agricultural departments, as a means of fertilising and utilising waste and poor tracts of land in this country.

—— GARDENING APPOINTMENT.—Mr. GEORGE EASTON, late Gardener to C. R. HODGSON, Esq., Copt Hall, Hendon, has been appointed Gardener to W. MORE MOLYNEUX, Esq., Loseby Park, Guildford, Surrey.

THE ORCHID HOUSES.

THE readers of Calendars of Operations ought to bear in mind that the papers have a wide circulation, and some allowance ought to be made between places in the north and the south portions of the country, and also for the various reasons that prompt cultivators to retard or hasten the growth of garden productions, Orchids included. In growing Orchids there are four things essential—ventilation, moisture, temperature, and good potting; and if these necessities are wrongly applied, injury to the plants will very soon follow. The air admitted to the houses must be pure, and adapted to the requirements of the plants; and in the houses where Cattleya, Dendrobium, Lælia, Masdevallia, and Odontoglossum are grown, I find the best way to admit air is to have the bottom row of glass on the roof tilted at the bottom end, so that there is the space of half an inch between the glass and the wood. By glazing in this way there is always a buoyant atmosphere in the houses; but this plan I do not adopt in the Phalænopsis house, as these plants certainly enjoy a closer and more humid atmosphere. Moisture may be created in many ways, but certainly I would not recommend the plan adopted by some, of putting a bed of manure and leaves under Orchid stages—for one reason, it looks untidy, for another, I think the requirements of the plants do not demand it. If there are brick and cement tanks built under the stages to hold water, there will be moisture always rising from the water in them. Of course, the greater the area of the water, the more moisture there will be in the house. The temperature of a house is entirely in the hands of the stoker, and enough piping should be in a house to keep up the required degree of warmth without having recourse to hard firing. Potting must always be done with care, employing only the best material.

PHALÆNOPSIS.

In the East Indian house Phalænopsis will now claim attention. As soon as the flower-spikes are cut off, any plant requiring to be repotted should be attended to at once. Carefully remove all the old sphagnum, charcoal, and crocks, replacing it with fresh, clean materials. The Phalænopsis will thrive well in baskets and pans, but they seem to be more at home on vertical cylinders of Teak. We grow them in various ways. If any are to be moved from baskets or pans to cylinders, it must be done with care, as almost immediately after flowering young roots are developed and if these are injured at all healthy leaves are not put forth, and poor flower-spikes result the following season.

DENDROBIUMS.

Among the Dendrobiums the chief work will be in potting, watering, and looking after aphides and other insects. D. chrysanthum must not be allowed to become dry, the least check stopping the growth and throwing it into flower. Dendrobiums of the chrysotoxum and Bensoniæ kind, require just enough water to keep the pseudobulbs from shrivelling, for if these Orchids are not thoroughly well ripened the flowering will not be satisfactory.

LÆLIAS.

In the Lælia-house L. purpurata and L. elegans will be making rapid growth and the plants must be supplied with plenty of water. L. anceps appears always to thrive in pots or pans; and Lælias of which autumnalis is the type are certainly at home on Teak blocks, placed near the roof. Although the occupants of this house, purpurata excepted, will bear a certain amount of bright sunshine without injury, it is yet prudent to shade all newly imported plants, as their encasement in the packing case for a long period has made them susceptible to injury from bright sunshine.

CATTLEYAS.

It is a busy time just now in the Cattleya-house. C. Trianæ, opening their flowers daily, require to be noted as regards the quality of the various plants in bloom. Others are sending out their long white roots, which require to have something placed within their reach on which to cling, and material should be carefully placed about the roots, as advised in a former paper. Cattleya superba must be watched, as water lodging in the centre of the growth will speedily destroy it. The blinds, if not already placed on this house, should be in readiness, as we may expect bright sunshine shortly. Here we have already found it necessary to shade, but where the house has a northerly aspect there need be no hurry.

ODONTOGLOSSUMS.

In this house, the flower-spikes of Oncidium macranthum having now attained a considerable length, it is important that they should not be placed near an open ventilator, or the flowers will be deformed by the chill. Now is a good time to pot any Odontoglossums that have flowered during the winter, keeping them well up above the rim of the pot. Plants that are showing flower-spikes will require an abundance of water, but the house must not be allowed to get very hot, or the spike will be weak and the plants get drawn and sickly. Use the syringe freely about the pots and roots of all kinds of Orchids (but only overhead to Vanda Hookeri and V. teres), and by-and-bye a very fine spray over the Odontoglossums in the cool-house only. *A. Bradshaw, Waddesdon.*

FORESTRY.

FIGHTING WITH GROUND GAME

may, to some, appear a rather curious expression, but unfortunately it is not so to the forester and fencer, their wits being often taxed to the utmost and their resources exhausted in trying to prevent the attacks of hares and rabbits on the various trees and shrubs placed under their care. But in the first place let me advise foresters who have any say in the now commonly adopted idea of hare importation from the Sister Isle to vote *en masse* against it, for they are not to be trusted, wholesale destruction being evidently their motto. Some years ago a great number of plants, including the Rhododendron, Yew, and Laricio, required neither examination nor protection, but since the introduction of these foreigners the fencer has found out that his work has considerably increased, for nothing in the plant way comes amiss to these desperadoes, and that even during fairly mild winters. For single or specimen trees fencing is at once the cheapest and most effectual method of preventing the attacks of game; although we have, and with very satisfactory results, used Larch and Oak bark, as well as several of the advertised compounds, with a certain amount of success for the same purpose. The bark tree-guard can, however, only be effectually employed in the protection of trees with unbranched stems, and is used as follows:—Strips of well dried Oak or Larch bark that were saved for the purpose in spring, and which are about 4 feet in length, are placed rather loosely around the stem of the tree, and united together by three pieces of galvanised netting wire placed at equal distances apart, the lower being 3 inches from ground level. When carefully adjusted this is a very neat and inexpensive protection for all trees up to 6 inches in diameter of stem, and has been found after nine years' trial on this estate to be well worthy of extension. Another simple and neat tree-guard is made by inserting at 6 inches apart small stakes in a circle around the plants requiring protection, and entwining Hazel or Birch wands between them from bottom to top. They may be placed at a distance of, say, 2 feet from the stem or lower branches, and inclined outwards. Wire netting for fencing Conifers, more particularly the choicer sorts, is also to be recommended, especially where first expense is not a matter of great importance. In erecting this, five 6-feet posts should be driven into the ground in a circle around the tree stem, and at a distance of 3 feet from the same. A circular notch or small trench of 6 inches in depth, and running immediately outside the posts, is then taken out, into which the netting is placed and made fast to the upright posts. The wire is sunk 6 inches in the ground as a preventive against rabbits burrowing under it; while the height above-ground (2½ feet) will, in most cases at least, be found sufficient to prevent their jumping over.

I have but little faith in tar, of whatever brand it may be, its effect as a game-deterrent usually dying with its unpleasant odour. It is likewise—although here I am open to criticism—injurious to trees and shrubs generally—Hollies at least, if applied in quantity around their stems, either before or after they have been attacked by rabbits and hares.

Davidson's compost is a capital remedy against game attacks, indeed, amongst the many advertised specifics I consider it the best, and could it be procured at half its present cost would, no doubt, be largely employed.

Conifers, &c.

Seeds of the Sequoia gigantea (Wellingtonia), Picea Morinda, Pinus Laricio, P. austriaca, P. pinaster, P. pinea, Cupressus macrocarpa, Juniperus recurva (by-the-bye, I have just found excellent well-filled seeds on one of these latter plants where no male form exists), Thuiopsis borealis, Cupressus sempervirens, and Araucaria imbricata may still be collected and carefully dried and stored away until wanted for sowing. One of your correspondents wants to know if seeds of the Wellingtonia are commonly produced? at what age does the tree usually cone? and if the cones are fruitful? To the first query I would, so far as my own observations are concerned, unhesitatingly answer, Yes, very commonly; while to the second I would say, From fifteen years old and upwards, although I have repeatedly seen cones produced when the tree was hardly a dozen feet in height, and still in the nursery border. The last question, "Are the cones fruitful?" may be answered in the affirmative, for we have raised numbers of seedlings from trees where artificial fertilisation was not resorted to. Whilst speaking of the Wellingtonia, I might ask if any of your correspondents have found birds' nesting therein, or insects infesting the trees. Has it been noticed that in Conifers from warm climes—warmer, I mean, than our own—male cones are produced plentifully for several years previous to the female ones? In other words, that Indian and Chinese as well as Japanese Conifers usually produce abundance of pollen before female cones, while those from Russia behave in an opposite manner.

Seed beds for early spring sowings should at once be prepared by the soil being thrown up loosely for some time previous to the final up-making; stiff soils should be well worked and freely mixed with sharp river-sand and leaf-mould in about like proportions. Any of the rarer Pine seeds, of which only a limited quantity has been procured, may for safety's sake be sown in shallow boxes and placed in a cool frame, where they will not only have better chances of germinating but be safe from marauders, the attacks of which cause much loss.

General Work.

Fencing, hedging, draining, road-making, and groundwork improvements may still be carried on when the state of the weather will permit. Planting and extending game coverts, more particularly such as are formed of Privet and Rhododendrons, layering Laurels, cutting back and pruning evergreens generally, and attending to rival leaders and disproportionate side branches had better be attended to before the pressure of spring work comes on. Keep up a good stock of well dried faggots, firewood, and charcoal, as the demand on these during such weather as we are experiencing at present is sure to be large.
A. D. Webster.

The Bulb Garden.

THE DAFFODIL.

We have been much interested with the discussion that has been going on in the *Gardeners' Chronicle* lately about the single Daffodil becoming double. In your issue of January 30, p. 150, we noticed a report from Mr. Sinclair, in which he speaks of his experience of six years. As I believe we were the first to bring the single Pseudo-Narcissus largely into the trade, some seven or eight years ago, through Messrs. Carter & Co., by whom it was offered to the public, we should like to make a few remarks respecting the so-called double variety. Here in Sussex, where they grow wild, we have been able to observe them in their native state, and have taken particular notice of them for the last two or three years, but have never known a double form of the single variety to grow with the single ones, though we have sometimes noticed a few by themselves in the hedge, or in another field, where there were no single ones. We are surprised to find Mr. Sinclair had some double ones mixed with his single ones, for we believe we supplied him a few years ago with the bulbs he mentions, but there was not a double one near where they grew. Like Mr. Sinclair, we think by cultivation possibly they may become double, for the ground on which they grow in this part of Sussex is very poor. We have cultivated them in the gardens with very good results, as the bulbs improve wonderfully by cultivation, but we never bloom them more than once in the cultivated state, as the bulbs that have bloomed are sold the following year, and any one requiring a quantity of bloom early would do well by planting them thickly in a frame in some sunny spot, where, if they could have a little stable-litter put round the frame, to cause a trifling degree of heat, they would then be in bloom in February.
Thos. Piper & Son, Bulb Merchants, Maresfield, Sussex.

THE DARLINGTON WALL-COVER.

So many contrivances are adopted to secure the bloom of wall trees from frost and to mature the fruit crop when secured, that it is not easy to say which is the best for these purposes. Some of the contrivances modestly aim only at protection in the spring of the year, and consist of Frigi Domo netting, tiffany, straw ropes, and glass eaves or penthouses, the latter being permanently or otherwise fixed over the trees. In the southern



Fig. 47.—Richardson's wall-case.

parts of England these means of spring protection are usually sufficient, the warmth of a normal summer ripening a crop of Peaches, Mulberries, Pears, Apricots, Plums, and Figs. In the northern parts of the kingdom and in cold districts of the south and east wall cases are an essential in every fruit garden, not only for protection from frost in the spring-time, but for the proper ripening of fruit. The Darlington wall covers made by W. Richardson & Co., of that town, seem to meet this want in a practical manner, and as they are made chiefly of wood and glass, with some cast-iron standards to fix them steadily on the ground, they are thoroughly portable, and therefore just the things for a tenant on lease. The roof is not movable, but ample ventilation seems to be secured by the front sashes sliding over one another. They are made of various heights to suit walls of from 8—12 feet in height, and are fitted with two doors. The width is 4½ feet, inside measurement, and the length whatever may be desired. With a portable boiler of iron or copper, and a suitable number of pieces of gas-piping with screw socket joints, a crop might be obtained in the most unfavourable spring weather, and the fruit and young wood ripened thoroughly by applying heat in September and early in October, should the autumn prove ungenial.

Cratægus heterophylla.—This tree bears a long, narrow, one-seeded fruit, of a rich crimson colour; very abundant white flowers. Its chief merit is, that it produces its leaves and flowers very early in the spring, and retains the former along with its fruits later than any other species. A somewhat dwarf tree, with upright branches.

BARON SCHRODER'S ORCHIDS.

For Orchids of superlative excellence, The Dell, Egham, is justly renowned. If a startling novelty of sterling merit appears it may make the journe there in a circuitous manner, stopping here and there on the way, but ultimately, if that mighty lever, £. *s. d.*, can be brought to bear on it, the specimen, or the largest obtainable portion of it, is likely to be landed in the snug Orchid-houses at The Dell to join the company of the *élite* of the Orchid tribe there assembled. There the marvellous violet-blotched Odontoglossum crispum Veitchianum, and its equally fine and similarly marked representatives in the Pescatorei section—O. Pescatorei Veitchianum and O. P. Schroderianum—abide in company with O. crispum Ballantinei, O. Andersonianum flaveolum, O. A. Godefroyæ, and other incomparable hybrids in every section of Orchids grown, the object being to secure the best things, rather than to collect unproved plants in the hope of obtaining prizes. The plan on which the houses are arranged, in a quadrangle, admits of suitable aspects as to sun and light or shade being found for all the different classes of Orchids, and not an inconsiderable part of Mr. Ballantine's success with so many difficult things may be attributed to the pains he takes to find out the right quarters for his plants, for, as he justly observes, "in such an extensive and well-appointed establishment the right place for everything is to be found, if it be only thought out." This is an excellent idea, and one which might be applied in most places, for it is a common thing to see plants languishing in unsuitable situations, when places in which they would thrive are confessedly available.

The larger Orchid-houses at The Dell have the centre stages occupied by immense specimens of such things as Anthurium Veitchianum (one of which in a large tub has foliage over 6 feet in length), A. Warocqueanum, A. Andreanum, now bright with its scarlet spathes; and other handsome foliage plants which do not harbour insects; these are beautiful objects at all times, and contrast well with the different batches of Orchids as they bloom in their seasons.

Cattleya Trianæ House.

At the present time the bulk of Cattleya Trianæ make the principal show, and those who have seen some of them at South Kensington, and in particular the C. T. Schroderiana, which received a First-class Certificate there at the last meeting, know something of their excellence. Of all Trianæs the heavily flowered plant of C. T. Schröderiana now in bloom at The Dell must be pronounced the best when size, form, substance, and colour are all duly considered; indeed, it is a stately plant in bulb, leaf, and flower, and one well worthy to carry the name of the Baron into a class which is so much in favour with him. The superb variety in question has immense, well open flowers, with broadly expanded dark crimson labellum and yellow throat. It is this last feature (the labellum) which generally makes or mars a C. Trianæ, and in the variety Schroderiana it is developed to the highest point of excellence. Beside it is a many-flowered specimen of C. T. Russelliana, which is, and always will be, considered a front-rank variety, its colour is so rich and glowing. A plant of C. Trianæ marked "Thomson's variety, Clovenfords," is also a grand form, with massive light tinted sepals and petals, and broad and open crimson-maroon tip; it is beyond all praise. A C. Trianæ feathered and blotched with crimson on the petals after the manner of C. T. Ernestii of Mr. Measures, is very showy; the several forms of the pure white C. T. alba, chaste and effective; and the numerous other rare forms which are in flower here almost bewildering in their variety and beauty. Among them may be noted some grand masses of C. Percivalliana, with from twenty to thirty flowers each; this pretty Orchid improves with us, and such varieties as those at The Dell, are very effective, arranged with the Trianæs. Among the other rare plants in bloom in the Cattleya-house is a great mass of C. bicolor splendens, with many spikes of four to six flowers with glowing magenta labellum.

Lælia House.

Epidendrum macrochilum (very showy and fragrant) and the last of that grand display of white Lælia anceps, represented by the charming L. a. Veitchiana,

with its clear white flowers and blue tinted lips. Some of the masses of white L. anceps here are 2 to 3 feet across, and consequently they are grand when in bloom. Some great specimens of Cymbidium Lowianum, both the ordinary and the "superbum" varieties, are well bloomed, and the fine plants of Cœlogyne cristata almost hidden under their snow-white bloom.

THE LARGE DENDROBE HOUSE.

In this structure Dendrobium thyrsiflorum Walkerianum has many spikes; D. heterocarpum, D. Ainsworthii, D. moniliforme, D. nobile, and the offspring of the last two, D. Dominianum, are in bloom, and many others in bud; also flowering are some large baskets of Odontoglossum Roezlii, and two sturdy plants of the lovely Phaius tuberculosus, one with two spikes and the other with three. Mr. Ballantine always managed this plant fairly well, but never to his own satisfaction until now, when the plants are well in hand, and only require to be kept clear of thrips, which are so fond of it.

THE MASDEVALLIA HOUSE.

is just commencing its show with some grand plants of superb varieties of M. ignea, one having over fifty, and another over one hundred large orange-scarlet blooms; the curious M. leontoglossa, M. macrura, M. triangularis, M. Wagneri, M. polysticta, and a grand early flowering form of M. Harryana, with large, glowing, violet-coloured flowers, are also in flower.

THE COLD ODONTOGLOSSUM HOUSE

exhibits perhaps, with the Cattleyas and Lælias, the best examples of culture on the establishment, and in these the vigour and floriferousness of the plants is not to be excelled. Some grand forms of O. crispum giganteum, O. c. guttatum, O. Andersonianum, and O. Tuckerianum are in bloom; as also O. blandum, O. aspersum, O. Edwardi, with an immense branched spike of violet flowers; and some good pans of the effective scarlet Sophronitis grandiflora, are in flower. Many of the grand things known to be in this collection are in bud, and all in the highest health.

OTHER HOUSES.

In the warm houses Vanda Cathcart has three spikes; Cypripedium Haynaldianum is superb, with six spikes, and four to six flowers on each spike; C. barbatum Warneri, C. Argus, and C. calurum also in bloom; and the vigorous plants of C. Stonei platytænium, C. Morganæ, and C. Schroderianum in the best possible condition. There are several things in this department which Mr. Ballantine manages better than most other growers, and among these may be noted Aërides crassifolium, which grows almost beyond recognition, and produces branched flower-spikes several feet in length; and Vanda Sanderiana, which flowers most profusely and bears foliage of the richest green, and roots in all directions.

In the low span in five divisions the first is used for Odontoglossum citrosmum, which promises well for bloom; the second for the collection of Lycaste Skinneri varieties, and plants requiring a similar temperature, in bloom being some very handsome forms of L. Skinneri, including L. S. rubella, L. S. delicata, and the best white L. S. alba; together with Odontoglossum Uro-Skinneri, O. nebulosum, O. pulchellum majus, &c. The third has the splendid collection of Odontoglossum vexillarium, stout and clean, and the varieties of Miltonia Warscewiczii, including the pure white one, coming into bloom; O. Krameri, and Zygopetalum rostratum were here thriving well suspended near the glass. The fourth division has the collection of Vandas, some of them already in bloom, the lesser Cattleyas and the Miltonias; and the fifth Epidendrum vitellinum majus, well budded; E. xanthinum, Burlingtonia decora, &c., in bloom. When we consider that the Orchid part of the establishment just noted is but a part of a garden which is perfect in each division, whether devoted to florists' flowers, or fruit forcing houses, or ornamental and useful outdoor garden, we cannot help saying that Baron Schroder's garden offers one of the best examples of a good establishment well kept up and skilfully managed.

SKIMMIAS.

THE Skimmias are excellent evergreen shrubs; they are hardy, they bear crimson berries which contrast well with the foliage, and they do perfectly well, as we can testify, in town gardens under very disadvantageous conditions. But there are Skimmias and Skimmias, and though botanists will probably tell us they are all of the same species, yet for garden purposes the form called oblata, originally described in our columns by Mr. T. Moore, October 8, 1864, is the one to choose. It must be remembered that the plants have unisexual flowers, and so if disappointment arise from the non-production of berries, the gardener must use his eyes and see whether he has both sexes. (See figs. 48, 49.)

Florists' Flowers.

HYACINTHS.

THE bulbs ought not to be left in the plunging material out-of-doors any longer. A good grower was surprised when I told him on one occasion that the crowns of the bulbs had not any small pots inverted over them as is sometimes done; indeed after trying them with small pots over the crowns, and leaving them without I am inclined to think that the latter is the best way, the bulbs are so seldom forced out of the soil, if the plunging material is in contact with the crowns. The plants are all placed in a cool greenhouse, and a pot is inverted over the crowns for three or days to avoid injuring them in the least by too sudden exposure to light and air. Those intended for exhibition about the end of March or early in April may be kept in a greenhouse temperature, and rather close to the glass, as the leaves of Hyacinths are apt to draw up too long before the



FIG. 48.—SKIMMIA JAPONICA: SHOOT AND BERRIES.

flowers are quite fully developed. I remember judging at an exhibition where one of the exhibitors bent the lower part of the leaves in the form of a tuck, so that the whole of the leaves were the regulation length on each plant. The bent portion of the leaves was covered with green moss. The collection was disqualified of course. A little weak manure-water aids the development of the flowers. In forcing Hyacinths they may be placed in a light airy position, and as soon as the first flowers open on any plants they should be placed in the greenhouse. It is better for the flowers to develope there, as they last much longer.

POLYANTHUS NARCISSUS,

in its numerous fine varieties, may well be classed as florists' flowers, and they are very well adapted to furnish the greenhouse with beautiful sweetly perfumed flowers. I pot them with the Hyacinths and treat them very much in the same way; under the same cultural conditions they flower about the same time. If they are intended for exhibition, most of the large societies stipulate that three bulbs only should be planted in one pot. They are grosser feeding plants than Hyacinths, having more numerous roots. The leaves are apt to become drawn if the plants are not freely aired, or placed too closely together.

THE AMARYLLIS.

Bulbs that were potted in the second week of January, inclusive of offsets and small seedlings and the old bulbs, are now pushing into flower and leaf. The early stage of their growth is a critical time with them, and it is easy to damage the bulbs. We grow ours in a house where they can be plunged by themselves in a tan-bed, and they will do quite well if no water be applied to the roots for a considerable period after potting. It is now more than a month since they were repotted, and none of them have any water given them. When they do get water, it will be applied to the soil so as to reach the fibrous roots, but not come in contact with the bulbs more than can be avoided. They require but little water at the roots, even up to the time the flowers open. During the last few years the culture of the Amaryllis has very much increased owing to the excellent exhibitions of them in some of the principal London and other nurseries during the season. The quality of recently introduced varieties is far superior to those in cultivation ten years ago; indeed, the beauty of the new seedlings of last season would leave an impression on the memory not easily effaced. The temperature in which the plants are growing should range from 50° to 55° at night, with a slight increase by day. *J. Douglas.*

FANCY DAHLIAS IN 1885.

HAVING touched on some of the show Dahlias, and the forms in which they appeared during the hot, dry weather of the past summer (vol. xxiv., p. 780), I now propose to pass in review the fancy varieties, that cultivators of this flower may see what are likely to be the most useful for exhibition purposes. For general decorative purposes in the garden the fancy varieties are not sufficiently grown; they are, with few exceptions, of dwarf growth, of good habit, free of bloom, and possess parti-coloured flowers—for there is no such thing as a self-coloured fancy, unless, as is frequently the case, the blooms sport to a self colour. Some fancy varieties are much more sportive than others, and one of the most changeable of these is that charming variety Gaiety, one of the most useful and pleasing of the many fancy flowers sent out from the famed Castle Street Nurseries at Salisbury. This variety varies considerably. It would not be difficult to exhibit it in the same stand in three or four different forms, and all of them attractive, but in this respect its usefulness to the exhibitor is greatly enhanced, and this variety and its sports are very beautiful, for the contrast between the golden ground and the red stripe is excellent; and then it is constant and easy to be got, and very little thinning is required. I put this at the head of the fancies. At a large Dahlia show it will be found in almost every stand. Annie Pritchard, white, charmingly striped with lilac-rose, is very pretty, and exceedingly constant, and, like Gaiety, it requires no thinning. Charles Wyatt is also a very fine fancy, the ground colour is deep rose, flaked with crimson and purple, and it is one of the best formed fancies in cultivation; it is especially useful, because it will sport to two self forms, one purple and one rosy-lilac—in either character, excellent show flowers. Chorister, fawn colour, striped with crimson and rose, is a very good and useful fancy, and will sport both to crimson and purple selfs; Duchess of Albany, pale orange ground, striped with bright crimson, is a pretty sport from James O'Brien, which has a yellow ground with crimson and reddish-rose stripes, and both of them will revert to the self form, and so make good show varieties. Fanny Sturt is an old but exquisite fancy, red, tipped with white—always a telling flower in a stand when caught in good condition, but, owing probably to the drought, it was very late last season. Flora Wyatt is one of the finest formed fancies in cultivation, the ground colour dull orange, flaked with red: sometimes it makes a pure orange self, and sometimes a dullish red one, but in both cases they are self sports of fine quality. Henry Glasscock, buff, striped and spotted with crimson, is a good useful fancy, and it also makes a very fine crimson self; Hercules, yellow ground, striped and speckled with rich crimson, is a good useful variety, very fine in colour; Hugh Austen, orange-scarlet, striped with dark red, is also a most useful flower; Jessie McIntosh, red, with a distinct white tip, is also a good bright fancy—it is also of excellent form; John Forbes, fawn colour striped with maroon, is also a good useful variety, equally so when it sports, as it is apt to do to a shaded maroon self;

Madame Soubeyre, is a pretty rosy-lilac flower, striped with carmine, and very pleasing and fairly constant; Miss Annie Melsome is a lovely variety, yellow with white tip, very constant and to be depended upon; Miss Browning is in the same way, so is Mrs. Saunders, but while Miss Browning is very good and constant it also has a better habit and petal and is also freer than Mrs. Saunders—the latter is difficult to get late in the season; Miss Rodwell, rosy-purple, tipped with white, is very pretty indeed, and has an excellent habit of growth; Mons. Chauvière, lilac ground, striped and spotted with dark crimson, is a pretty old variety, somewhat flat, but useful in a large collection; Professor Fawcett, dark lilac, striped with chocolate, is a very good fancy indeed, and makes a capital crimson self; Rebecca is a fine variety, dwarf habit, free and constant, colour lilac striped with crimson, fine petal; The Rev. J. B. M. Camm is a fine old flower, constant and free, yellow flaked with red, and as it comes very large the branches should not be thinned out; Peacock, dark purplish-maroon, tipped with white, is very pretty and bright, and a flower that tells in a stand.

Seeing that, as far as Salisbury is concerned, many of the fancy varieties had sported to the self form, much more so than is generally the case, the enquiry was suggested, Does this occur more markedly in a dry than in a wet season? Possibly differences of opinion will prevail in regard to this matter, but it is worthy consideration. The probability is—so erratic appears to be the action of the fancy Dahlia—that while some sorts sport more readily in dry weather, some would show the same tendency in a more marked manner during a moist one.

And in remembrance of the apparently mixed character of one or two of the new Dahlias for 1866, who is to define what is and what is not a fancy Dahlia? Twenty years or so ago it was not difficult to define a fancy Dahlia. Then it was laid down by a high authority that "to the composition of a fancy Dahlia two (or more) distinct colours are essential, if the variegation is in the form of stripes or flakes, as in the Carnation. This arrangement of colours, whether the light or the dark preponderate, is in itself sufficient to constitute the subdivision distinguished as striped fancy Dahlias; but if the variegation consists in the edges or tops of the florets differing from the general or ground colour, then the relative position of the colours determines whether the individual is a fancy flower or otherwise. Thus a white, yellow, or any pale variety, edged, tipped, or laced with a dark colour, after the manner of the Picotee, is denominated simply an edged, tipped, or laced Dahlia; but when this disposition of colours is reversed—*i.e.*, when the florets of a dark flower are tipped, &c., with a light colour—the variety so marked is termed a tipped fancy Dahlia."

In the country—in the case of country exhibitions—all bicolored flowers are regarded as fancies, and shown accordingly; while show Dahlias are confined to those that are really self-coloured. This is a manifest departure from the rules just laid down, but the practice has the merit of being intelligible. It cannot be long before a new classification will become a necessity, unless the Dahlia should cease to be an exhibition flower upon the old lines, which is not an improbable contingency.

It remains to be stated that fancy Dahlias that have sported to selfs are not used for propagating purposes. It is obvious that, like run Carnations, the progeny cannot be depended upon to produce the flower in its true form. This is sometimes a little awkward when only two or three plants of a new variety are obtained, and all betray this tendency.

The fancy Dahlias are not nearly so numerous as the show varieties. The latter had been grown for many years before the former had attained to the rank of an exhibition flower. The show varieties have a much wider scope also in point of variety of character, and this tends to make them more numerous than the varieties of the fancy division. *R. D.*



Fig. 49.—Skimmia oblata: shoot and berries. (see p. 244.)

Wood Sale. — On February 3 there were sold on the estate of Lauriston, Kincardineshire, about 160 lots of wood. The lots consisted of Scotch and Spruce Fir suitable for stackyard purposes and sold at from *2s. 7d.* to *7s.* per lot.

PRIMULAS, Etc.

On looking round Messrs. Carter's nurseries recently, we noticed a fine batch of Primulas, some 7000 or 8000 plants in all being grown, notes being made of the following new varieties of the fern-leaved type raised by the firm, which are undoubted acquisitions, beginning with an unnamed sort, bearing flowers of a rose-shaded mauve colour, the nearest approach yet to a decided mauve. Elaine, fine ivory-white; Holborn Venus, pure white, regularly spotted, and splashed with carmine; Holborn Carmine, very large fine flowers, name suggested by its colour; Holborn Blush, colour suggestive of Lady Hume's Blush Camellia; a good white (name not noted) is to be found in a variety which appears to be an improvement on The Queen in that the flowers are not so crimped—that is, they are more flat than that sort. The blue-flowered sort, Holborn Gem, appears to be getting more decided in colour, and now seeds more freely than when first introduced—an augury, let us hope, of its being more widely cultivated, a distinction which it well deserves. One Primula particularly deserves notice, not on account of its flowers, which are small, but because of its foliage, the leaves being Ivy-shaped, therefore very distinct in this respect from all other Primulas. Burbidge in his work, *The Propagation and Improvement of Cultivated Plants*, referring to this family of plants remarks, "There is a wide field in this genus for the intelligent hybridist."

Carter's Ivy-leaved Primula will certainly furnish the ever-busy "hybridist" with materials from which it is not too much to expect a new race may spring. It will, doubtless, be exhibited at the forthcoming Primula Conference, when, we believe, Messrs. Carter hope to contribute somewhat largely from their varied stock.

It should be noted that the Primulas are grown in 48 "rimless" pots, this make of pot allowing of greater depth of drainage—an important point in the successful cultivation of these plants.

Miscellaneous.

Amongst plants of a miscellaneous character were noted Chrysanthemum Bronze Queen of England, a sport from Queen of England. It originated at this nursery, and is valuable from its distinct colouring, the flowers being of a pleasing shade of rose, tinted with fawn. It received high honours from the Floral Committee of the National recently, and will, we believe, be put into commerce next year.

Forest Hill would appear to be the district for "sporting characters," for in this neighbourhood "sported" Chrysanthemums George Glenny, 1882, and Golden Queen of England, 1884. The following varieties had sports in this nursery, but as they were already in commerce they were of no value to the firm, viz., Lady Slade sported to Angeline; Venus sported to White Venus; Queen of England sported to Golden Queen of England.

Microlepia linearis, the Wax Plant, to which public attention has been lately directed, was also noticeable, and the same remark will apply to Boussingaultia baselloides, the Buenos Ayres Potato-producing plant. As grown here it has every prospect of making a fine hardy evergreen conservatory climber, the foliage being stout and free growing. As to the "Potatos," they were conspicuous by their absence. The Vanilla of commerce, V. planifolia, has been fruiting finely for the last six months. As is now well known, the flowers have to be artificially fertilised to make it produce fruit in this country. A fine batch of some 500 plants of Calceolaria, Carter's Victoria Prize, gave token of a bountiful harvest of flowers later on. Cinerarias Brilliant Prize were especially luxuriant in growth, leaves like Cabbages, and in rude health, very promising for a good bloom display.

Horticulture and agriculture being twin sisters, it may not be out of place here to refer for a short time to some valuable experiments with hybrid Wheat which have lately been carried out by Messrs. Carter, at Forest Hill. The following brief extract is from an able article in the *Times* on the subject in September last:—"More than thirty years may be counted since any known experiments were made in this country in the so-called hybridisation of cereals, with the view of obtaining new and more valuable varieties. High importance, therefore, attaches to a feat of the present harvest, which has been accomplished by Messrs. Carter & Co., of High Holborn,

This is the production of veritable novelties in Wheat by crossing some of the finest kinds hitherto resulting from selection. Entirely new sorts have now been developed, and these ought properly to be described as 'cross-bred' rather than 'hybrid' Wheats, the latter term implying a product from the union of two distinct species of cereal, which product, if attainable at all, would, from analogy of the animal kingdom, prove infertile. . . . . After three years of continued cultivation, three of the hybrids are regarded as sufficiently fixed in type, and so valuable in distinctive character and properties as to warrant their growth on an extended area next year, with a view of supplying seed corn to the public. These are Hybrid No. 10, a cross between Square-headed White and Hunter's White; No. 13, across between Talavera White and Carter's Royal Prize Red; and No. 19, Carter's Fill-measure crossed with Mammoth White."

Necessarily our space forbids giving the article in its entirety. It is ably and interestingly written, and is well worthy of perusal by all interested in this important subject—one that is rendered all the more important, dealing as it does with the food of the people—"the staff of life!" *B.*

THE EFFECT OF SNOW ON VEGETATION.

THE falls of snow between January 6 and 25, which amounted in the aggregate to a depth of above 16¾ inches, and yielded, when melted, a quantity of water equal to about 141 tons on each acre of ground, lead one to ask what is the effect of snow on vegetation.

It is known that in high latitudes the disappearance of vigorous vegetation in plants may depend quite as much on intensity of winter cold as on insufficiency of summer heat. When the sky is clear and the night air calm and frosty vegetables cool down and very soon show a temperature considerably below that of the air which surrounds them. Thus it not unfrequently happens, during the early months of spring, when the air is calm and the sky clear, that the young shoots, buds and leaves of plants are cut off, in fact frozen; although the thermometer suspended in the air indicates several degrees above freezing point. Market gardeners and others who are much exposed to loss from this cause sometimes ascribe the effect to the light of the moon, and they ground their opinion upon the fact that when the sky is clouded the destructive effects of frost are not apparent, although the same temperature of the atmosphere be recorded by the thermometer.

These observations have been shown by M. Arago not to be altogether false, but only incomplete.

When the sky is clouded the principal condition to radiation of heat from the surface of plants or other objects is wanting; the temperature of objects on the surface of the ground does not fall below that of the surrounding air, and consequently plants do not freeze unless the air itself falls below 32° Fahr.

It is in this way that we explain the use of mats, of layers of straw, in a word of all those slight coverings which gardeners are careful to supply during clear frosty nights to delicate plants under their charge. Before it was known that bodies on the surface of the ground became colder than the air which surrounds them during a clear night, the *rationale* of this practice was not apparent, for it was altogether impossible to conceive that coverings so slight could protect vegetables from a low temperature of the air.

In the same manner in severe winters the frost, by penetrating the ground, would frequently destroy the vegetation of a garden, were it not that the snow which covers the surface of the soil becomes a powerful obstacle to excessive cooling, by acting at one and the same time as a covering and as a screen, preventing radiation;—as a covering, because snow is one of the worst of conductors, being one of those substances which for a given thickness opposes the passage of heat most effectually: it is, therefore, an obstacle almost insurmountable to the earth beneath it getting into equilibrium in point of temperature with the atmosphere above; as a screen, because in sheltering the ground it prevents the soil from undergoing the cooling which it would not fail to experience in clear frosty nights by radiation into the atmosphere. It is well known in many parts of Europe that the accidental want of the usual covering of snow will cause the loss of all the autumn-sown outdoor crops.

It is on the surface of the snow that the great depression of temperature takes place; and snow being a very bad conductor of heat, the earth cools in a much less degree than it would otherwise do. *J. H. Willis.*

HOME CORRESPONDENCE.

Outdoor Fruit Growing.—The establishment of a South Lancashire Society for the fostering of the cultivation of out-of-door fruit is a step in the right direction, and one of the most promising signs of the times. And though it is a far cry to Lancashire from East Anglia, I should be pleased to become a member of the new society, and do anything in my power to promote its success and that of other provincial societies with kindred objects. For years I was under the impression that the stimulation of hardy fruit culture could be best promoted by some of our larger horticultural societies, such as the Caledonian, the Manchester, or the Royal of England; but the fact that coincident with the general prosperity of these and many other societies, the culture of hardy fruit has on the whole declined, seems to point to the necessity of establishing special societies in many local centres for the resuscitation, extension, and improvement of our hardy fruit culture. The decadence of once flourishing fruit gardens and orchards is by no means confined to the neighbourhood of Manchester; they abound in such counties as Devonshire and Cornwall, where the well worn cuckoo cry of deterioration of climate can hardly be urged as an excuse. The latter has, no doubt, done a good deal of harm, though it rests on no substantial basis of facts, and on misleading readings of experience. As good or better hardy fruit can be grown throughout Great Britain to-day as fifty or a hundred years ago; more—as fine Apples, Pears, Plums, Cherries, Peaches, Nectarines, were grown last year as in any former year within the historic period. Hence our dilapidated orchards do not depend upon our plants or our climate, but on ourselves. Broadly stated, hardy fruit culture has been greatly—I had almost written, grossly—neglected for many years. Exceptions sufficient abound, not only to test the rule, but to show the possibility of reversing the rule in the direction of the present exception. Of late years the tide of horticultural fashion has run in ornamental directions. Plant growing, bedding out, and excessive decoration, have absorbed most of the talents and the capital employed in gardening. Even that portion of those devoted to mere utilitarian phases of horticulture has run strongly in tropical grooves. Grapes, Pines, Peaches, Melons, under glass, have had far more attention than Apples, Pears, Plums, Cherries, Peaches, in the open air, whence, as a matter of course, only the leavings of talent, labour, capital, have been devoted to our hardy fruits, with such results as Mr. Turner so well describes in your columns. The idea of establishing societies to work a 30 miles' radius or so from their centres is a very happy one. Could such societies be multiplied and set to work to foster the special fruit culture of their respective districts, including not only the varieties best adapted for local soil and climate, but information respecting the fruits most in demand, and that commanded the highest prices in each district, a mass of information might be got together that would prove of the highest importance to consumers, and would give a powerful impetus to the expansion and improvement of our hardy fruit industry. *D. T. Fish.*

Eucharises Planted Out.—As I have had the pleasure of seeing the Eucharis plants under Mr. Edward Ward's charge at Hewell, perhaps a word or two from me may not be inopportune. The bulbs are planted out in a prepared border under the staging that runs round three sides of the plant stove, so near the hot-water pipes that the leaves often touch them Water is very sparingly given, and on many days the only supply the leaves get is from the drops that trickle down after the watering of the pot plants on the staging. By thus withholding water the plants are not forced, and to this cause may be attributed the total exemption from the disease which the bulbs in question show. It is a canon with most growers to keep the foliage moist; Mr. Ward practises the direct opposite, and with the best results as regards floriferousness I ever witnessed; moreover, the colour and size of the leaves indicated an amount of vitality quite capable of producing two or even three crops of blooms in the year. Perhaps some ingenious reader will explain how it happens that the Eucharis leaves are no whit the worse from touching the pipes. *Vagabond.*

Special Fertiliser for Peach Yellows.—In response to an inquiry in your issue of January 16 as to the proper quantity and the method of applying the special fertiliser for Peach yellows, permit me to say that we recommend keiserite, 25 lb.; muriate of potash, 100—150 lb.; dissolved bone-black, 450 lb. These ingredients should be thoroughly mixed and applied to the soil under the tree as far as the branches extend, taking care to leave a space of 1 foot or so about the trunk to prevent the injurious effect of direct contact. The full quantity given will suffice for an acre of seventy trees, thus giving about 9 lb. per tree. It is generally found best to apply half in spring and half in the autumn. Any other convenient form of superphosphate may be substituted for the dissolved bone, if the quantity used is based upon its containing 12 per cent. of available phosphoric acid. The muriate of potash is the most essential part of the formula, since it is to the action of this half that we look for the connective action in overcoming the disease. Sulphate or nitrate of potash are not of special value in this case. Trees which are well advanced in disease should receive a special application, spring and fall, of 4 lb. each of muriate of potash for two or three years, the other ingredients being also supplied to reinforce the constitutional vigour. The results thus far obtained from several thousands of trees show that the disease may be successfully overcome by this treatment, and the value of the tree so far outweighs the cost of material and its application, that the measures recommended commend themselves to the consideration of fruit growers upon purely business principles of economy. *D. P. Penhallow, Montreal, Canada.*

Daffodils.—Confusion worse confounded! I fear it will be too true, when I go to South Kensington next March or April to exhibit some of my Irish Daffodils that I shall have to place Yellow King, Spurius major, and Golden Queen in the same pigeon-hole as the Irish King, viz., Ard-Righ. Yellow King is now in flower here, and it is identical, but not so early in consequence of being ripened in England. Early planting of Daffodils has the greatest possible advantage in size of bloom. The Irish King is a giant with me. I shall send you some blooms from open air next week. *W. B. H., Temple Hill, Cork.*

Centradenia rosea.—This old Mexican plant does not meet with the favour it deserves, and it would seem to have been forgotten by your correspondents, for I have failed to trace any notice of this useful plant in the *Gardeners' Chronicle* of late years. Any one possessing a warm greenhouse might succeed with it because its cultivation is so very easy. During the winter and spring it flowers profusely and continuously—even in small pots well branched and evenly balanced plants can be formed which present a charming effect, making it a capital dinner-table plant; the neat and distinct purplish-red foliage, together with the numerous small rosy-white flowers, being there seen to advantage. *W. N.*

The Council of the Royal Horticultural Society.—For some time past I have noticed the remarks which have been reported from time to time in the horticultural papers on the above subject, and the inference I have drawn is, that several nurserymen think it a strange thing that none of "the trade" occupies a seat on the Council. I am sure that there are a very large number of gentlemen connected with the nursery and seed trades who are in every respect qualified to act as members of the Council; at the same time I think that, upon the whole, it is a wise regulation that prevents any gentleman connected with the trade being a member of the Council. I remember having a conversation on this subject nineteen years ago with the late Mr. James Veitch, of Chelsea. At that time Mr. Veitch was a member of the Council, and all who knew that gentleman will, I am sure, admit that it would have been impossible to find a more able man for the post; but Mr. Veitch resigned, and why?—because it was thought by others in the same business that his influence was too great in the Council, and that its policy was to a large extent moulded by him; and feeling that his position as a member of the

Council to an extent invited these remarks, he withdrew from that body, at the same time his able advice and assistance were always at the disposal of the representatives of the Society. Mr. Harry Veitch will, I am sure, pardon me for naming this incident. I fail to see in what way the position of the Society would be made stronger by the addition of any number of gentlemen on the Board connected with the nursery or seed trades. I feel sure that all will admit that Mr. Barron is fully competent to give all the practical advice required for the guidance of the council. I believe that the Fruit and Floral Committees are mainly composed of gentlemen connected with the trade, but I can assure these committees that their awards do not give unqualified satisfaction. Only the other day, a member of a large firm in the North said to me:—"It is of no use sending anything from the provinces to South Kensington for a Certificate; there is a kind of trade ring, and unless you are a member you have no chance of recognition." No doubt this is most ungracious. I merely mention it to show that there exists a spirit of jealousy amongst people who have to do with such lovely things as plants and flowers, and I fear that this spirit would be evinced in a very decided way if the executive of the Society consisted to any extent of gentlemen connected with the trade. *Bruce Findlay, Manchester.*

Action of Frost.—The sprays of Eucalyptus sent with this may possibly interest you, as the frost seems to have affected them differently from those of Camellias, &c, mentioned in the *Gardeners' Chronicle*. Most of the foliage is a good deal injured, but the very young leaves have, as you see, suffered most, and also the top of the leading shoot (which, however, was the least sheltered). The foliage on the lower part of the tree (a young tree, about 15 feet high, much sheltered by walls) seems to have suffered more than most of the scimitar-shaped leaves. A spray is sent with the horizontal leaves much blackened, and an intermediate form (between the horizontal and vertical forms) which is less injured. The frost last month was exceptionally severe for this part of Ireland, yet (perhaps from the well-ripened wood from last summer's dry weather) hardly anything seems injured amongst our "tender" shrubs, including various Australian and New Zealand kinds, except this Eucalyptus, and also two out of four Camellias, two being uninjured, though in the same sheltered position. If those who try experiments out-of-doors with plants like Camellias would note which are the hardy and which the more tender varieties, it would be of much use in the future culture of outdoor shrubs. *C. M. O.*

Leucojum Hernandesii.—As Mr. Brockbank appeals to me to express my opinion on the distinctness of this bulb from L. æstivum, I would say that on seeing them both in bloom in his garden, I considered them quite distinct in many points—growth, colour, size of bloom, &c. I have planted those bulbs of L. Hernandesii which I had from Mr. Brockbank, alongside L. æstivum in my garden, so as to be able to compare them more carefully. I would add that I consider L. æstivum decidedly the better plant, a larger flower, and, as far as I know, freer to bloom. *J. T. Poë, Rsverston.*

Charcoal for Orchids.—I am not surprised at Mr. Woolford expressing his opinion on this subject, for I have known for some months now, that he had discontinued to use it, and if I mistake not, owing to the fact that it favoured the development of fungus. Mr. Woolford does not tell us why he has lost faith in it; but if it is because he has been troubled with fungus, I would advise him to make another trial, but with Oak charcoal well burnt. Of course there are in charcoal, as in peat, many qualities, some of them being fit only for the rubbish-heap. It will be easily understood that where charcoal is made from a variety of any soft or hard wood that may be scraped together, that there will be a wide difference in quality, compared with properly burnt Oak cord-wood. I am fully aware of the evils to be feared from a half-burnt piece of wood, but to show that I have faith in the charcoal that I use as to its not causing fungus, I have used it very extensively in Vine borders where one hardly expects to see it again for some years. I should have pleasure in sending Mr. Woolford the adddress (should he wish it) where he can procure pure Oak charcoal burnt by experienced charcoal burners. I have always found pure charcoal to be the greatest purifier, and one of the best fertilisers that I could use, not only for Orchids, but for almost all other plants grown in pots. Respecting burnt ballast, no one need look far to find the reason why nurserymen use it, if they will consider the great numbers of imported Orchids that are put into baskets or pots for sale. To buy good charcoal, or even to break crocks, for the purpose, would be too much expense, considering the low prices that many Orchids realise. Nurserymen necessarily find out the cheapest material to use. *A. Bradshaw, Waddesdon.*

Cantua dependens.—Mr. T. Smith (at p. 153) states that he always failed to flower this plant in England. It is not so very difficult to flower it well, when it receives the treatment it requires. When I lived in Scotland many years ago we used to flower it annually in the greenhouse. The plants were potted in good loam, a fourth part of leaf-mould, and a little sand; they seem to require plenty of light when making their growth. We used to grow the plants at the end of a greenhouse, where they received the greatest amount of light possible from the roof glass, and also the glass end. The leaves must be freely syringed during summer, to keep them free from red-spider. If this pest attacks them they drop off before they have had time to perform their functions, and the wood does not ripen. The long straggling growths should be trained up close to the glass, and the wood will be sure to ripen if the leaves are kept clean. Let the house have plenty of air. We never turned the plants out-of-doors to ripen their wood; the warm dry air of a greenhouse will do that well. The damp cold nights out-of-doors in autumn have the very opposite effect. Besides, when the leaves are taking on the ripening tint dryness at the roots is essential, although it would also be an error to dry them up too quickly. They require plenty of pot-room; a three-year-old plant will take a pot 15 inches in diameter. A good way to train the growths is to insert sticks round the sides of the pot; they should slope considerably outward, and the growths ought to be tied to these so that the long pendulous flowers may hang down in clusters. It is a very charming plant, and were it more known, and its culture understood, we would see it in many gardens. Cantua buxifolia seems to be the correct name for it. It was introduced from the Peruvian Andes in 1845, I believe by Messrs. Veitch of Exeter. It is well figured in the *Botanical Magazine*, t. 4582, and a fine page illustration is given in your columns, June 19, 1880, p. 785. It was previous to this described by Ruiz and Pavon under the name of Periphragmos dependens. The flowers are 4 or 5 inches in length, of a deep red colour, with broad yellowish streaks on the tube. It is stated that some varieties have the flowers almost white. It seems to be very plentiful in Peru, as the "Indians adorn their huts on feast days with the clusters of the gay blossoms of this species." It can be propagated very freely by cuttings of the half-ripened wood; they do not take long to form roots in the shady place, but they ought to be placed under a close bell-glass. *J. Douglas.*

Reports of Societies.

EDINBURGH BOTANICAL: Feb. 11.

THE Society met this evening at 5, St. Andrew's Square, Professor Dickson, President in the chair. The following communications were read:—

I. "Obituary Notices of Deceased Fellows and Associates," by Mr. Andrew Taylor. These included notices of M. Edmond Boissier, Switzerland (corresponding member); the Earl of Selkirk, Mr. Alexander Croal, Stirling; Mr. William Wilson Evans, Edinburgh; Mr. James Welsh, of the firm of Messrs. Dicksons & Co., nurserymen, Edinburgh; and Mr. James Robinson, Cheshire.

II. "On Some of the Properties of Rosewood," by Mr. A. Galletly, Curator of the Edinburgh Museum of Science and Art.

"Brazilian Rosewood, which is the Rosewood *par excellence*, has been used in Europe for furniture purposes for at least 200 years, and if the dates on some articles of this material shown at South Kensington be correct, for nearly 300 years. Tables and cabinets were made of it long before Mahogany was brought across the Atlantic. According to a Brazilian official publication Rosewood trees are abundant in all the provinces on the east side of the empire from Pernambuco to Rio de Janeiro. The exports of this wood from Brazil have increased tenfold within the last fifty or sixty years and now amount in value to about £100,000 per annum. Notwithstanding its importance and the length of time it has been used in Europe the species of tree which yields it is not yet known. In Brazil it is called Jacaranda-wood; but in that country there are several Jacarandas—the black, the purple, the violet, the white, and the thorny Jacarandas, the species of which are known, besides the rose Jacaranda, of which apparently only the genus is known. At all events the botanical source of Brazilian rosewood is not known in Europe. According to the catalogue of the Kew Museum it is supposed to be obtained from one or more species of Dalbergia. In East India there are three dark heavy woods belonging to this genus, well known for their useful properties, which somewhat resemble, though they have not the beauty of Brazilian Rosewood. These are the Dalbergia latifolia, the D. sissoo, and the D. cultrata. Indeed the D. latifolia has been long well known in England as East India Rosewood.

"Rosewood being known to be distinctly resinous—a property which is well seen by lighting a splinter of it—a number of experiments were made to determine the amount and character of the resins and resinous colouring matters which Brazilian and Honduras Rosewood, as well as two species (Dalbergia latifolia and D. sissoo) of the Indian woods referred to, contained. The results of these experiments, which consisted in treating the sawdust of the different samples with naphtha, ether, and alcohol, showed that the character of the resinous matters extracted from these woods is nearly the same in all, and that there is no great difference in their quantity. For example, the naphtha extract was in most cases about 1½ per cent. of the wood, the ether extract averaged nearly 4, and the spirit extract roundly 14 per cent. The total extract was rather higher in the Brazilian than in the East Indian woods. The naphtha extract has the characters of ordinary Pine resin—viz., ready solubility in spirit, and the highly characteristic odour when heated. Both the ether and the alcohol extracts are very dark coloured, and the latter especially has a very strong tinctorial power, one part in 100,000 of alcohol showing a distinct colour in a test tube.

"The results of similar experiments with a few other woods were given. A specimen of ebony, curiously enough, scarcely coloured the ether or the alcohol, but its naphtha extract was considerable. Spanish Mahogany gave extracts not far short in quantity to some of the Rosewoods, but there is difference in the characters of the former, most marked in their comparatively feeble tinctorial power. The other woods tried gave results entirely different from those obtained from the Mahogany, and still more with those got from the Rosewood experiments."

III. "Notes on some rare British Algæ, Lichens, and Mosses," by Mr. E. M. Holmes, F.L.S.

IV. "On the Progress of Vegetation during January at the Royal Botanic Garden, Edinburgh," by Robert Lindsay, Curator.

"The month of January, 1886, has not been exceeded in severity by any month since December, 1882. After the first three days, which were mild and genial, there followed a succession of severe frosts and snowstorms till the end of the month, unbroken save by an occasional flash of lightning or hailstorm, as if added to relieve the monotony. Several very low readings of the thermometer were registered. The lowest occurred on the 19th, when the glass fell to 8°, or 24° of frost, being the lowest point reached at the garden since December 15, 1882, when 4° lower was registered. Other low readings occurred: on the 7th, 17°; 8th, 15°; 10th, 21°; 20th, 12°. Collectively, 158° of frost were registered for the month, as against 72° for the corresponding month last year. The highest morning readings were—on the 1st, 50°; 3d, 44°; 11th, 38°; 15th, 37°; 29th, 38°. The lowest day temperature was 28°, which occurred on the 19th, and the highest 52°, on the 1st. Snow began to fall on the 5th; a very heavy fall took place on the 10th, and at intervals till the month closed there were renewed falls. Outdoor work has in consequence been greatly interfered with. Notwithstanding the severity of the weather experienced vegetation has not suffered to any great extent, owing to the protection afforded by snow and the dry frost-bound condition of the ground. A large number of half-hardy plants have either been killed outright or badly injured. With few exceptions they are species which survive only during very mild winters in this district, and are never risked out-of-doors without our having duplicate plants to fall back on secured indoors. Common Wallflowers and East Lothian Stocks are almost destroyed, while Intermediate Stock is comparatively safe as yet. Wallflower appears to be becoming more tender than it was formerly. This may probably be due to selecting for seed varieties having improved flowers only, little or no attention being paid to varieties having a vigorous

constitution as well. Golden variegated Hollies are slightly injured, showing that they are more tender than either the silver variegated or green varieties, which are not at all injured.

"On the rock garden twelve species and varieties of plants came into flower during the month, viz., Primula vulgaris caulescens, Crocus Imperati, Draba aizoon, Hepatica angulosa, Helleborus abschasicus, H. antiquorum, H. albicans major, H. olympicus, H. o. albus, H. purpurascens minor, H. viridis, H. guttatus. Of the forty selected plants whose dates of flowering are annually recorded to the Society, not one has opened during January, while in former years as many as sixteen have been recorded in January."

V. Miscellaneous communications.—Dr. Craig exhibited a specimen of the medicinal Squill, Scilla maritima, which had germinated in his Materia Medica Museum, and which he presented to the Botanic Garden.

Obituary.

MR. D. DOIG.—The horticulturists of Scotland and many on the other side of the border will regret to learn that this long well-known gardener has passed away. He died at his house, Rossie Priory Gardens, a few days ago. Nearly a year since he was seized with paralysis, and in June last he was laid aside from active duty, but took a keen interest in the work at the gardens to the last day of his life. He was born at Kirkinch, parish of Meigle, in 1821, and served his time as an apprentice under Mr. James Kidd, who was gardener at Rossie Priory for fifty years. Mr. Doig also prosecuted the study of botany, and was well acquainted with the wild plants of Britain. After serving his apprenticeship he was gardener to various gentlemen, and on the retirement of Mr. Kidd, twenty years ago, he was appointed head gardener at Rossie Priory, the seat of Lord Kinnaird, where he gave great satisfaction. His services were often in requisition at horticultural exhibitions, and he was widely known as a writer in the *Gardeners' Chronicle* and in other horticultural and botanical journals.



STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 17, 1886.

Month and Day.	Barometer. Mean Reading reduced to 32° Fahr.	Barometer. Departure from Average of 13 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Feb.	In.	In.	°	°	°	°	°	°			In.
11	29.98	+0.19	35.5	27.2	8.3	32.2	— 6.8	29.9	95	S.S.W.	0.00
12	29.82	+0.03	42.0	33.0	9.0	38.2	— 0.7	35.1	97	E.S.E.	0.07
13	29.76	—0.04	46.0	34.6	11.4	40.8	+ 1.9	39.0	94	S.E. : E.S.E.	0.01
14	29.64	—0.16	43.0	36.0	7.0	39.8	+ 1.0	37.9	93	S.S.E.	0.04
15	29.84	+0.02	40.4	34.0	6.4	37.4	— 1.3	36.0	95	E.N.E.	0.04
16	29.76	—0.05	34.3	32.0	2.3	33.0	— 5.7	30.6	91	E.N.E.	0.00
17	29.84	+0.02	35.2	30.9	4.3	33.0	— 5.7	30.9	92	E. : E.N.E.	0.00
Mean	29.81	+0.00	39.5	32.5	7.0	36.3	— 2.5	34.3	94	variable	0.16

Feb. 11.—Dense fog all day.
— 12.—Dull damp day.
— 13.—Dull damp morning. Fine afternoon.
— 14.—Dull day, a slight rain falling occasionally.
— 15.—Dull damp day.
— 16.—Dull day.
— 17.—Dull damp day.

LONDON: *Atmospheric Pressure.*—During the week ending February 13, the reading of the barometer at the level of the sea increased from 30.21 inches at the beginning of the week to 30.73 inches by 9 A.M. on the 8th, decreased to 29.96 inches by 5 P.M. on the 12th, increased to 29.97 inches by 9 A.M. on the 13th, and was 29.90 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.34 inches, being 0.60 inch higher than last week, and 0.38 inch higher than the average of the week.

Temperature.—The highest temperature in the shade in the week was 46°, on the 13th; on the 10th the highest temperature was 29°.2. The general mean was 36°.4.

The lowest temperature was 20°, on the 9th; on the 13th the lowest temperature was 34°.6. The mean of the seven low night temperatures was 26°.1.

The greatest range of temperature in one day was 13°, on the 9th; the smallest, on the 11th, was 8°.3. The mean of the seven readings was 10°.3.

The mean temperatures were, on the 7th, 30°.2; on the 8th, 28°.6; on the 9th, 26°.5; on the 10th, 25°.5; on the 11th, 32°.2; on the 12th, 38°.2; and on the 13th, 40°.8; and these were all below their averages (excepting the 13th, which was 1°.9 above) by 8°.9, 10°.5, 12°.6, 13°.5, 6°.8, and 0°.7 respectively.

The mean temperature of the week was 31°.7; being 3°.8 lower than last week, and 7°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 69°.9, on the 8th. The mean of the seven readings was 59°.7.

The lowest reading of a minimum thermometer placed on grass was 18°.9, on the 9th. The mean of the seven readings was 25°.9.

Rain.—Rain fell on two days, to the amount of 0°.08 inch.

ENGLAND: *Temperature.*—During the week ending February 13, the highest temperatures were 51° at Truro, 49°.2 at Bristol, 48°.5 at Liverpool; the highest at Sunderland was 43°, at Wolverhampton 44°.9, at Nottingham 45°.1. The general mean was 46°.8.

The lowest temperatures were 18° at Cambridge, 20° at Blackheath, 22°.7 at Sheffield; the lowest at Liverpool was 31°.8, at Preston and Newcastle 30°. The general mean was 26°.3.

The greatest ranges were 28°.6 at Cambridge, 26° at Blackheath, 25°.3 at Sheffield; the least ranges were 14° at Sunderland, 15°.5 at Preston, 16°.7 at Liverpool. The general mean was 20°.5.

The mean of the seven high day temperatures was highest at Truro, 47°.7, at Liverpool 44°.2, at Newcastle 44°.1; and was lowest at Blackheath, 36°.4, at Brighton and Wolverhampton 37°.5. The general mean was 41°.3.

The mean of the seven low night temperatures was highest at Newcastle, 35°.6, at Liverpool 35°.3, at Truro 35°; and was lowest at Cambridge, 25°.5, at Blackheath 26°.1, at Bristol 28°.2. The general mean was 31°.6.

The mean daily range was greatest at Cambridge, 13°.8, at Bristol 13°.2, at Truro 12°.7; and was least at Preston, 6°.9, at Bradford 7°.2, at Sunderland 7°.5. The general mean was 9°.7.

The mean temperature was highest at Truro, 41°, at Newcastle 39°.5, at Liverpool 39°.4; and was lowest at Blackheath, 31°.7, at Cambridge 32°, at Wolverhampton 32°.6. The general mean was 36°.1.

Rain.—The largest falls were 0.55 inch at Truro, 0.36 inch at Liverpool, 0.26 inch at Preston; the smallest falls were 0.02 inch at Sunderland, 0.03 inch at Hull and Leeds. No rain fell at Bradford. The general mean fall was 0.14 inch.

SCOTLAND: *Temperature.*—During the week ending February 13, the highest temperature was 49°.8, at Leith; at Dundee the highest was 45°.9. The general mean was 48°.3.

The lowest temperature in the week was 27°, at Perth; at Paisley the lowest temperature was 34°. The general mean was 30°.3.

The mean temperature was highest at Leith, 42°.6; and lowest at Perth, 39°. The general mean was 40°.8.

Rain.—The largest fall was 1.26 inch, at Greenock; the smallest fall was 0.02 inch, at Leith. The general mean fall was 0.44 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"He that questioneth much shall learn much."—BACON.

FIGS.—Thompson, in the *Gardeners' Assistant*, says Figs are readily propagated by seeds. Have any Figs been raised from seed ripened in this country? *H.*

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

BONES FOR PLANTS: *P. C.* These can be got from bone-mills in the state of meal or powder, in which state their action on plants is almost immediate, or they may be obtained in half-inch pieces or larger. Breaking them by hand is a tedious and time-robbing job, and would answer on a small scale only. Dissolved in sulphuric acid they form a valuable manure.

BOOKS: *H. H. T. Days and Hours in a Garden* is a reprint, with additions, of articles that appeared in this journal under the title, "Notes from a Buckinghamshire Garden;" it is published by Elliot Stock. The *English Flower Garden*, by the late H. A. Bright, is a reprint from the *Quarterly Review*, and is distinct from the "Notes from a Lancashire Garden;" it is published by Murray. The other question will be answered next week.—*Z. Fruit Culture Under Glass* is published by Messrs. W. Blackwood & Sons, Edinburgh and London. We do not know the price of the work; such matters should be advertised.

CORRECTIONS.—In list of certificated plants at South Kensington (*vide* report in last week's issue, p. 214), instead of R. H. Measures, Esq., read R. J. Measures, Esq.; and H. Simpkins is the gardener to Mr. Measures, not Jenkins. These errors are due to the slovenly writings on tickets, &c., at the meeting. These particulars cannot be too plainly written.—In the article "Brainea insignis," p. 203, second paragraph, line 13, for "summer," read "remaining,' summer in Hong Kong being the wet season.

INSECTS: *G. K. G.* We found no maggot or other insect in the small insufficient fragments of Carnation stems sent, but believe they have been injured by the larvæ of a minute two-winged fly of the genus Agromyza. *I. O. W.*

LATE CHRYSANTHEMUMS AND PRIMULAS: *T. T.* The blooms of Chrysanthemum Fulton (?) are very good for the season, and the foliage free from mildew. It must be a great advantage in some places to have these flowers at so late a period of the winter, and there are other persons whose taste for the Chrysanthemum willingly changes for other flowers at the new year, and who rejoice when others they regard as more seasonable come in. The Primulas are pretty, but not better than many others.

MR. D. BUCHANAN: *E. W.* A correspondent has kindly forwarded the address of this gentleman, who is in excellent health, and sanguine of success in his undertaking. Communications should be addressed, Mr. D. Buchanan, Carlyle Street, Tennyson Street, Mackay, Queensland, Australia.

NAMES OF PLANTS: *Mr. Cullingford.* The large pseudobulb is that of Schomburgia tibicinis, and the smaller is Brassavola nodosa.—*A. Cambridge.* We have done our best with the leaf sent, but cannot name it without more complete material.—*Camjee.* Ornithidium densum.—*H. A.* 1, apparently a Retinospora of some sort grown under glass; 2, Dendrobium Farmeri; 3, Oncidium sphacelatum.—*J. F.* Dendrobium Falconeri.

RHODODENDRON AND SOLANUM: *John Parnell.* We are not acquainted with a Rhododendron Nobleanum album, R. Nobleanum showing various shades of crimson only. There is no constant variegated form of Solanum capsicastrum, but it may come with variegated leaves occasionally from seed.

ROYAL HORTICULTURAL SOCIETY: *Critic.* There is a good deal to be said on the other side, and if you condemn the appointment, it is not fair to asperse the holder. The requirements of the office are not what you suppose them to be. The charge of untruthfulness should not be brought unless you are prepared to substantiate it. We believe it is correct that some members of the Council did guarantee the amount under certain conditions. As to the scant courtesy shown to Mr. Dick we entirely share your opinions.

SMALL SNAILS THAT GNAW THE ROOTS OF CUCUMBERS: *T. Hovell.* It is Bulimus Goodalli, imported probably from the tropics with Orchids or other plants.

WELLINGTONIA: *P.* The production of male flowers is not very rare. We are obliged for your specimen.

*** All communications intended for publication should be addressed to the "*Editor*," and not to the Publisher, or to any member of the staff personally. The Editor would also be obliged by such communications being *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending

newspapers should be careful to mark the paragraphs they wish the Editor to see.

INTELLIGENT READERS, PLEASE NOTE. — *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

OSMAN & CO., 14, Windsor Street, Bishopsgate, London, E.—Wholesale Price List of Seedsmen's and Florists' Sundries.

SUTTON & SONS, Reading, Berks. — Farmers' Year Book.

THOS. S. WARE, Hale Farm, Tottenham, London, N. —General Catalogue of Hardy Plants, Roses, Chrysanthemums, &c.

RODGER, M'CLELLAND & CO., Newry, Ireland—Trees and Shrubs.

THOS. WOODFORD, Atherstone—Vegetable and Flower Seeds.

COMMUNICATIONS RECEIVED.—M. D. (with thanks).—Bruce Findlay.—S. Brigid.—R. B. L.—Dr. Sorauer, Proskau.—C. W. L.—C. V. I., Copenhagen.—H. P. A., Ontario.—Lucien Linden, Ghent.—C. Naudin, Antibes.—R. W. A Pietermaritzburg, Natal.—A. M.—P. D., waits for want of space.—A. Kentish Vicar.—A. D.—A Vagabond.—O. T.—W. W. W. S.—W. L. & Co.—"Traveller," who does not send his name. R. McL.

Markets.

COVENT GARDEN, February 18

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

BUSINESS has somewhat recovered, and a better demand for home goods has set in. Our market is fully supplied with well-kept home Apples, but prices are not so good as they were. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0
Arbor vitæ (golden), per dozen	..	6 0
— (common) doz.	6 0	12 0
Arum Lilies, dozen.	9 0	12 0
Azaleas, per doz.	..	24 0
Begonias, per dozen	6 0	12 0
Bouvardias, doz.	..	12 0
Cinerarias, doz.	12 0	18 0
Cyclamen, 12 pots	12 0	24 0
Cyperus, per dozen	4 0	12 0
Daffodils, per dozen	9 0	12 0
Dracæna terminalis, per dozen	..	30 0
— viridis, per doz.	12 0	24 0
Ericas, various, doz.	12 0	24 0
Euonymus, in var., per dozen	..	6 0
Evergreens, in var., per dozen	..	6 0
Ficus elastica, each	1 6	7 0
Ferns, in variety, per dozen	..	4 0
Foliage Plants, various, each	..	2 0
Genistas, per dozen	0 0	15 0
Hyacinths, per doz.	6 0	9 0
Lilies in clumps, or pots, per dozen	18 0	30 0
Marguerite Daisy, per dozen	..	8 0
Myrtles, per dozen	6 0	12 0
Palms in var., each	2 6	21 0
Pelargoniums, scarlet, per dozen	6 0	9 0
Primulas, single, 12 pots	..	4 0
Solanums, per dozen	8 0	12 0
Spiræas, per dozen	12 0	15 0
Tulips, 12 pots	..	6 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	..	1 0
Arum Lilies, 12 blms.	4 0	8 0
Azaleas, 12 sprays	..	6 0
Bouvardias, per bun.	0 6	1 0
Camellias, 12 blms.	2 0	4 0
Carnations, 12 blms.	1 0	3 0
Chrysants., 12 blms.	2 0	4 0
— 12 bunches	..	9 0
Cyclamens, doz. blms.	0 4	0 6
Daffodils, per bunch	1 0	2 0
Epiphyllums, 12 blms.	0 6	1 0
Eucharis, per dozen	4 0	6 0
Gardenias, 12 blooms	12 0	24 0
Hyacinths, Rom., 12 sprays	..	0 9
— red, 12 blooms	1 0	2 0
Lilac, French, bunch	2 0	7 0
Lily-of-the-Valley, 12 sprays	..	0 9
Margherites, 12 bun.	4 0	8 0
Mignonnette, 12 bun.	4 0	9 0
Pelargoniums, per 12 trusses	..	1 0
— scarlet, 12 trusses	0 9	1 0
Primulas, double, per bunch	..	1 0
— single, per bunch	0 0	0 6
Roses (indoor), doz.	3 0	9 0
— Tea, French, doz.	0 9	1 6
— red, French, doz.	2 0	4 0
Snowdrops, 12 bun.	1 6	3 0
Tropæolums, 12 bun.	2 0	3 0
Tuberoses, 12 blms.	2 0	3 0
Tulips, doz. blooms	0 9	1 0
Violets, 12 bunches	1 0	1 6
— Czar, Fr., bunch	1 6	2 6
— Parme, French, per bunch	..	4 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	4 0	..
Asparagus, Eng., 100	0 0	..
— French, bundle	18 0	25 0
Beans, Kidney, lb.	2 0	..
Beet, red, per dozen	1 0	2 0
Broccoli Sprts., bush.	9 0	..
Capsicums, per doz.	0 6	..
Carrots, per bunch	0 6	..
Cauliflowers, per doz.	2 0	3 0
Celeriac, per root	0 3	0 4
Celery, per bundle	1 6	2 0
Coleworts, doz. bunch	4 0	6 0
Cucumbers, each	1 0	1 6
Endive, per dozen	1 0	2 0
Herbs, per bunch	0 2	..
Leeks, per bunch	0 0	6 ..
Lettuce, per dozen	1 0	1 6
Mint, green, bunch	1 6	..
Mushrooms, punnet	1 0	1 6
Mustard and Cress, do.	0 4	..
Onions, per bushel	4 0	..
Parsley, dozen bunch	2 0	3 0
Parsnips, per dozen	1 0	..
Potatos, per cwt.	4 0	5 0
„ kidney, per cwt	4 0	5 0
Salsafy, per bundle	0 9	..
Savoys, per dozen	2 0	..
Scorzonera, per bundle	1 0	..
Seakale, punnet	2 6	..
Shallots, per pound	0 3	0 9
Spinach, per bushel	4 0	6 0
Sprouts, per pound	0 6	..
Sprue Asparagus, per bundle	1 0	..
Tomatos, per lb.	1 6	2 6
Turnips, bunch	0 6	..

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Apples, per ½-sieve	1 0	3 0
— Canadian, barrl.	10 0	14 0
Grapes, per lb.	2 6	5 0
Kent Cobs, 100 lb.	30 0	..
Lemons, per case	8 0	10 0
Pine-apples, Eng., lb.	1 0	..
— St. Michael, each	2 6	8 0
Pears, per dozen	1 0	2 6

SEEDS.

LONDON: *Feb.* 17.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, state that the seed market to-day was moderately well attended. There is a general determination now amongst country buyers to get in, at any rate, a portion of their spring requirements of seeds while the present low rates prevail. America is still buying Clover seed from Europe. Trefoil, red, white, and Alsike, show no quotable alteration. Grass seeds continue steady. Hemp and Canary experience a small sale at the unprecedentedly low figures previously noted. White Mustard is firm. Rape seed dull. Very little doing in either Haricot Beans or blue Peas. Linseed is firm, with upward tendency.

CORN.

MARK LANE: *Feb.* 15.—English Wheats were offering at late comparatively cheap rates, but met less demand than in the earlier part of last week. Foreign was held generally very steadily. Flour was dull of sale, and unaltered in value. Good malting Barley sustained late rates, and grinding sorts 3*s.* to 6*d.* dearer on the week. Beans and Peas were 6*d.* higher. Oats were dull of sale.

Feb. 17.—There was a dull trade at mostly unaltered rates—certainly not dearer—for Wheat and flour. Barley fully supported the recent improvement; Beans and Peas brought steady value; and Oats were quiet and unchanged.

Average prices of corn for the week ending Feb. 13:—Wheat, 29*s.* 8*d.*; Barley, 29*s.*; Oats, 19*s.* 4*d.* For the corresponding period last year:—Wheat, 32*s.* 10*d.*; Barley, 31*s.* 9*d.*; Oats, 20*s.* 11*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Feb.* 17.—Good supplies of fruit and vegetables; trade good, prices fair. Quotations:—Apples, 2*s.* 6*d.* to 6*s.* per sieve; Savoys, 5*s.* to 12*s.* per tally; Cauliflowers 5*s.* to 12*s.* do.; Beetroot, 2*s.* 6*d.* to 3*s.* do.; Sprouting Broccoli, 3*s.* to 3*s.* 6*d.* per sieve; Brussels Sprouts, 3*s.* 6*d.* to 5*s.* do.; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* do.; Celery, 6*s.* to 12*s.* per dozen bundles; bunch Greens, 3*s.* to 4*s.* 6*d.* per dozen; do. Turnips, 2*s.* 6*d.* to 4*s.* do.; do. Carrots, 2*s.* to 2*s.* 6*d.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Onions, 4*s.* to 4*s.* 6*d.* per cwt.; Carrots, 20*s.* to 40*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 22*s.* 6*d.* to 27*s.* 6*d.* do.; Mangels, 20*s.* to 22*s.* 6*d.* do.

STRATFORD: *Feb.* 16.—The supplies have been good, as also the attendance of buyers, and a fair trade has been done at the following prices:—Savoys, 5*s.* to 9*s.* per tally; bunch Greens, 3*s.* to 3*s.* 6*d.* per dozen; Sprouts, 4*s.* to 5*s.* per sieve; do., 2*s.* 6*d.* to 3*s.* per half sieve; Mangels, 21*s.* to 22*s.* per ton; Swedes, 22*s.* to 25*s.* do.; Turnips, 55*s.* to 70*s.* do.; Carrots, cattle feeding, 20*s.* to 26*s.* do.; do. household, 30*s.* to 36*s.* do.; Onions, 100*s.* to 110*s.* do.; Celery, 8*s.* to 12*s.* per dozen bundles; Horseradish, 1*s.* per bundle; Apples, 2*s.* 6*d.* to 4*s.* per basket; Parsnips, 7*d.* to 1*s.* per score; Beetroot, 3*s.* to 4*s.* per sieve.

POTATOS.

BOROUGH AND SPITALFIELDS: *Feb.* 16.—Dull trade, with drooping prices. Quotations:—Regents, 60*s.* to 100*s.*; Magnum Bonums, 50*s.* to 90*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Feb.* 17.—Trade has been a little better for superior samples. Quotations:—Champions, 45*s.* to 55*s.*; Victorias, 55*s.* to 65*s.*; Regents, 55*s.* to 70*s.*; and Magnums, 50*s.* to 70*s.* per ton.

STRATFORD: *Feb.* 16.—Prices:—Magnums, 50*s.* to 70*s.*; Regents, 50*s.* to 70*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 2166 bags from Hamburg, 196 bags from Harlingen, 130 bags from Malta, and 140 sacks from St. Nazaire.

HAY.

WHITECHAPEL: *Feb.* 16.—Trade very dull, with large supplies, and a reduction in the top prices of Clover and hay. Quotations:—Clover, prime, 90*s.* to 100*s.*; inferior, 70*s.* to 88*s.*; hay, prime, 70*s.* to 87*s.*; inferior, 50*s.* to 65*s.*; and straw, 28*s.* to 38*s.* per load.

Feb. 18.—There was a fair supply on offer; trade was quiet, and prices were easier for straw.

CUMBERLAND (Regent's Park): *Feb.* 16.—A continued large supply of Clover and hay, and a very dull trade. Prices rather easier, and in favour of buyers. Quotations:—Clover, best, 90*s.* to 100*s.*; second, 70*s.* to 90*s.*; hay, best, 75*s.* to 88*s.*; seconds, 62*s.* to 72*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *Feb.* 16.—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 110*s.*; and straw, 30*s.* per load.

Government Stock.—Consols closed on Monday at 100⅛ to 100⅛ for both delivery and the account. Tuesday's final quotations were 100⅛ to 101 for both transactions. On Wednesday and Thursday business for both delivery and the account closed at 101⅛ to 101⅛.

The Finest Celeries yet introduced are

WRIGHT'S GROVE RED, WHITE, PINK, and GIANT WHITE.

Extract from *Gardeners' Chronicle*, October 31, 1885, report of show at South Kensington, page 569:—"Turning to the single dish classes, we found no less than twenty lots of Celery, in sizes, generally very fine and clean. Here Mr. Richards, of Somerley Park Gardens, was *first* with a superb, clean, solid sample of Wright's White, as good as could be desired."

GROVE RED and WHITE have also been awarded First Prize. Packets 1*s.* each, four varieties, 3*s.*, post-free.

CUCUMBER, PARAGON, also PRINCE OF WALES, packets, 1*s.* each, free.

W. WRIGHT, Market Square, Retford.

GARDEN POTS.

BEST QUALITY.
Largest Stock.
1½ to 10 inches diam.
1 doz. or 100,000 sent.

J. MATTHEWS,
Royal Pottery,
Weston-super-Mare.

TO THE TRADE.

LARGE STOCK.
LONG TOMS,
and others.
STATE QUANTITY.

SEND FOR
PRICE LIST.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

4*d* per bushel; 100 for 25*s*; truck (loose, about 2 tons), 40*s.*; 4 bushel bags, 4*d.* each.

LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks 25*s.*; sacks, 4*d.* each.

BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; sacks, 4*d.* each

COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* per half ton, 26*s.* per ton in 2-bushel bags, 4*d.* each.

YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1*s.* per bushel.

SPHAGNUM MOSS, 8*s.* 6*d* per sack

MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—**H. G SMYTH**, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

GENUINE GARDEN REQUISITES, as supplied to the Royal Gardens.

FRESH COCOA-NUT FIBRE REFUSE, 4-bushel Bags, 1*s.* each; 30 for 25*s.*—bags included; 2-ton Truck, free on Rail, 25*s.* BEST BROWN FIBROUS KENT PEAT, 5*s.* per Sack; 5 for 22*s.* 6*d.*; 10 for 35*s.*; 20 for 60*s.* BEST BLACK FIBROUS PEAT, 4*s.* 6*d.* per Sack; 5 for 20*s.*; 10 for 30*s.* COARSE BEDFORD SAND, 12*s.* 6*d.* per Bushel; 14*s.* per ½ Ton; 25*s.* per Ton. SPECIALITÉ TOBACCO PAPER, 10*d.* per lb.; 28 lb., 21*s.*; cwt., 70*s.* FINEST TOBACCO CLOTH, 8*d.* per lb.; 28 lb. for 18*s.* LEAF-MOULD, 5*s.* per Sack. PEAT MOULD, 4*s.* per Sack. YELLOW FIBROUS LOAM, 3*s.* per Sack. CHARCOAL, 2*s.* 6*d.* per Bushel; Sacks, 4*d.* each. BONES, GUANO, SPHAGNUM, &c. LIST Free. Special Prices to the Trade for Cash.

W. HERBERT & CO., Hop Exchange Warehouses, Southwark Street, S.E. (near London Bridge)

COCOA-NUT FIBRE REFUSE: newly made. The same as supplied to the Horticultural Society.—Truck-load of 2 tons, 30*s.*; twenty sacks of same, 14*s.*; forty, 25*s.*; sacks included. All Free on to Rail. Cash with orders.—T. STEVENS AND CO., Cocoa-nut Fibre Merchants, "Greyhound Yard," and 153, High Street, Battersea, S.W.

12-oz. Sample Packets, free by post, 12 Stamps.

FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 4*s.* 6*d.* per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton per Truck. Sample Bag, 5*s.*; 5 Bags, 22*s.* 6*d.*; 10 Bags, 45*s.* Bags included. Fresh SPHAGNUM, 12*s.* 6*d.* per Bag. SILVER SAND, Coarse or Fine, 52*s.* per Truck of 4 Tons.

WALKER AND CO., Farnborough Station, Hants.

Peat—Peat—Peat.

FOR Rhododendrons and common purposes. For Stove and Greenhouse Plants, Heaths, Ferns, &c. For Orchids (specially selected fibrous), in sacks or barr-ls. Fresh SPHAGNUM, very superior LEAF MOULD, LOAM, Fine and Coarse SILVER SAND.

Trade liberally dealt with. Prices on application to GATERELL AND SON, Wholesale Peat Merchants, Ringwood, Hants

PEAT.—Finest Quality, Hampshire Brown Fibrous, 5*s.* 9*d.*; best selected for Orchids, 11*s.* yd. In Trucks. Free on Rail, London.—Samples on application to C. FOULON AND CO., 3, Throgmorton Avenue, London, E.C.

GARDEN REQUISITES.

TWO PRIZE MEDALS.

Quality, THE BEST in the Market. (All sacks included.)

PEAT, best brown fibrous .. 4*s.* 6*d.* per sack; 5 sacks for 20*s.*
PEAT, best black fibrous .. 3*s.* 6*d.* „ 5 sacks for 15*s.*
PEAT, extra selected Orchid 5*s.* 6*d.* „
LOAM, best yellow fibrous ..
PREPARED COMPOST, best } 1*s.* per bush., sacks included).
LEAF MOULD, best only ..
PEAT MOULD, „ ..
SILVER SAND, coarse, 1*s.* 3*d.* per bush., 12*s.* half ton, 22*s.* ton.
RAFFIA FIBRE, best only .. .. .. 1*s.* per lb.
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 18*s.*
TOBACCO PAPER „ (Spécialité) 8*d.* lb., 28 lb. 18*s.*
MUSHROOM SPAWN, finest Milltrack .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each; 10 sacks, 9*s.*; 15 sacks, 13*s.*; 20 sacks, 17*s.*; 30 sacks, 25*s.*; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

CHUBB, ROUND & CO.,
WEST FERRY ROAD, MILWALL, LONDON, E.

J. JENSEN & CO.'S
NORWEGIAN
FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash.	Per Cent.	Herring and Potash.	Per Cent.
7.0	Ammonia	.. ..	8.30
20.0	Phosphates	.. ..	9.0
15.0	Potash	.. ..	15.0
10.0	Magnesia	.. ..	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are £10 per Ton (bags included) for the COD, and £9 for the HERRING, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.
IN TINS.—2 lb. for 1s.; *and*
IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6d.; 56 lb., 10s. 6d.; 1¼ cwt., 20s.; 2 cwt., 30s. Bags free.

☞ Apply to all Nurserymen and Florists, or to
J. JENSEN & CO.,
10, ST. HELEN'S PLACE, LONDON, E.C.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonsals from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18s.; ½-cwt., 9s. 6d. ¼-cwt., 5s.; ⅛ cwt., 3s.; tins containing 7 lb., 2s. 6d.; 2½ lb., 1s.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool,
Can also be had from all Nurserymen and Seedsmen.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

BROWN FIBROUS PEAT.—Pure Fern Fibre, cut from the best Peat lands in England. Send for sample and price. post-free.
BRINKWORTH and SONS, Reading.

HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite.
BENJAMIN FIELD, F.R.H.S. (Son-in-law and Successor to J. Kennard), Swan Place, Old Kent Road, London, S.E.
Established 1854.

GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1s., 3s., and 10s. 6d.
GISHURSTINE keeps Boots dry and soft on wet ground. Boxes, 6d. and 1s., from the Trade. Wholesale from PRICE'S PATENT CANDLE COMPANY (Limited), London.

PURE WOOD CHARCOAL
FOR
VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES,
AND GENERAL HORTICULTURAL PURPOSES.
HIRST, BROOKE & HIRST, Manufacturers, Leeds, YORKSHIRE.

SILVER SAND, coarse, 24s. per truck of 4 tons; PEAT, 60s. per truck of 10 yards; LOAM, 45s. per truck of 4 tons. Terms cash. Sent to all parts at the lowest rates.—W. SHORT, Horticultural Company, Midhurst, Sussex.

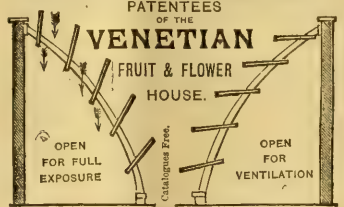
RUSSIA MATS and RAFFIA FIBRE.—Before Buying, write for JAS. T. ANDERSON'S Catalogue, which will be forwarded post-free on application.
149, Commercial Street, London, E.
Registered Telegraphic Address—"JATEA, LONDON."

Russia Mats—Raffia.
MARENDAZ AND FISHER can offer the above at lower prices than any firm. To the trade only.
James Street, Covent Garden, W.C.

To Nurserymen, Seed Merchants, and Florists.
J. BLACKBURN AND SONS are offering Archangel MATS lower than any other house in the Trade. Also Petersburg MATS and MAT BAGS, RAFFIA FIBRE, TOBACCO PAPER, and Shading Materials. Prices free on application.—4 and 5, Wormwood Street, London, E.C.

TREE MOVER.—Any one having an Elvaston Tree Mover, in sound condition, but not in use, may hear of a purchaser by addressing
R. C., Watergate, Emsworth, Hants. State price and how old.

SKINNER & BOARD, BRISTOL,
HORTICULTURAL BUILDERS & HOT-WATER ENGINEERS.
PATENTEES
OF THE
VENETIAN
FRUIT & FLOWER
HOUSE.



See House at INVENTIONS EXHIBITION, Kensington.
Estimates for WARMING Churches, Conservatories, etc., etc.

EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½d. per yard; 4 yards wide, 3d. per yard; or 2 yards wide, 10s. per 100; 4 yards wide, 20s. per 100 yards. New TWINE NETTING, 1 yard wide, 2d. per yard; 2 yards wide, 4d. per yard; 4 yards wide, 8d. per yard. COTTON NET, nine meshes to square inch, 1¼ yard wide, 7d. per yard run.
W. CULLINGFORD, Forest Gate, E.

PROTECT YOUR PLANTS
"FRIGI DOMO"
REGISTERED TRADE MARK
From Damp, Frost, and Cold Winds.
A perfect Non-conductor of Heat, keeping, wherever it is applied, an even Temperature.
MADE FROM PREPARED HAIR AND WOOL.
To be obtained of all Nurserymen and Seedsmen, and
BENJAMIN EDGINGTON (Limited),
2, DUKE STREET, LONDON BRIDGE, S.E.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

BOX of PATTERNS (on approbation), with Prices, POST-FREE.
DARLINGTON
(SEVEN PRIZE MEDALS. Established, 1752.)
GOLD MEDAL
DRESS FABRICS
are GUARANTEED the very best made, from the same YARNS as those supplied to Her Royal Highness the Princess of Wales; and are manufactured entirely by us, on our own premises, direct from the sheep's back (THROUGH OUR OWN LOOMS) to that of the wearer—features, we believe, which no other advertisers can claim. 1000 people engaged in their production. Warranted to wear and always look well.

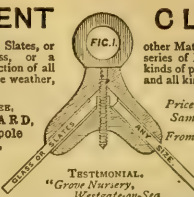


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New and Seasonable Makes.
Our CROSS-WARP SERGES, 10½d. to 3s. per yard, are practically unwearable either way of the Cloth. Our GOLD MEDAL Cashmeres, 1s. 9d. to 4s. per yd.; Merinos, 2s. to 3s. 6d. per yard; Ottomans, 1s. to 3s. per yard; Costume Cloths, 8½d. to 4s. 9d. per yard; Cords, 6d. to 1s. 6d. per yard. All the above are plain and coloured. Ocean, Canvas and Basket Cloths, plain and figured, at 10½d. per yard. Nuns' Veilings, plain and figured, 8½d. to 10½d. per yard; Soleils, plain and figured, 1s. 4d. to 3s. per yard. Purchases of £1 carriage paid to any Railway Station in Great Britain. Any Quantity Cut at Wholesale Prices.

HENRY PEASE & CO.'S SUCCESSORS,
Spinners and Manufacturers,
THE MILLS, DARLINGTON.
BOX of PATTERNS (on approbation), WITH PRICES, POST-FREE.

PATENT CLIP.
For Glass, Slates, or a Hand-glass, or a for the protection of all &c., from the weather, pests.



other Material, to form series of Hand-glasses, kinds of plants, flowers, and all kinds of garden

PATENTEE,
J. GODDARD,
13, Radipole Road,
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Price 6s. per dozen. Sample Clip, 9d.
From the Inventor.
(See also Figs. 2, 3, 4, and 5.)

TESTIMONIAL.
"Grove Nursery, Westgate-on-Sea.
"I have your sample Clip to hand, for which accept thanks. I was at South Kensington on the 9th, where I saw your Patent, and was much pleased with it. I shall be obliged by your sending me 100 at your earliest convenience. There are no end of ways that your Clips will help us to adopt glass to.—H. BURBRIDGE."

GIBSON'S Registered BOUQUET HOLDER.—The above new Holder meets the long-felt need of Ladies, Florists, and Gardeners. Bouquets can be sent by post or carried in hand without packing. Different sizes. Sample sent.
ALEXANDER GIBSON, Gardener, Gorebridge, Edinburgh.

To Gardeners and Florists.
FOR SALE, CHEAP, Three or Four New GREENHOUSES and HOTHOUSES; space required. Apply at the CADOGAN IRONWORKS, Stanley Bridge, King's Road, Chelsea, S.W.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.





GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME" FRAMES, PLANT COVERS, and PROPAGATING BOXES: also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price LISTS Free by Post. The Trade supplied

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Design, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability. Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
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SILVER SAND, fine or coarse grain as desired. Price, by post, per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

THE LOUGHBOROUGH GREENHOUSE HOT-WATER APPARATUS.



Price, as engraving, with Boiler, open feed syphon, 12 feet of 4-inch hot-water pipe, and patent joints complete, £4 4s. Delivered free to any station. Discount for cash.
This is the simplest, cheapest, and most powerful apparatus made. It requires no brick setting, no stokehole, and no hot-water fitter for fixing. The Boiler stands in the Greenhouse, the front only being outside and flush with the outer wall, so that the whole of the heat from the boiler itself is utilised.
It burns over 12 hours without attention, at a nominal cost.
"Loughborough" Boilers to heat up to 650 feet of 4-inch pipe, with hot-water pipe, joints, &c., always in stock.
Cost of Apparatus COMPLETE for Greenhouses as below:—

10 by 6 ft.,	£4 14 0	15 by 9 ft.,	£5 10 8	25 by 12 ft.,	£6 16 8
12 by 8 ft.,	5 1 0	20 by 10 ft.,	6 0 0	40 by 15 ft.,	12 12 4

Proportionate prices for other sizes. Estimates on application. The measurement of Greenhouse being given, every apparatus is delivered with pipes cut and fitted ready for fixing.
Illustrated List, with full particulars, post free.

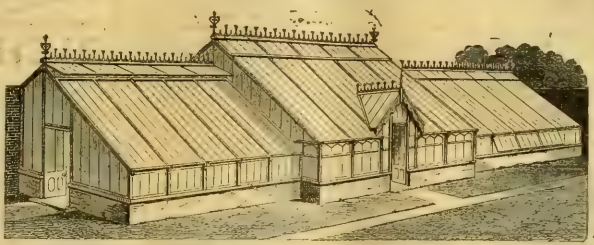
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Horticultural Builders and Hot-water Engineers,
46A, King William Street, E.C. } LONDON BRIDGE.

BOULTON & PAUL, Horticultural Builders and Hot-water Engineers, NORWICH.

Our Greenhouses and Heating Apparatus are Erected in every part of the Kingdom.

Complete Ranges of Vineries, Peach Houses, Forcing Houses, &c., designed and erected in best materials and at lowest prices. Ladies and Gentlemen waited upon by appointment.

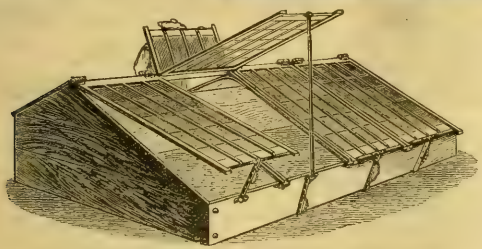
Garden Frames of every variety in stock.



Every kind of Garden Frame advertised is made by us in a superior manner, of well seasoned wood.

Estimates for any kind and size sent on application.

Before ordering send for special price.

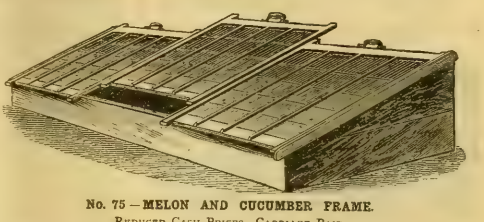


No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.

REDUCED CASH PRICES, CARRIAGE PAID.

Size.	Length.	Width.	Price.	Packing Cases.
No. 2 ..	8 feet ..	6 feet ..	£4 12 6 ..	5s. 0d.
No. 3 ..	12 feet ..	6 feet ..	6 5 0 ..	6s. 0d.
No. 4 ..	16 feet ..	6 feet ..	8 0 0 ..	7s. 0d.

Height in front, 11 inches; back, 22 inches; centre, 32 inches. Lights made to turn over. Set-opes for ventilating.



No. 75.—MELON AND CUCUMBER FRAME.

REDUCED CASH PRICES, CARRIAGE PAID.

Size.	Length.	Width.	Price.	Packing Cases.
No. 2 ..	8 feet ..	6 feet ..	£3 5 0 ..	4s. 6d.
No. 3 ..	12 feet ..	6 feet ..	4 12 6 ..	5s. 0d.
No. 4 ..	16 feet ..	6 feet ..	6 0 0 ..	5s. 6d.

Depth in front, 13 inches; back, 24 inches; Lights, 2 inches thick. Strengthened with iron rod. One handle to each light. Lights only, 6 by 4 feet, unglazed and unpainted, 6s. each; glazed with 21-oz. sheet glass, and painted four coats, 16s. each.

Cheaper Frames than the above are made by us but not advertised. All the Frames Painted Four Coats, and Glazed with Best 21 oz. English Glass, and Carriage Paid to any Railway Station in England and Wales; also to Edinburgh and Dublin.

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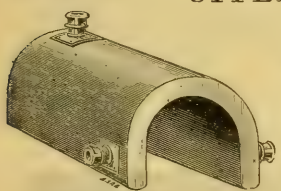
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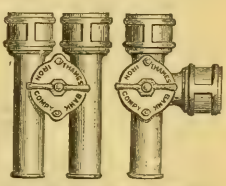
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Hot-water and Hot-air Apparatus erected Complete, or the Materials supplied.



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FROM

TO

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LONDON, W.C.

1886.

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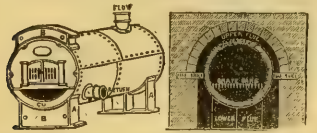
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Requires no sunk stokehole; will last all night without attention; will burn house cinders; costs nothing for fuel; is a tenant's fixture; any one can fix it; a domestic servant can stoke it. Price of Boiler to heat:—

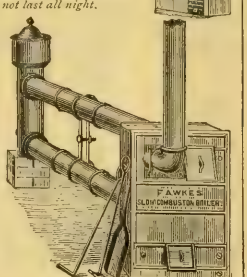
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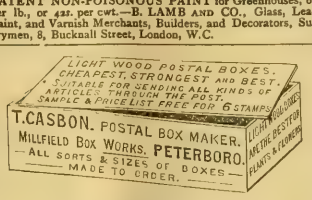
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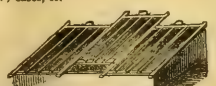
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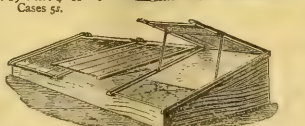
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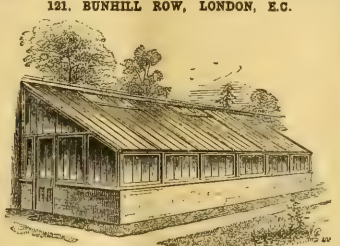
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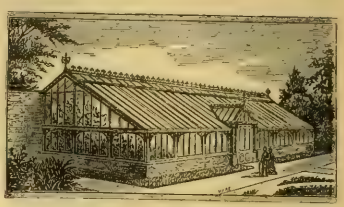
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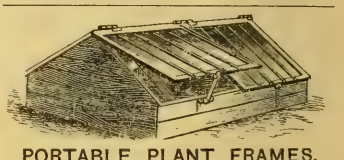
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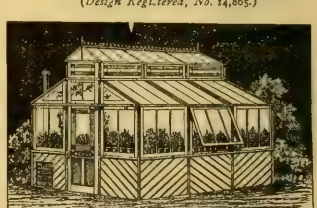
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The glass is nailed and puttied in.

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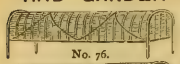
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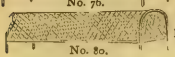
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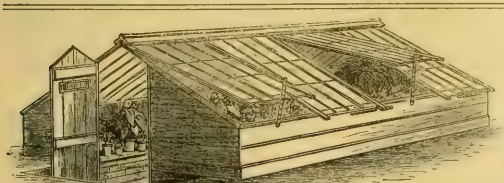
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9	„ ...	0	5	6	20	„ ...	0	11	0
10	„ ...	0	6	0	21	„ ...	0	11	6
11	„ ...	0	6	6	22	„ ...	0	12	0
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By Order,
JOSEPH M. MOORE,
Town Clerk.

South Shields, February 16, 1886.

WANTED, a HEAD WORKING GARDENER—two men under him. Must be thoroughly respectable, and perfectly understand Chrysanthemums, and other Flowers, Fruit, Vegetables, &c.—Apply by letter, Moraston House, Ross, Herefordshire.

WANTED, a GARDENER; young, married. Must understand Vines and Melons.—Apply by letter to Box No. 4, Post-office, Bridgnorth.

WANTED, GARDENER, and WIFE as Laundress, in small private family, 2 miles from a railway station. Vine and Orchard Houses and Nuttery. Church of England. Personal reference and real competence necessary. —R. D., Messrs. Terry, Stoneman & Co., 6, Hatton Garden, E.C.

WANTED, a strong single Man, as UNDER-GARDENER, to reside on the premises. Must be strictly sober and trustworthy, able and willing to Assist and Attend to Horses, and make himself generally useful if required Must be one who takes an interest in his work, and accustomed to do things in a thorough and finished manner.—Apply first by letter, stating age and wages required (reasonable wages will be given, but no fancy remuneration), and previous engagements, to P. G., 198, Herbert Road, Woolwich.

WANTED, a SUB-FOREMAN for the Herbaceous department. Must have some knowledge of Herbaceous and Alpine Plants and their Propagation. This would prove a comfortable and permanent appointment to a steady, industrious, painstaking man.—Apply, stating age, experience, and wages expected, to THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

WANTED, TWO Young MEN, accustomed to the general routine of a London Market Nursery. Must be active and willing Good character indispensable. Apply by letter only, stating wages required, to ALPHA, 14, James Street, Covent Garden, London, W.C.

WANTED, a Young MAN, about 24 years of age, for Flower Garden principally, of sober, active, and obliging character. 15s., with bothy. — F. ASHMAN, Billingbear Park, Wokingham.

Nursery.

WANTED, a strong active YOUTH, used to Potting and Tying, and to make himself generally useful. Wages 16s. per week.—S. DIXON AND CO., Amhurst Nurseries, Hackney, S.

WANTED, SEED TRADE LEDGER CLERK. Unexceptional references. — GEORGE AND WILLIAM YATES, Seed Merchants, Manchester.

WANTED, a PACKER. Must be thoroughly experienced. Apply, stating where formerly and last employed, age, and wages, to JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

WANTED, AT ONCE, a First-class BOUQUETIST and SALESWOMAN.—G. D. TAVINER, F.R.H.S., Florist, Bayswater Hill, W.

WANT PLACES.

POSTAL ORDERS.—To Advertisers, Subscribers, and Others.—It is very important in Remitting by Postal Order that it should be filled in payable at No. 42, DRURY LANE, to W. RICHARDS, as, unless the Number of a Postal Order is known, and it has been made payable at a particular office, and to a particular person, it is impossible to prevent any person into whose hands it may fall from negotiating it.

N.B.—The best and safest means of Remitting is by POST-OFFICE ORDER.

Letters addressed "Poste Restante" to initials or to fictitious names are not forwarded, but are at once returned to the writers.

B. S. WILLIAMS begs to intimate that he has at present in the Nursery and upon his Register some excellent Men, competent either to fill the situation of HEAD GARDENER, BAILIFF, FOREMAN, or JOURNEYMAN. Ladies and Gentlemen requiring any of the above will please send full particulars, when the best selections for the different capacities will be made.—Holloway, N.

Gardeners.

THOMAS KENNEDY AND CO. have on their Register a number of first-class GARDENERS, FORESTERS, &c., wishing engagement, and will be glad to furnish particulars to any one in want of same.—THOMAS KENNEDY AND CO., 108, High Street, Dumfries, N.B

SCOTCH GARDENERS. —JOHN DOWNIE, Seedsman, 144, Princes Street, Edinburgh, has at present on his List a number of SCOTCH GARDENERS, waiting re-engagements. He will be pleased to supply full particulars to any Lady, Nobleman, or Gentleman requiring a trustworthy and competent Gardener.

TO LANDED PROPRIETORS, &c.—A. MCINTYRE (late of Victoria Park) is now at liberty to undertake Formation and Planting of New Garden and Park Grounds, and Remodelling existing Gardens. Plans prepared. 115, Listria Park, Stamford Hill, N.

RICHARD SMITH AND CO. beg to announce that they are constantly receiving applications from Gardeners, seeking situations, and that they will be able to supply any Lady or Gentleman with particulars, &c.—St. John's Nurseries, Worcester.

GARDENER (HEAD), where three or four others are kept.—Age 27; good practical experience in all branches. First-class references and characters. — A TURNER, The Gardens, Wood Hall, Dulwich, S.E.

GARDENER (HEAD). — A GENTLEMAN reducing his gardening establishment wishes to obtain a good situation for his Gardener; 9co0 feet of Glass under his control.—T. WOOD, Esq., Rudgeway House, Eastville, Bristol.

GARDENER (HEAD), where two or three are kept.—Age 34, married, no family; experience in all branches. Four and a half years in present situation. Good character.—W. D., 12, Church Road, Wimbledon, Surrey.

GARDENER (HEAD), where more are kept. —Age 27; experienced in Stove and Greenhouse, Orchids, Fruits, &c., and the general routine of a good Garden. Can be highly recommended from present employer. — W. PIERCE, The Gardens, Gifford House, Roehampton, Surrey.

GARDENER (HEAD); age 30.—Mr. A. PETTIGREW, Castle Gardens, Cardiff, would have much pleasure in recommending a good practical Gardener to any Lady or Gentleman requiring the services of such.—For further particulars, address as above.

GARDENER (HEAD); age 28.—T. COOMBER, The Hendre Gardens, Monmouth, can confidently recommend his Foreman to any Lady or Gentleman requiring the services of a thoroughly practical Gardener.—For further particulars address as above.

GARDENER (HEAD); married, no family. —Sir PERCY ANDERSON strongly recommends one who has lived with him seven years. Good and thorough in his work. Well-trained in Houses, Vines, &c. Trustworthy and willing.—J. C., The Lodge, Cookham, Maidenhead.

GARDENER (HEAD).—No family; has had Management of extensive Forcing Places and Kitchen and Flower Gardens, Laying-out Grounds, Planting. Erection of Horticultural Buildings, Land, and Stock. Excellent character.—H. H., 1, Church Road, Farncombe, Surrey.

GARDENER (HEAD); age 30.—Mr. RAFFILL, Low Hill Gardens, Bushbury, Wolverhampton, can with confidence recommend Richard Sharpe to any Lady or Gentleman requiring a trustworthy, practical man. Highest references and testimonials from previous employers.

GARDENER (HEAD); age 24.—W. JONES can with confidence recommend his Foreman to any Lady or Gentleman requiring the services of a thoroughly energetic and trustworthy man. Good knowledge of Orchids, Plants, Fruits, &c.—Great West Hatch, Chigwell, Essex.

GARDENER (HEAD).—Age 34, single; thoroughly practical in all branches. Twenty-one years' experience. Six years in present situation. Excellent character.—G. WEEDON, The Vicarage, Church Street, Kensington, S.W.

GARDENER (HEAD), where three or four are kept.—Age 25; well experienced in Vines, Peaches, Melons, Cucumbers, Kitchen and Flower Gardening. Five and a half years' good references.—M., The Gardens, Bryngwyn Tram Inn R. S. O., Hereford.

GARDENER (HEAD); age 29.—F. CLARKE, Gardener to the Right Hon. Earl of Lonsdale, can with every confidence recommend his Foreman, Wm. Fry, as a thorough practical man, most trustworthy, and fully competent to manage a good establishment.—The Gardens, Lowther Castle, Penrith.

GARDENER (HEAD).—ADAM ELPHINSTONE, who has been actiag as General Foreman for the past thirteen years at Somerleyton Hall, Ripley Castle, Plas Dinas, and Nevill Court, seeks an engagement as above. Can have the highest testimonials for competency and trustworthiness—A. E., Nevill Court, Tunbridge Wells.

GARDENER (HEAD).—A GENTLEMAN wishes to recommend his Head Gardener to any one requiring a thorough practical man in all branches of the profession. Understands Land and Stock if required. Abstainer. Highest references.—T. HUNTER, The Gardens, Rock Mount, Anston, Rotherham.

GARDENER (HEAD); age 26.—J. TRIGGER, Milton Park, Peterborough, can with confidence recommend his Foreman, J. S. Upex, to any Nobleman or Gentleman requiring the services of a good practical man. Over three years in present situation.—For further particulars address as above.

GARDENER (HEAD).—Age 32, married; can be highly recommended as a high-class Plantsman; has had eighteen years' practical experience in large establishments in the cultivation of all kinds of Fruits, Flowers, and Vegetables. First class references as to character and ability. Distance no object.—G. B., 15, Montpelier Vale, Blackheath, Kent, S.E.

GARDENER (HEAD), to any Lady or Gentleman requiring a thorough practical man in every department.—Married, no family; over twenty years' practical experience in the Management of large establishments. Highest testimonials. Satisfactory reasons for leaving. No objection to Land and Stock.—C. SANDFORD, Mrs. Morton's Library, St. Mary Church, Torquay.

GARDENER (HEAD); age 28, English.—W. KETTLEWELL, Balrath Burry Gardens, Kells, Co. Meath, can highly recommend his Foreman (R. Weller) to any Lady or Gentleman requiring the services of a thorough practical and energetic Gardener. Has had experience in some of the best kept places in England. Abstainer.—Particulars from above address.

GARDENER (HEAD); age 28. — Mr. J. REDINGTON, Head Gardener, Littlecote Park, can recommend his Foreman, S. Edwards, to any Lady or Gentleman. Understands Kitchen and Flower Gardening, Grapes, Peaches, Pines, Cucumbers, Melons, and Plant Growing. Good character from present and previous employers.—S. EDWARDS, The Gardens, Littlecote Park, near Hungerford, Berks.

GARDENER (HEAD); age 31, married, no family, English.—W. J IRELAND, over three years Gardener to the Marquis of Headfort, will shortly be open to treat with any Nobleman or Gentleman requiring the services of a first-class Gardener, who thoroughly understands his business, and is not afraid of exerting himself. Leaving present situation at own request. Character of the highest order.—Headfort Gardens, Kells, Co. Meath.

GARDENER (HEAD WORKING), where two or more are kept.—Age 30, single.—S. G., 14, St. Thomas' Gardens, Queen's Crescent, Hampstead, N.W.

GARDENER (HEAD WORKING).—Age 48, married, one son (age 14); competent in all Branches; thirty years' practical experience. Good character.—F. H., 4, Heath Bank Villas, Bromley, Kent.

GARDENER (HEAD WORKING).—Age 27; eleven years' experience in good establishments in Scotland and England. First-class testimonials. Total abstainer.—J. WATTIE, St. Nicholas House Gardens, Scarborough.

GARDENER (HEAD WORKING).—Age 36, married. Twenty years' practice, thoroughly understands Gardening in all its branches. Four years' good character.—H. T., Pondfield, Little Berkhamsted, Herts.

GARDENER (HEAD WORKING), where three or more are kept.—Age 31, married, no family; three years' good character.—T. SMITH, South Eden Park, Beckenham, Kent.

GARDENER (HEAD WORKING).—G. WISE can with confidence recommend to any Lady or Gentleman a good trustworthy man as above.—The Gardens, Chasman Dean, Worthing, Sussex.

GARDENER (HEAD WORKING), where three or four are kept.—Age 27, married; thirteen years' good practical experience in all branches. First-class references.—W. L. H., Redleaf Gardens, Penshurst, Kent.

GARDENER (HEAD WORKING).—Married, one boy (age 13): experienced in all branches of Gardening, including Nursery and all kinds of Planting, if required. Twenty-six years' excellent personal testimonials.—G. LONGLEY, Rainham, Sittingbourne, Kent.

GARDENER (HEAD WORKING); married when suited.—A LADY wishes to recommend her Head Working Gardener, who understands his work, to any Lady or Gentleman requiring a Gardener.—W. BAILEY, 3, Portland Terrace, The Green, Richmond, Surrey.

GARDENER (HEAD WORKING), where two or three are kept.—Thoroughly understands Vines, Peaches, &c.; fourteen years with previous employer, and three years with present one. Satisfactory reasons for leaving.—T. P., 24, Pope Road, Bromley Common, Kent.

GARDENER (HEAD WORKING)—Age 38, married; twenty years' thorough experience in all branches. Has had Oversight of Stock and Rearing Poultry. Excellent character.—GARDENER, 13, Netherton Road, Seven Sisters Road, Stamford Hill, N.

GARDENER (HEAD WORKING).—Age 26; twelve years' practical experience in all branches. Two years and seven months as Second in a Flower and Kitchen Garden and Glass in previous situation. Nearly two years as Foreman under Glass in present situation. Good characters. State particulars.—H. R., 9, Lytton Road, New Barnet, Herts.

GARDENER (HEAD WORKING).—Age 41, married; twenty-five years' practical experience in Early and Late Forcing, Fruits, Cut Flowers, Stove and Greenhouse Plants, Flower and Kitchen Garden, Meadow Land, &c. First-class character. Disengaged in a month.—M. P., Ivy Cottage, Etchingham, Sussex.

GARDENER (HEAD WORKING).—Age 35, married; seventeen years' practical knowledge in Early and Late Forcing of Flowers, Fruit, Vegetables, Stove, Orchids, Greenhouse Plants, and general Routine of good Gardens. Six and a half years' good references.—G. JOHNSON, Head Gardener, Holmwood, Sydenham Rise, S.E.

GARDENER (HEAD WORKING, or good SINGLE-HANDED).—Age 27, single; thoroughly experienced in all branches. First-class references.—WHIDDON, 63, Upper Park Road, Hampstead, N.W.

GARDENER (HEAD, or otherwise).—Age 30; thoroughly practical. Highly recommended by late employers. Total abstainer.—A. B., 19, Hamilton Road, East Norwood, Surrey.

GARDENER (HEAD), or ORCHID GROWER.—Age 30, married, one child; fifteen years' experience. Thoroughly understands the Treatment of newly imported and established Orchids, and Fruit, Flower, and Kitchen Gardening. Three years' good character from present employer. Satisfactory reasons for leaving.—F. RUSSELL, Castle Road, Colchester.

GARDENER.—Age 30, unmarried; son of provincial nurseryman; good general knowledge. Life abstainer, and non-smoker. First-class references.—E. NEWBERRY, Upway, Dorchester, Dorset.

GARDENER and BAILIFF, or either, or MANAGER.—Age 33, unmarried at present; understands Sheep, Cucumbers, Melons, Kitchen and Flower Gardening, Forestry, and Laying-out, Rearing and Breeding of Stock, Sheep, &c.; Agricultural Machinery, including Management of Steam do.; can Keep Accounts, &c., and do Land Measuring. Two years' Nursery experience; seven and a half years' previous good character. Living with relative.—ROB ROY, 1, North Row, Uckfield, Sussex.

GARDENER (WORKING), where others are kept).—Age 32, married; thoroughly experienced, Indoors and Out. Excellent characters from last and previous employers.—G. CORDERY, Hambledon, Cosham, Hants.

GARDENER (WORKING), to any Lady or Gentleman in want of a good Working Gardener.—Age 34, married; eighteen years' experience in all kinds of Garden Work, with good testimonials. Over five years in last situation.—G. SIMMONDS, 18, Hartford Road, Bexley, Kent.

GARDENER (SINGLE-HANDED).—Age 38: willing to make himself useful.—B., Wm. Stanton, The Horns Cottages, Hertford.

GARDENER (SINGLE-HANDED, or where another is kept.)—Married when suited. Nine years' experience in all branches. Good character; abstainer.—H. HARRISON, 28, Stamford Terrace, Stamford Hill, N.

GARDENER (SECOND, or good SINGLE-HANDED), in a Gentleman's Garden.—Age 25, married when suited; ten years' experience in all branches. Good reference.—G., Mr. Walker, Newsagent, Cranleigh, Surrey.

GARDENER (SECOND).—Age 20; respectable. Three years' good character.—W. F. HALLETT, Dunhead St. Mary, Wilts.

GARDENER (SECOND).—Young, respectable; six years' good character; abstainer.—H. WHITE, York Villa, Kelvin Road, Highbury, N.

GARDENER (SECOND).—Age 25; can be well recommended.—E. H., 2, Woodbury Terrace, Bruce Road, High Barnet.

GARDENER (SECOND).—Experienced in Vines, Peaches, Cucumbers, Melons, Ferns, &c.; six years' character. Please state wages.—J. YOUNG, Bodicote, near Banbury, Oxfordshire.

GARDENER (UNDER), or SECOND where three or four are kept.—Age 22; two years' good character.—A. S. W. G., 14, Upper Pilliper Road, Woolwich.

GARDENER (UNDER), or SECOND in a good establishment where three or more are kept.—Age 22; two years in present place. Bothy preferred.—F. TRUST, Brownsea Island, Poole Harbour, Dorset.

GARDENER (UNDER).—Age 27, single; good character.—G. N., 228, High Road, Lee, Kent.

GARDENER (UNDER), in a good establishment.—Age 19; five years' experience. Bothy preferred.—H. NETTLEY, Petworth Park Gardens, Sussex.

GARDENER (UNDER), in a Gentleman's Garden.—Age 20; seven years' experience. Good character. Total abstainer.—F. J., 96, Barton Terrace, Preston, Lanc.

GARDENER (UNDER).—Age 22; strong, active, and willing. Total abstainer. Two and a half years' good character.—G. B., Skinner's Cottages, Sevenoaks, Kent.

GARDENER (UNDER).—Age 21; steady and willing. Anxious to improve. Three years' experience under good Gardener. Can be well recommended.—GARDENER, Rossiyn, Bromborough, Cheshire.

GARDENER (UNDER), or JOURNEYMAN in a Gentleman's garden.—Age 22; bothy preferred.—W. FOSTER, The Vineries, Branksea Isle, Poole, Dorset.

FOREMAN; age 26.—Mr. BENNETT will be pleased to recommend his Foreman (J. Clark) to any one requiring a first-class man. Abstainer.—Rudding Park, Knaresborough, Yorks.

FOREMAN, in a good establishment.—Age 27; ten years' experience in all branches. Good recommendation from last and previous situations.—L. MATTHEWS, Water House, Knighton, Radnorshire.

FOREMAN; age 26.—Mr. W. SMYTHE, The Gardens, Basing Park, Alton, Hants, would be pleased to recommend his Foreman as above. Two and a half years in present place.

FOREMAN.—Age 27; had experience, amongst other places, at Keele Hall and Trentham; two years at Coed Coch, Abergele, N.W. No small place accepted. Can be well recommended.—GEORGE GREEN, Sowdley, near Cheswardine, Market Drayton, Salop.

FOREMAN.—Mr. D. MELVILLE, Head Gardener to Mrs. Hornsby, St. Vincent's, near Grantham, can confidently recommend his Foreman to any Nobleman's or Gentleman's Gardener requiring a good all-round man. No small place accepted.

FOREMAN; married.—Mr. MORWOOD, Canwell Gardens, Tamworth, will be pleased to recommend his Foreman to any Gardener requiring a thorough good man in all branches of Gardening. Well up in Table and Room Decoration.

FOREMAN; age 27.—Mr. STAGG, Gardener to P. Rawson, Esq., Woodhurst, Crawley, would be pleased to recommend his Foreman, who has lived with him for seven years, to any one requiring a thorough trustworthy energetic man. Twelve years' experience.

FOREMAN (GENERAL or DEPARTMENTAL).—Ten years' experience in good establishments; knowledge of House Decoration. Total abstainer. Well recommended. Distance no object.—State wages and particulars to FOREMAN, Manor House, Alvediston, Salisbury.

FOREMAN (INDOORS), or PROPAGATOR and GROWER, in a good Market Nursery.—Thirteen years' experience. Good references. Please state particulars and wages.—Y. Z., 70, Cotterell Street, Hereford.

FOREMAN, or good SECOND in a good private establishment.—Age 25; ten years' good practical experience. Can be well recommended.—FOREMAN, Verandah Cottage, Malvern Wells.

FOREMAN, or good SECOND.—A young Man requires a situation as above. Can be well recommended. Bothy preferred.—F. BROWN, Gardens, Cambridge House, Twickenham, Middlesex.

FOREMAN, or SECOND, in a good establishment.—Age 25; good experience in all branches. Good references.—H. W. D., 1, Elizabeth Cottages, New Town, Dartford, Kent.

FOREMAN, or SECOND, in a Nobleman's or Gentleman's establishment.—Age 24; ten years' experience. Excellent character for steadiness and ability from present and previous employers.—GARDENER, Brookland House, Market Harborough.

PROPAGATOR (INDOORS), under the Foreman, in large establishment, or FOREMAN and GROWER in small Market Nurseries.—Age 28, single; good references. Permanent situation preferred.—H. KUPPER, 1, Ebenezer Road, Child's Hill, Finchley Road, N.W.

JOURNEYMAN (FIRST), under Glass.—Age 22; nine years' experience. Excellent character.—ALEX. BELL, Barrow Point Gardens, Pinner, Middlesex.

JOURNEYMAN (FIRST), in good establishment, under Foreman.—Age 22; two years' excellent recommendation from last situation. Seven years' experience. Suburbs of London preferred.—JOHN DODD, Marley Gardens, near Buckfastleigh, Devon.

JOURNEYMAN, in a good establishment.—Five years' experience, both Indoors and Out.—E. SEYMOUR, Manor Gardens, Little Missenden, Amersham.

JOURNEYMAN, in the Houses.—Age 20; two years' good character from present situation.—C. FISHER, The Gardens, Hackwood Park, Basingstoke.

JOURNEYMAN, in the Houses.—Three years in Fruit and Plant Houses.—ALPHA, Elm Cottage, Arundel.

JOURNEYMAN, in the Houses.—Age 23; abstainer. Five years' good character.—SYDNEY PEARCE, Embley Park, Romsey, Hampshire.

JOURNEYMAN, in a good establishment, in the Houses.—Age 21; eight years' experience. Good references.—A. SMITH, Wichnor Park, Burton-on-Trent.

JOURNEYMAN, in a good Nursery.—Age 20: six years experience in the Trade. Used to growing Soft-wooded Plants and Cut Flowers. Good references.—G. BAYLISS, The Nursery, Walton, Preston.

JOURNEYMAN, in the Houses, in a good establishment.—Mr. H. MITCHELL can with confidence recommend a young man as above.—The Gardens, Aberaman House, Aberdare, Glamorganshire.

JOURNEYMAN, in the Houses, or partly Inside and Out.—Age 22: two years in present situation.—All inquiries answered on application to J. HUDSON, Gunnersbury House Gardens, Acton, W.

JOURNEYMAN, in a good establishment.—Age 22; seven years' good experience Inside and Out in three good establishments. Character will bear strict inquiry.—W. B., The Gardens, Ewell Castle, Surrey.

JOURNEYMAN, in a good establishment.—Age 23; has a knowledge of Orchids. Eight years' experience. Good testimonial from previous situation. Bothy preferred.—A. BATEMAN, 109, Lots Road, Chelsea, London, S.W.

To Head Gardeners.

JOURNEYMAN, in a good place.—Age 22, active, Protestant; has had four years' experience in Plant and Fruit Growing, Room and Table Decoration, &c. Highly recommended.—R. DRIVER, Birr Castle Gardens, Parsonstown, King's County, Ireland.

IMPROVER, in a good Nobleman's or Gentleman's Garden.—Age 21: six years' practical experience.—H. JONES, Green Hill, Llandudno.

IMPROVER, in a Nobleman's or Gentleman's Garden; age 19.—Mr. HAYTER would be plea ed to recommend a steady industrious young man. Six years character.

IMPROVER, in the Houses, in a good establishment.—Age 18; two years' experience. Good character. Would pay a small Premium.—T. W., 75, Homesdale Road, Bromley, Kent.

IMPROVER, in the Houses.—Age 18; over four and a half years' experience; persevering and intelligent. Good character from present employer.—K. HAMMETT, Chorleywood House, Rickmansworth, Herts.

TO NURSERYMEN.—Wanted, a situation in the Houses; age 22; well up in General Nursery Work. Assist Propagating. Good reference.—H. G., Summer Cottage, Knap Hill, Woking, Surrey.

SHOPMAN, or SECOND.—Age 25; twelve years' good general experience in the London Wholesale and Provincial Retail Trade.—C., 10, Comberton Terrace, Mount Pleasant Lane, Upper Clapton, London, N.

SHOPMAN, or ASSISTANT SHOPMAN.—Age 23; eight years' experience in all departments of the Retail Seed Trade; also good general knowledge of Plants and Bulbs. Six years with James Veitch & Sons, Chelsea. First-class references.—S. GEORGE, 10, Victoria Road, Putney, S.W.

SHOPMAN (ASSISTANT).—Age 21; good general knowledge of the trade in all branches. Salary moderate.—Nursery, Seed, and Floral Depot, Finkle Street, Kendal.

ASSISTANT.—Age 21; five years' experience.—W. B., 5, Church Row, Fulham, London, S.W.

Seed Trade

ASSISTANT.—Nine years' experience in all branches.—For references, &c., apply, The Wirral Seed Stores, Hamilton Street, Birkenhead, or HENDERSON AND SONS, Brechin, N.B.

HANDY-MAN, on a Gentleman's Estate or Nursery.—Age 26; Rough Carpentering, Painting, Glazing, and General Repairs, including Hot-water Work and Steam. Highest references.—E. WOOD, Sandy Lane, Bletchingley, Surrey.

Asthma, Consumption, Coughs, Colds, and Bronchitis, Rapidly cured by

DR. LOCOCK'S PULMONIC WAFERS.—Nurse SHORMITH, Chilmark, Salisbury, writes:—"I don't like being without the Wafers, and only wish every other nurse, as I do, could keep a store in hand; they would save much suffering in life, let alone the boon of having a reliable medicine in need. I could send you some particulars of cures." They instantly relieve and rapidly cure Asthma, Consumption, Bronchitis, Coughs, Colds, Shortness of Breath, Phlegm, Pains in the Chest, Rheumatism—and taste pleasantly. Sold at 1s. 1½d. and 2s. 9d. per Box.

HOLLOWAY'S OINTMENT and PILLS.—A frequent cause of Gout and Rheumatism is the inflammatory state of the blood, attended with bad Digestion and general Debility. A few doses of the Pills taken in time are an effectual preventive against Gout and Rheumatism. Any one who has an attack of either should use Holloway's Ointment also, the powerful action of which, combined with the operation of the Pills, must infallibly effect a cure. These Pills act directly on the blood, which they purify and improve. Having once subdued the severity of these diseases, perseverance with the Ointment, after fomenting the affected joints with warm brine, will speedily relax all stiffness, and prevent any permanent contraction

GREEN'S PATENT "SILENS MESSOR" AND OTHER
LAWN-MOWING, ROLLING AND COLLECTING MACHINES FOR 1886.

THE WINNERS OF EVERY PRIZE IN ALL CASES OF COMPETITION.

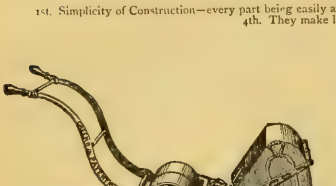
Patronised by—
HER MOST GRACIOUS MAJESTY THE QUEEN on many occasions,
HIS ROYAL HIGHNESS THE PRINCE OF WALES,
THE KING OF THE BELGIANS,
The Late EMPEROR OF THE FRENCH, The EMPEROR OF RUSSIA,
And most of the Nobility, Clergy, and Gentry of the United Kingdom.

Royal Horticultural Society's Show, South Kensington, London, June 3 to 7, 1881. The "*Journal of Horticulture*," *of June 9, 1881* :—"MOWING MACHINES.—After a critical examination the Silver Medal was granted to the old firm of world-wide fame, Messrs. T. Green & Son, of Leeds and London. As the Machines are known in all lands where good lawns are cherished, it is quite unnecessary to give any description of them."

Upwards of 130,000 of these Machines have been sold since they were first introduced in the year 1856,
And thousands of unsolicited Testimonials have been received testifying to their superiority over all others.

They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off the highest prize that has been given.

The following are their advantages over all others :—
1st. Simplicity of Construction—every part being easily accessible. 2d. They are worked with much greater ease than any other. 3d. They are the least liable to get out of order. 4th. They make little or no noise in working. 5th. They will cut either short or long Grass, wet or dry.



SINGLE-HANDED LAWN MOWER.

To cut 6 inches,	can be worked by a Lady	Price £1	15 0
To cut 8 inches,	do.	do.	2 10 0
To cut 10 inches,	do.	by a strong youth ..	3 10 0
To cut 12 inches,	do.	by a man	4 10 0
To cut 14 inches,	do.	do.	5 10 0

DOUBLE-HANDED LAWN MOWER.

To cut 16 inches,	do.	one man on even lawn	£6 10 0
To cut 18 inches,	do.	man and boy ..	7 10 0
To cut 20 inches,	do.	do.	8 0 0
*To cut 22 inches,	do.	two men	8 10 0
*To cut 24 inches,	do.	do.	9 0 0

* If made stronger, suitable for Donkey, 30s. extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self Delivery Box, or Side Delivery, with Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

DONKEY and PONY MACHINES.

To cut 26 inches	£14 0 0
To cut 28 inches	16 0 0
To cut 30 inches	18 0 0
Leather Boots for Donkey	1 0 0
Leather Boots for Pony	1 4 0

HORSE MACHINES.

To cut 30 inches	£22 0 0
To cut 36 inches	26 0 0
To cut 42 inches	30 0 0
To cut 48 inches	34 0 0
Leather Boots for Horse	1 9 0

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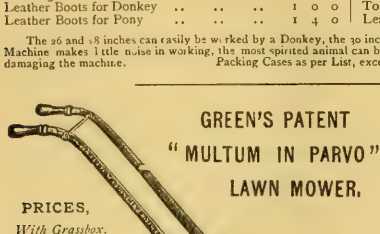
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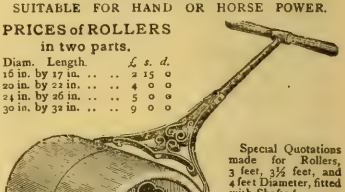
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THE

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4000 splendid Bulbs of LILIUM AURATUM and numerous distinct varieties of IRIS, received from Japan in very fine condition; LILIUMS and CALOCHORTI, from California; CRINUMS, AMARYLLIS, CALADIUMS, PALMS, 800 named Standard and Dwarf ROSES, and selected FRUIT TREES, from an English Nursery; 300 CARNATIONS and PICOTEES, GLADIOLUS, PÆONIES, and an assortment of HARDY PLANTS and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, March 3, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

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Expiration of Lease. Without Reserve. Five minutes' walk from three Railway Stations.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Greetham & Cook to SELL by AUCTION, on the Premises, The Wellesley Nursery, Paddenswick Road, Goldhawk Road, Hammersmith, W., on THURSDAY, March 4, at 12 o'Clock precisely, the erections of Twelve GREENHOUSES, STAGING, BRICKWORK, loose LIGHTS, 4000 feet of Hot-water PIPING, principally 4-inch. Ten BOILERS, the whole of the STOVE and GREENHOUSE PLANTS, thousands of Geraniums and Calceolarias; heaps of MANURE and Potting MOULD, POTS, and numerous other items.

May be viewed the day prior and morning of Sale. Catalogues had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

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By Order of the Executors of the late Mr. George Jackson. Without Reserve.—CLEARANCE SALE of the whole of the beautifully grown NURSERY STOCK at these branch Nurseries, the Land being sold for Building.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Kingston Hill Nurseries, Kingston, close to Norbiton Railway Station, on THURSDAY and FRIDAY, March 4 and 5, at 12 o'Clock precisely each day, the whole of the valuable and well-grown NURSERY STOCK, in splendid condition for removal, consisting of a very fine lot of specimen Conifers and Evergreens, 1500 Rhododendrons, 1 to 4 feet; 1500 common Laurels, 2 to 5 feet; 1000 Standard and Dwarf Roses; 500 magnificent Green Hollies, 3 to 10 feet; and 800 Tree Box, 3 to 6 feet, unusually fine; 5000 Euonymus and Aucubas, 1000 Forest Trees in variety, Ivies in pots, 2000 Fruit Trees, and other Stock.

May be viewed any day prior to the Sale. Catalogues may be had at either of Messrs. Jackson's Nurseries at Kingston; and of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.; and Leytonstone, E.

Friday Next.
By order of the NEW PLANT AND BULB COMPANY, the Third Portion of Mr. Edward Wallace's COLLECTION of ORCHIDS made at Ocana, consisting of sound pieces in good condition of Odontoglossum Pescatorei, O. triumphans, and O. Phalænopsis; Ada aurantiaca, Sobralia alba, Epistephium Cattleyoides, Bletia Sherattiana, Maxillaria venusta, a few Odontoglossum Alexandræ, a fine importation of Freesia refracta alba, and some enormous Bulbs of Lilium Neilgherrense.

From Messrs. SHUTTLEWORTH, CARDER AND CO., 1900 very fine ODONTOGLOSSUM ALEXANDRÆ, of their well known type.

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MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, March 5, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Monday Next.—(Sale No. 7103.)
7000 grand Bulbs of LILIUM AURATUM and other LILIES, and fine varieties of IRIS, from Japan. Several thousand TUBEROSES, home-grown LILIES, TIGRIDIAS, GLADIOLI, EUCHARIS, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, March 1, at half past 12 o'clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7105.)
ROSES, FRUIF TREES, SHRUBS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 3, at half-past 12 o'Clock precisely, several hundreds of First-class Standard and dwarf ROSES, including all the leading varieties; FRUIT TREES of sorts; SHRUBS and CONIFERS, CARNATIONS, PICOTEES, PINKS, and other BORDER PLANTS, in quantity; LILIUMS of sorts; TUBEROSES, GLADIOLI, TIGRIDIAS, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7106.)
The Fourth Portion of the valuable COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 3, at half-past 12 o'Clock precisely, without the least reserve, the fourth portion of the above extensive Collection, comprising fine plants of CATTLEYA MENDELII, C. TRIANÆ, C. WARNERI, and C. MOSSIÆ; several hundred unflowered ODONTOGLOSSUM ALEXANDRÆ, O. VEXILLARIUM, LÆLIA PURPURATA, CŒLOGYNE CRISTATA, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7107.)
VALUABLE IMPORTATIONS of ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, March 4, at half-past 12 o'Clock precisely, a grand lot of the rare and beautiful SACCOLABIUM ILLUSTRE; also a fine lot of AERIDES HOULLETIANUM, in specially fine condition; and a few plants of a new SACCOLABIUM, together with a fine importation of CATTLEYA SCHOFIELDIANA, C. WARNERI, LÆLIA XANTHINA; a fine lot of CATTLEYA SKINNERI, in extra condition; CALANTHE REGNERII, VANDA species, in the way of HOOKERI; and ODONTOGLOSSUM ALEXANDRÆ, from hitherto unsearched mountains, &c.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower and Bud.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in Flower and Bud will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 17, and he will be glad if Gentlemen desirous of entering Plants for this Sale will please send particulars as soon as possible.

Important Sale of Shrubs, Fruit Trees, Forest TREES, &c., at

MESSRS. JOHN STEWART AND SONS' Nurseries, Broughty Ferry, on WEDNESDAY, THURSDAY, and FRIDAY, March 3, 4, and 5.

On Wednesday—Specimen Shrubs, &c. Thursday—Shrubs, Roses, and Fruit Trees. Friday—Forest Trees, &c. Sale each day at 11 A.M. Catalogues on application to the Exposers.

A. MONCUR, Auctioneer.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the REMAINDER of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

JOHN COWAN, Exhibition Garden, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.
AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names would fail to convey the assortment.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

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TO BE SOLD, with possession, a First-class FREEHOLD MARKET GARDEN of 20 Acres (cropped with Fruit and other Trees), adapted for Building, with modern Dwelling-house, Forcing-house, Ranges of Pits, &c. Excellent opportunity, owner relinquishing in consequence of ill-health.

Apply to PROTHEROE AND MORRIS, 67 and 68, Cheapside, London, E.C.

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FOR SALE, by Private Treaty, a modern-built CONSERVATORY, 50 feet by 14 feet, in three compartments, with Iron Girder Supports, Flower-stands, and all modern appliances; Steam Boiler and Connections, Forcing Frames, Shelves and Supports; a Forcing House, 14 feet by 8 feet, with glass roof, sides, and ends; Greenhouse, 23 feet by 9 feet, with glass roof, sides, and ends. Either together or separately.

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FOR IMMEDIATE DISPOSAL, as a going concern, the old and lucrative BUSINESS of Messrs. G. and W. YATES, Nurserymen and Florists, who are relinquishing this branch of trade in order to entirely devote their attention to their well-known established and increasing Wholesale and Retail Seed Business. There are upwards of eight acres of good fertile Land (well stocked with selected Shrubs and Trees adapted to the locality), which may be had on long lease at a low rent, and known as "Green Lane Nurseries," situate at Heaton Norris, five miles from Manchester, and one mile from Stockport, Lancashire, by road or rail. The Glass, Plants, Houses (nine in number), Pits, Stable, Sheds, &c., are replete with all modern requirements for a first-class trade, which has been successfully carried on for over twenty years. The Stove and Greenhouse Plants optional.

The inspection of intending purchasers is invited.

Portion of the money may remain on mortgage.

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FINEST STAGE FLOWERS.

WOOD and INGRAM beg to offer fine Plants of the above, in great variety, thoroughly established, in 3-inch pots (a pair in each pot), 12s. per dozen pairs. Package (extra) 1s. the first, and 6d. every additional dozen pairs.

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Purple BEECH, 10 to 12 feet, strong, 18s. per dozen.
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Fine specimen CONIFERS, 4 to 8 feet, 2s. 6d. to 7s. 6d. each.
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Extra transplanted LARCH and SCOTCH, all sizes, cheap.

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FOR SALE, 2 Latania borbonica, 8 to 9 feet through; 2 Thrinax elegans, 8 feet do.; Areca rubra, 8 feet high; Arecas intescens, 9 feet; Croton Disraeli, 4 feet; Dracæna indivisa, 9 feet. Apply to
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And other leading varieties. Prices on application.

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BALSAMS, as double as Camellias.—Eight vars., separate, 2s. 6d.; mixed, 1s. 6d.

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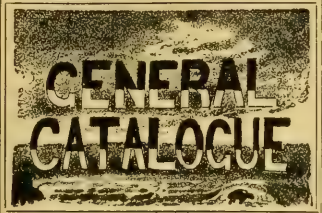
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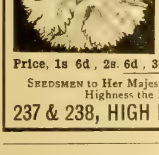
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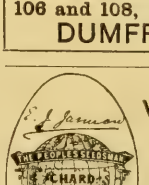
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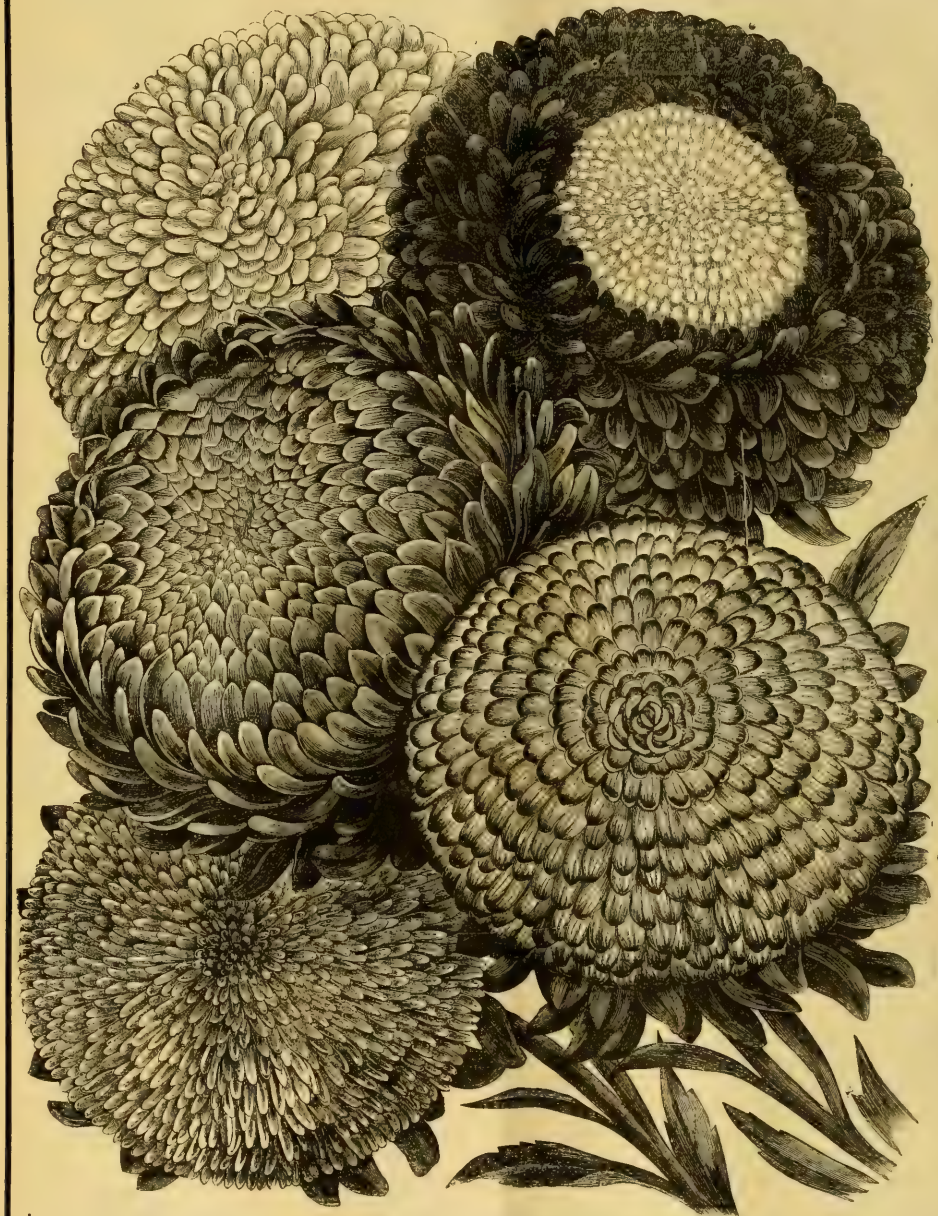
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THE

Gardeners' Chronicle.

SATURDAY, FEBRUARY 27, 1886.

CONCERNING FIGS.

PERSONS interested in this question may remember the summary I contributed to the *Gardeners' Chronicle* (xix., n.s., pp. 529 and 572) of Graf von Solms' essay on the *Origin, Domestication, and Distribution of the Common Fig*, and Fritz Mueller's article on the Fig and Caprifig. Briefly, Solms arrived at the conclusion that the Caprifig was the wild parent of the cultivated Fig, and Mueller challenged the accuracy of that view. With the same facts before him Mueller sought to prove, as held by Linnæus, that the Fig and Caprifig were female and male respectively of the same species; and this explanation of their relationship seemed to me, from all the evidence I was able to collect, the more probable of the two. Subsequently I gave the essence (*Gard. Chron.*, n.s., xx., p. 22) of the older literature and some unexplained facts bearing on the subject, from which I ventured to adopt Mueller's view that the Caprifig is the male and the Fig is the female of Ficus carica, the common Fig. Since then I have compared a large number of dried specimens of Asiatic Figs with the type specimens in the Kew and British Museum herbaria of Miquel's and other botanists' species, for Dr. G. King, Superintendent of the Royal Botanic Gardens, Calcutta, who is engaged upon an illustrated monograph of the species inhabiting India and the adjacent countries. Having in view the probability of the separation of the sexes, I was prepared to find differences in the shape and size of the receptacles of the same species, and this led to the identification, mainly from the foliage, of several pairs of forms, which had been described as independent species, as the male and female of so many species. As the object of my work was merely to match the specimens from the Calcutta herbarium with the named types in this country, and I was pressed for time, I did not carry my investigations beyond establishing the specific identity, as I believed, of these pairs of forms; and Dr. King, who discovered these affinities in several instances independently, will not, he informs me, be able to do much in this direction beyond suggestion in his forthcoming monograph, because the material in herbaria is too often insufficient, and to await opportunities of obtaining fresh would delay indefinitely the publication of a work needed for practical purposes. In fact, investigations of this nature require much time and undivided attention to carry them to a successful issue.

Graf von Solms has found the necessary leisure himself to make a beginning.* As he tells us, he was so impressed with the soundness of Mueller's theory, though opposed to his own, that he resolved to utilise the first opportunity of putting it to the test. The facts adduced by Mueller were so convincing, he

* See *Botanische Zeitung*, 1885, pp. 513, 529, 545, 561, and tab. 5.

says, "that I can only wonder how it was that I did not more seriously weigh them, especially as some of them were evident enough to me, and the older literature contains abundant indications of some such relationship."

At length a six months' sojourn in Java offered an opportunity for carrying this intention into effect; and there, at Buitenzorg, with the entomological assistance afforded by Dr. Gustav Mayr, Graf von Solms has obtained results wholly supporting Mueller's theory.

It is not my intention to attempt to reproduce here the details of his researches, but to cull therefrom the main facts. In the first place it may be mentioned that although there are many native species presenting the same or similar sexual peculiarities as the common Fig, it is by no means easy to find a species amply represented by both sexes within a practicable distance. Thus, of Ficus fulva, a shrubby species common about Buitenzorg, not a bush could be found bearing male flowers.

The first species encountered under satisfactory conditions was Ficus hirta, Vahl, var. setosa. This also is a shrubby species, revelling in the most exposed sunny situations, and yielding fruit in abundance. There was at first sight a perceptible difference in the shape of the Figs on different bushes; on some they were perfectly spherical, while on others they were inversely Pear-shaped. It was also observed that quite ripe figs of the spherical shape were of a beautiful Cherry-red, and the previous leathery receptacle was of a succulent, sticky, juicy consistence. Whether all the Figs of this shape coloured and softened in this manner remained doubtful, but certainly none of the Pear-shaped ones assumed these conditions; ripe, or overripe, and fallen, they were invariably greenish-yellow, and of a tough, leathery consistence. On examination, it was proved beyond the shadow of a doubt that the spherical Figs were those of the female, and the Pear-shaped ones those of the male plants. The female Figs of this species contain exclusively female flowers, interspersed with bristles; and when ripe the pericarp of the separate fruitlets consists of a tender yellow endocarp enclosed in a slimy pulpy exocarp. The interior of the male receptacles, or Figs, is exclusively occupied in the lower half by female gall-flowers,* which present no essential deviations from the fertile females except in the nature and direction of the style. Even when these flowers are not punctured by their tenant insect (Blastophaga javana, G. Mayr) they remain absolutely sterile, not a single normally developed fruitlet having been found. The upper part of the male receptacle is filled with diandrous male flowers, a few of which are sometimes monandrous by abortion.

A second species investigated, offering similar conditions, was Ficus diversifolia, Blume, an ornamental shrub, very common in the Malay peninsula and archipelago, and presenting the greatest variability in the shape, size, and venation of its leaves, and in the size and shape of the Figs and the length of their stalks. Indeed, so marked are the differences that several species have been founded on different forms now known to occur in various combinations, occasionally on the same individual. The Figs of F. diversifolia are borne on short or long and slender stalks, or they are quite sessile, and they are spherical oval, Pear-shaped, or almost cylindrical; but these differences, Graf Solms states, have no connection with the sexual forms of the species, which, unlike those of F. hirta, are indistinguishable from any external characters of the Fig. On the other hand, the internal structure of the Figs of F. diversifolia presents much greater diversities. In ripe Figs of the male plant the upper half of the cavity of the receptacle is thickly beset with male flowers, and the lower half is restricted to gall flowers, a varying number of which, though usually only a small proportion, grow out. Blastophaga quadripes, G. Mayr, is the gall-maker in this species. Female Figs of F. diversifolia, examined in a ripe condition, contained only quite a small number of fruitlets, remarkable for being about four times the size of the ripe galls of the male Figs. Other differences observed were the shape of the fruitlet, and the sessile instead of stipitate, purple, fleshy, perigonal leaves. The pericarp is of a greenish colour, and leathery throughout, not differentiated into an endocarp and fleshy exocarp, as in F. hirta. Moreover, the fertile females are readily distinguishable from the gall-flowers in a very young state, contrary to what is the case in F. hirta.

Among the gigantic, arboreous Fig trees of the section Urostigma, none of the Figs examined by Solms exhibited any traces of sexual differentiation. What is more remarkable, in F. elastica, for example, the male and female and gall-flowers were indiscriminately intermixed all over the receptacle. Still this irregular aggregation of the three kinds of flower is characteristic of only a small number of species of Urostigma. Thus, in U. religiosum, the males are limited to a narrow zone immediately encircling the orifice of the receptacle; the whole of the remainder being occupied by females and galls intermixed. Sometimes the number of male flowers in the Figs of certain species of Urostigma is exceedingly small, or even reduced to one, as observed in the Indian U. tomentosum, and the African U. glumosum.

Among other species of Ficus belonging to the section Covellia, Graf von Solms examined the Figs of F. Ribes, Miq., which are borne in clusters on leafless branches springing from the stem and older branches. Great care was exercised in the comparison of numerous individuals to make sure that they really belonged to the same species. Here, as in Urostigma, the sexes of the Figs could not be detected by any external characters of the Figs; yet the sexes are separated as in Ficus hirta—that is to say, some individuals bear Figs containing only female flowers, while others only bear Figs containing male and gall-flowers. In this species the perianth of the female flowers is saccate, and so thin and tightly fitting that it is easily overlooked; and this in the fertile females is less than half the relative length it is in the gall-flowers.

The Figs of several other species of Ficus of the section Covellia were examined and gave similar results, with slight differences in the details.

The Cultivated Fig a Female Plant only.

Finally, Graf von Solms undertook another examination of the receptacles (Figs) of the common Fig and Caprifig; and he had no difficulty in proving the existence of analogous differences between the fertile female flowers and the gall-flowers, the most important of which is the much longer style of the former. The Fig bears only female, and the Caprifig essentially male and gall-flowers; and besides the difference in the relative length of their styles, the stigmas are diversely constituted. At the receptive period the styles of the females are twice as long as the ovary, and strongly bent in the direction of the dorsal part of the carpel, and one stigmatic lobe, or occasionally both, is very much developed horizontally, and evidently papillose; whereas, in the gall-flowers, the styles are shorter than the ovaries which they surmount, and the less developed stigma is papillose.

These differences, Solms says, suggest a probable explanation why the Blastophaga are unable to deposit their eggs in the female flowers, though they freely do so in the gall-flowers, the much greater length of the style of the fertile flowers being an insuperable obstacle. With regard to the Blastophaga of the common Fig, it is asserted that, unless the eggs are actually deposited within the integuments of the ovule they perish.

Further investigation of the Erinosyce and the Fig of Croisic, surmised reversions to a truly monœcious condition, promises some very interesting results, but this can only be carried out in the countries where they grow.

A very remarkable phenomenon exhibited by our Ficus Carica is the contemporaneous production of *mamme* on the male tree and *fiori* on the female. The former offers the singular paradox of a male inflorescence wholly composed of female gall flowers; and the flowers of the latter are constitutionally incapable of development. In both cases, therefore, the tree yields, in regular alternation, Figs of an essentially diverse nature. How far such a differentiation of the generations of inflorescence obtains for other species of Figs is unknown.

Various modifications of sexual differentiation in Figs have been briefly sketched in the foregoing, and many other combinations may be expected to occur in so vast a genus as Ficus; yet Graf von Solms thinks those investigated may be sufficient to afford a clue to the probable order of their development. The relatively oldest type of the genus he assumes is represented by Ficus elastica, in which the male and female flowers are indiscriminately intermixed in the same receptacle, and the latter, as far as imperfect material will permit of a judgment, are all essentially of the same nature, so that it would seem to depend upon accident whether the ovules would develope into perfect seeds or galls. The next step is the aggregation of the male and female flowers in different regions of the same receptacle, the females being at the same time divided into fertile and gall, irregularly intermixed. Following this is a complete separation of the sexes, as in F. hirta, F. diversifolia, &c. No instance is known, Solms says, of purely male and female Figs being borne on the same tree, nor, he adds, are they likely to be; but as we are merely on the threshold of the subject it would be rash to assume that they never do, in the face of well authenticated instances of individuals of normally dicecious plants changing their sex. Perhaps they may never bear both at the same time, but alternately, as I ventured to suggest before in explanation of the reason why some crops of the cultivated Fig fall off. *W. B. Hemsley.*

* The name gall-flower is applied to the sterile females commonly punctured by the parasitical Blastophaga, in contradistinction to the fertile or seed-bearing females. Various species of Blastophaga were observed in the different species of Java Figs examined; in fact, each species of Fig appears to support a peculiar species of insect.

New Garden Plants.

Dendrobium (Antennata) streblocerAS, *n. sp.**

An antennate Dendrobe, from the same source as Dendrobium stratiotes, described below. Thus two fresh members of this small group were discovered and introduced nearly at the same time by the Lindenian collectors. The flowers are smaller than those of Dendrobium stratiotes, like those of Dendrobium antennatum. The sepals and petals are as in Dendrobium stratiotes, chin narrower; side laciniæ nearly square, obtuse angled, isthmus well developed; anterior lacinia nearly triangular, basilar angles blunt. There are five keels over the median area of the lips, median one most obscure, ceasing in an angular elevation in front of the apex of the lip. The side keels are adorned with two undulations, and cease higher up in the disc of the mid-lacinia. The outer keels run out into an angulus at each side of the isthmus. There are two small lamellar auriculæ on each side in front of the base. Column blunt on each side of anther. *H. G. Rchb. f.*

Dendrobium (antennata) stratiotes, *n. sp.*†

This highly curious and marvellous Dendrobe bears a raceme of rather large flowers, surpassing those of Dendrobium taurinum. The dorsal sepal is ligulate, acute, and twisted, as also are the lateral sepals, which have an extinguisher-shaped chin. Sepals linear acuminate, twisted, surpassing the sepals in size. Lip trifid, side laciniæ rhombic, with lateral partly rough veins, and three keels in the mid-line between them, the lateral ones angular in front of the base of the mid-lacinia, mid-lacinia elliptic, acute, without an isthmus. Column with a right angle on each side at the top. I had a very good inflorescence sent me in spirits. The colour appears to have been white and purple. It comes from the Sondaic Archipelago, having been discovered by the Lindenian collectors, and was kindly sent me by Director Lucien Linden. *H. G. Rchb. f.*

Cattleya Trianæ formosa (*Will.*) Schroderiana et Russsliana, *n. vars.*

If you wish to have an adequate idea of these grand beauties take the *Orchid Album* for September,

* *Dendrobium streblocerAS*, n. sp. Antennatum. Racemosum: floribus illo. Dendrobii antennati æquantibus; sepalis linearibus ligulatis tortis; sepalis lateralibus latioribus tortis, mento angustiori; tepalis linearibus tortis, labelli laciniis lateralibus subquadrato-rhombeis obtusangulis isthmo brevi, lacinia antica triangula, lateribus obtusangula, auriculis lamelliformibus parvis geminis in basi, carinis a basi in apicem descendentibus, extremis in isthmo angulato abruptis, medianis lateralibus antice lamellato-undulatis, mediana carina ante apicem in angulum abruptam; columna utrinque obtusa. Ins. Sondaic. *H. G. Rchb. f.*

† *Dendrobium stratiotes* n. sp.—Antennatum: floribus multo majoribus; sepalo impari ligulato acuto torto; sepalis lateralibus latioribus tortis; mento extractoriformi, tepalis linearibus acutis tortis longioribus; labello trifido, lacinis lateralibus rhombeis obtusis nervis asperis, carinis terms per discum; lateralibus ante basin laciniæ anticæ sessilis elliptice acutæ angulatis; columna apice utrinque angulata. Ins. Sondaici, miserunt dom. Al. Linden et A. D Rouse. *H. G. Rchb. f.*

1883, pl. 108. There is Cattleya Trianæ formosa; which you may regard as an improved variety of C. Veitchiana, with more developed yellow. Now the two flowers before me are distinguishable by the larger amount of orange-colour yellow on lip's disc. The C. Schroderiana is grand in its dimensions, and with uncommonly long petals, while C. Russeliana is a little smaller, and has a purple blotch at the base of the column, which is green in Schroderiana. This comes, indeed, also nearer to C. formosa itself, as the upper disc of the lip is lightest whitish-ochre where it is yellowish, with oblique bi-pinnate reddish-brown short lines in the C. Russeliana, as it is in C. Luddemanniana, &c. I cannot help preferring C. Schroderiana, though C. Russeliana is a stately beauty when C. Schroderiana is not by its side. I have to thank for those flowers Baron von Schroder, who kindly forwarded at the same time a very fine flower of Cattleya Percivaliana. *H. G. Rchb. f.*

KEW AND ITS WORK.

(*Continued from p. 206.*)

VALUE OF VEGETABLE PRODUCTS.—Just consider for awhile what a large proportion of the food and clothing of mankind has to be derived from the vegetable kingdom. Last year the value of the agricultural crops grown in Great Britain alone amounted to £136,000,000 sterling. The value of the grain and flour imported amounted to £67,000,000 sterling. These two added together amount to over £200,000,000, or £6 per head for each person in the country. The exports of the United States, mainly grain and flour, amounted last year to 740,000,000 dollars, or nearly £150,000,000 sterling. The total exports and imports of India last year amounted to £131,000,000 sterling, and of these materially over £100,000,000 belonged directly to the vegetable kingdom in one form or another.

THE FUTURE OF THE ANGLO-SAXON RACE.

And consider, also, to what a large extent the future fortunes of the British Empire depend upon a proper development of the capabilities of our colonial possessions to produce the vegetable crops that are useful to the human race for food, clothing, medicine, and other economic uses. Our population is now 350,000,000. What will it be in a hundred years' time? Notwithstanding emigration, the population of Great Britain has doubled in the last half century, whilst that of France, which in the seventeenth century amounted to 38 per cent. of the whole population of Europe, now hardly attains 13 per cent. To 350,000,000 add 50,000,000 for the population of the United States, which has increased above 20 per cent. during the last ten years. The estimate recently put forward by Mr. Gladstone does not seem at all an extravagant one, that in a hundred years' time it is not improbable that the English-speaking race and its subjects will mount up to a population of 1,000,000,000. How all these men and women and children are to be supplied with needful food and clothing is a problem that will try to the very utmost the knowledge and the foresight and the energy and the enterprise of the generations that are to follow our own.

And think of these things, too, from a social and political point of view, side by side with this growth in population and this wonderful revolution that has been brought about by railways and steamships and telegraphs, how we have been growing gradually more and more luxurious in our habits of daily life, and how the spread of education and the popularisation of art and the enormous increase which has taken place during the last generation in the number of those who possess incomes of moderate competence have increased the quantity and quality of the things which as a nation we consider that we need to enable us to live our daily lives in contentment and comfort, and how that now, more than ever, the mass of the nation will have an influence in making the laws and controlling the great issues of our foreign and colonial policy.

THE POWER MAN HAS OF SPOILING THE WORLD.

And reflect also upon the melancholy testimony borne by the historic record how through man's greediness, improvidence, and quarrelsomeness many of the countries that supported the great nations of antiquity have been robbed of their natural beauty and fertility. Pass round the basin of the Mediterranean and compare the state of things now with what it once was in Persia, in the valleys of the Euphrates and Tigris, in Syria, Palestine, Asia Minor and Greece, in Northern Africa, in Cyprus and Sicily, and in a lesser degree in Spain and Italy. Everywhere we find the same sad contrast of wide tracts of country that were once fertile corn-land now changed to sandy deserts and pestilential marshes, aqueducts, and roads ruined by neglect and violence, vineyards and Olive gardens, and groves of Date Palms ruthlessly destroyed, and mountains that were once sheltered by groves of Oak, and Pine, and Chestnut, changed to bare stony ridges, of which the water springs have been dried up, and the grassy sward parched away, and the coating of alluvial soil which the roots of the trees kept in its place carried away by the rain to silt up the rivers and harbours of the lowlands. Contrast the Carthage of Regulus and Scipio Africanus with the Tunis of to-day; or the Cyprus that was ruled by the Venetians, when the island maintained a population of 1,000,000, with the Cyprus which was handed over a few years ago by the Turks to the English, when the population had sunk to 140,000; or the Lebanon of to-day with the Lebanon of Hiram and Solomon; or the Assyria of to-day with the Nineveh of Jonah, Sennacherib, and Asurbanipal; or the Babylonian plain as it is now with what it was in the days of Nebuchadnezzar and Belshazzar. We are told by Herodotus, who visited the city seventy years after it was taken by the Medes and Persians under Darius, that the walls of Babylon formed a square 50 miles in circumference, and that the Babylonian territory supported, not only its own resident population, but also the whole retinue and army of the Persian king for four months in the year, that one of the satraps owned 16,800 horses, and that his dogs were so numerous that four large villages were excused from all other taxes on condition of supplying them with food. He says that the soil of the Babylonian plain was so fertile, that of Wheat it yielded a return of two or three hundred-fold; that Millet and Sesamum grew to a great size; and that over the whole plain the Date Palm flourished, bearing fruit abundantly. Now for centuries the plain has been a sandy desert, without any regularly settled inhabitants, and the visitor sees only a few Arab tents and frail reed huts, furnishing an impressive contrast to the ruins of the great walls and temples, the only trees now a few Willows and Tamarisks along the river, and here and there a spiny Acacia scattered over the sand.

RECENT CHANGES.

About the plants that have been cultivated for many centuries, such as the Vine and the Hop, the cereal grasses and the common fruits and timber trees of the north temperate zone, the farmers, gardeners, and foresters who have been working at them for generations under every phase of growth and every modification of soil and climate know far more about their different varieties and the situations they need in order to be grown successfully, than botanists, whose attention is not concentrated upon the plants which are specially valuable from an economic point of view, which do not number more than perhaps a hundred species out of the 100,000 with which the botanist has to deal. But even of most of these during the last generation, as population has increased and the carrying trade has been completely revolutionised by steam and electricity, the countries in which they are grown have been changed very materially. The total amount of foreign food imported into Great Britain in 1864 was an average of 25*s.* per head. In 1883 it amounted to 69*s.* per head, the difference representing a lump sum of £77,000,000 per annum. In 1864 the total amount of foreign grain and flour imported into the country was worth £20,000,000 sterling; in 1883 it cost £70,000,000—an increase of £50,000,000 in twenty years. Before the war of secession in the United States the Southern States had almost a monopoly of the trade in raw Cotton; last year the value of the raw Cotton exported from India was between £14,000,000 and £15,000,000 sterling. In 1840 China had a monopoly of the Tea trade. In 1883-4 the value of the Tea exported from India was 408 lakhs of rupees, or over £4,000,000 sterling. In 1850 the area under cultivation of Tea in India was not more than 1000 acres, yielding an annual crop of £250,000. In 1880 the area under cultivation was 206,700 acres, yielding an annual crop of 40,000,000 lb., representing an invested capital of £15,000,000 sterling: an annual expenditure of £2,000,000 in wages, and, at the rate of five to an acre, yielding means of subsistence to over 1,000,000 natives. The annual export of Coffee from Ceylon, instead of being now as it was in the years between 1865 and 1878, £5,000,000 sterling a year, has dropped to £1,500,000. *J. G. Baker.*

(*To be continued.*)

SAMUEL BROOKES.

WHEN one has to go back fifty years in a place like Chicago to find the sort of place it was, he will find very little from which a florist could hope to build a business. And yet the subject of this sketch, at the age of forty, after breaking up a similar business in London, landed here in October, 1833, the year the town of Chicago was incorporated; it was inhabited by 550 people, living in 175 houses, with a taxable property of 60,000 dols., and a first year's tax levy of 48.90 dols. A wild bear had been killed this year just out of the city proper, and 7000 Indians congregated there, with whom a treaty was concluded by the United States.

Samuel Brookes was born at Hammersmith, near London, in 1793, received a first-class education, early manifested a great love of flowers, served an apprenticeship to a florist, and we find him at the early age of twenty-one with Mr. Barr, at Bali's Pond, London. This partnership, however, lasted but a short time. Mr. Brookes, becoming sole owner, built a beautiful place, second to none in his day. His love of new plants led him to carry on a correspondence with botanical collectors in all parts of the world, and he was the introducer of many novelties, the Azalea and Norfolk Island Pine not among the least. Mr. Fortune, of China fame, was one of his acquaintances, if not in his employ.

The rapid growth of London caused him to vacate a large portion of his grounds, and he built several blocks of dwelling-houses on them, which, through the treachery of a contractor, greatly crippled his resources, and was really the cause of his emigrating to this country. His outfit consisted of a heavy invoice of nursery and seed stock generally; household goods, including a piano—the first that reached Chicago; and a large bell, also noted in the early days here. Finding a market for his stock in New York, he took a steamboat for Albany, a canal-boat to Buffalo, where he landed in May. He then, with his household in a couple of wagons, and the heavy articles sent by lake, continued his journey, and as he often used to say, in spite of many a hardship, had a delightful trip, botanising on his way, and after a two months' jaunt reached Chicago. After a winter spent in the city, he decided to try farming, and located thirty-five miles out. The infant city growing apace, and his younger children requiring better educational facilities, he in 1843 moved back again, and decided to once more try his favourite pursuit, the population of the city having risen in the meantime to at least 8000.

His first venture, and the first greenhouse in the city, was erected in 1844 on the corner of Clark and Adams Streets, which was then out on the prairie, but buildings soon encroached on our traveller, and in 1853 he moved again, this time greenhouse and all, to more spacious grounds, now known as Oakwood, five miles out. Here he stayed until 1860, when he purchased land and made a move to Lake Avenue and Forty fifth Street, where the writer found him in 1861, and where his son Frederick still continues the business. It was the writer's good fortune to pass many a pleasant hour with Mr. Brookes in his house among his books; in his greenhouses among his favourite plants; and as co-exhibitor at the annual floral shows that in the early history of the city it did not seem difficult for the florists and others to bring about, although now, with half a million inhabitants and a hundred florists, it seems an impossibility.

Mr. Brookes' genuine love of plants amounted to an enthusiasm; his knowledge of them was extensive, and nothing gave him greater pleasure than an arrival from across the ocean of a kindred spirit with the latest knowledge of plant growth and lore to impart. He was an importer of choice plants from the start; try them he must, even if the Western people were slow to catch with his enthusiasm. Father Brookes, as for years he was called (being a pillar of the Congregational Church), was a true gentleman of the old school; dignified, gentle, honest, and upright in all his dealings.

He departed this life surrounded by a loving family of children and grandchildren, if we mistake not, to the third generation, surrounded with plants to the last; and, what few could say, had lived to see the city of his new Western home spring up from a frontier town of 500 people to 300,000 or 350,000. He had a soul so gentle that the wonderful change from the luxury of a life in London to that of the wilds of the West never disturbed his serenity. His was hardly the nature to pile up the almighty dollar, perhaps, but such lives as his, however, have the profoundest satisfaction of a well spent inward life. *Edgar Sanders, in "The American Florist."*

THE GENUS ODONTOGLOSSUM.

(*Continued from p.* 140.)

FOLLOWING from O. Lindleyanum (p. 140), we come to a small group which bears it a strong resemblance, and points to it as one of its parents.

O. CORADINEI seems by the length and projection of its column and the form of its labellum to be between O. Lindleyanum and O. crispum. Sepals and petals narrow, yellow blotched with brown, lip yellow or whitish with brown blotch. The illustration (fig. 51) represents the original type.

O. C. HEMILEURUM.—A very distinct variety with the sepals and petals of the type, but with a wholly light yellow lip.

O. C. KINLESIDEANUM.—This is a very pretty form with white sepals and petals bordered with yellow; lip yellow and white.

O. LIGULARE has much the appearance of a stout growing O. Coradinei; sepals and petals pale yellow with brown blotches, lip creamy-white with brown blotch.

O. TRIPUDIANS begins another section distinct from the preceding. They vary much, some of them being very poor, pale-looking things, and others, on the contrary, are very handsome. Some have a greenish-yellow ground blotched with dull brown, and others have the sepals almost entirely rich brown, and the petals golden-yellow blotched with brown. The lip is generally white, and shaped like O. Pescatorei, but crimped and fringed at the edge, and with the brown blotch usually found in O. triumphans in the centre.

O. T. HARRYANUM.—This is the grandest of all the tripudians, and was named by Prof. Reichenbach in honour of Mr. Harry Veitch. Flowers large, and of good substance. The glossy sepals and petals almost black tipped with yellow, lip pale yellow, blotched with maroon, and finely fimbriated.

O. T. OCULATUM.—A grand variety, flowered by John Day, Esq. Sepals and petals dark chestnut-brown, tipped yellow; lip white, with violet blotches.

O. T. SUPERBUM.—This superb form received a First-class Certificate at the Royal Horticultural Society, January 12 of this year, when it was exhibited by Mr. Dorman. Sepals and petals broad and wax-like, yellow blotched with shining brown, the sepals being almost entire, covered with that colour, lip fringed, white with red blotches.

The O. GRANDE section is one of the handsomest of the genus, its members being all showy and richly coloured. In habit the plants of this section resemble each other in the form of their oval compressed pseudobulbs surmounted by pairs of spreading leaves, the colour of the whole being of a peculiar greyish-green.

O. GRANDE.—This is one of Mr. Skinner's finest introductions, and of it he states that he was often close to where the plants grew without seeing them as they were in the shady ravines, where he did not expect to find Orchids. It flowered with His Grace the Duke of Bedford in 1841, and lent no small aid to Orchid culture by its beauty. Flowers on stout spikes, often four to seven each, about 6 inches across; sepals yellow, barred to the tips with chestnut-red; petals broader, yellow, usually blotched only on the half nearest the column, the rest being plain; lip creamy-white with brown spots; the flowers, like those of the rest of the section, having a brightly polished appearance. Guatemala.

O. SCHLEIPERIANUM (Ill.) (fig. 50).—In appearance this resembles a rather small pale-coloured O. grande; it is, however, a very fine summer-flowering Orchid; sepals and petals pale yellow, barred with light brown; lip yellowish, with a few brown bars. Costa Rica.

O. INSLEAYI, named in honour of Mr. Insleay, then gardener to George Barker, Esq., of Birmingham, was noted at the time (about 1840) as one of the showiest of Orchids, and since that it has always been a favourite even before the grand varietal forms which more recent importations have produced were known. Flower-spikes stiff, erect, bearing six to ten flowers each, about 3 inches across; sepals and petals pale yellow, barred with brown; lip yellow, with a few red spots. Mexico.

O. I. LEOPARDINUM.—This is a grand local form, introduced by Messrs. James Backhouse & Sons, of York. The flowers are much the same in form and size as in the type, but they are brighter and richer in their colouring. Mexico.

O. I. SPLENDENS, originally named by Professor Reichenbach, in 1868, from a plant which flowered with Messrs. Hugh Low & Co., of Clapton, out of an importation presumably from the leopardinum district, for many years was not to be bought at any price, but a recent importation of O. I. lepardinum, by Messrs. F. Sander & Co., seem to have been fruitful in producing a small supply, but not sufficient to render it anything like a cheap plant. Like the other varieties of O. Insleayi it is autumn and winter-blooming. The flowers of O. I. splendens are much larger than those of any of the other Insleayis. Sepals and petals yellow, clouded, and shaded rather than barred with brown; lip very showy, bright yellow, blotched with dark scarlet. A very grand Orchid, from Mexico.

O. WILLIAMSIANUM is a very rare kind, and very showy, apparently intermediate between O. grande and O. Schleiperianum. Flower-spikes very strong, each with about a dozen flowers, about 4½ inches in diameter; sepals greenish-yellow, barred with chestnut-brown; petals broad and wavy, pale yellow, with arge reddish-brown patch and veining at the base; lip creamy-white. It is a very sturdy grower, and has flowers of better form and substance than O. Schleiperianum. Costa Rica.

All the Odontoglossums of this section do well in pots in fibry peat, or peat and sphagnum, but so far as my experience goes they want a little more heat than the cold Odontoglossum-house gives when it is kept down to the lowest prescribed limit. I always found them do well with the Lycastes, Zygopetalums, &c., a little warmer than the O. crispums, and where no suitable and safe place can be found without it a cool corner of the intermediate-house should be set aside for their accommodation in winter. A light situation, where they can be protected from the direct rays of the sun in summer is essential, as I have noticed that direct sunlight is very injurious to them. *James O'Brien.*

(*To be continued.*)

THE GENUS HOOKERA.

THE restoration of Hookera is not only a tardy act of justice to Salisbury, but it brings back to nomenclature the commemoration of the able artist who planned and illustrated the *Paradisus Londinensis*. This work contains 117 plates, and was discontinued when Hooker was appointed artist to the Horticultural Society (Salisb. *Gen.*, p. 10); other plates had been prepared, and the letterpress for them had been circulated privately to some extent, for Salisbury speaks of "the 122d No. of *Paradisus Londinensis*, of which only a few copies were given by Mr. Hooker to his friends, without any figure" (*l.c.*, 139). Salisbury was believed by Sir Joseph Banks to help Hooker with money in the publication of the work (Banks, MS. correspondence, January 15, 1806). William Hooker, who was born in 1779 (Salisb. *Gen.*, p. 85), was a pupil—and an apt one—of Francis Bauer; his memory is associated by artists with the colour called after him "Hooker's Green"; and there was a peculiar fitness in the dedication of a plant to him by the author of the descriptions in the *Pardisus*. He engraved *Pom. Hereford*, viii.) and coloured (*Trans. Hort. Soc.* i., 198) the plates for Knight's *Pomona Herefordiensis* (1811), coloured the plates in Lambert's *Pinetum*, and himself produced the *Pomona Londinensis*—a far superior work—in 1813-18. He was a practical horticulturist, as is shown by several papers which he contributed to the *Transactions of the Horticultural Society*, of which body he was a Fellow, and of which he was employed as artist (Salisb. *Gen.*, p. 10), the many excellent plates appearing in the *Transactions* being a selection of those prepared by him. Thus, a Fruit Committee report in 1812 concludes with the acknowledgment of "the greatest assistance from one of their own number, Mr. William Hooker, whose great skill in his profession, and whose quickness in seizing the true characteristic marks of each tree or fruit have only been surpassed by the zeal and diligence which he has manifested in the pursuit" (*Trans. Hort. Soc.*, ii., 62); and Salisbury, speaking of "Ord's Apple," mentions him as knowing Apples "better than any of us" (*Trans. Hort. Soc.*, ii., 287). He lived in London, and died about the early part of 1832. In the *Transactions of the Horticultural Society*, 2d series, i., 246, we find William Hooker was in no way connected with the family of the same name who will always be inseparably associated with Kew. But the distinction is not always recognised; thus, in Johnson's *History of English Gardening*, p. 284, the *Pomona Londinensis* is attributed to Sir (then Dr.) W. J. Hooker. "*Journal of Botany*" *for February.*

FISH MANURES.

IT was little more than forty years ago that the first importation of Peruvian guano occurred in Scotland. About twenty years ago the imports of Peruvian guano attained their maximum, and they have since gradually dwindled away—the rich deposits of guano are now exhausted, and there remain only poor deposits, which in a great measure will not repay the cost of importing.

To find something that will take the place of a high-class Peruvian guano is of course a great desideratum, and it has been claimed for fish and flesh manures that they are the modern representatives of Peruvian guano, and the name "guano" has, therefore, been applied to them. Their composition, so far as total phosphates and nitrogenous matters are concerned, lends some support to that opinion, but the resemblance is only a superficial one.

The composition of Peruvian guano was a very complicated one, and the constituents were of a delicately-balanced kind, capable of easy decomposition in the soil, and the effect of these upon the crop was very rapid and precise. A large proportion of the phosphates were alkaline, and therefore immediately soluble, while the nitrogenous matter consisted chiefly of ammonia salts or complex soluble substances, which were rapidly converted into ammonia salts or nitrates, and were thus made immediately available for the nourishment of plants. "Fish guano," on the other hand, and flesh manures, such as "Frey-Bentos guano," consist of phosphates which are insoluble in water, and of nitrogenous matters of an albuminoid kind, which are only slowly decomposed in the soil. Before these constituents can be used by the plant, they must first be dissolved or decomposed, and that is a process which takes some time. The insolubility of these manures renders them unsuitable for application in circumstances where Peruvian guano exerted a powerful influence, such as in the starting away of cereals or young grass when applied as a top-dressing.

These substances are chiefly valuable for broadcast manuring with the view of raising the general fertility of the soil, or for application to root-crops which have a prolonged period of growth. The utility of fish guano in these respects has been very clearly demonstrated at the experimental stations of the Highland and Agricultural Society. The fish guano plot has gone on steadily improving since the beginning of the experiments, and it has been noticed that the Turnip crops have looked fresh and continued their growth far on in the season. The only year in which a marked deficiency in that plot was manifest was in 1884, at the Pumpherston station, when a crop of Beans was grown. The very backward state of that plot on that occasion pointed out very clearly wherein lies the chief deficiency of fish manure. The results obtained with the Bean crop exceeded in interest any that had occurred before upon the station, and the one overruling constituent in a Bean manure was shown to be potash. All the plots that had potash applied to them did well, and those that had the largest dose of potash did best, while those that had no potash applied to them were a failure. The most notable failure was seen in two plots which had been manured with fish guano and fish meal.

It is characteristic of fish manures that while they contain much phosphate and abundance of nitrogenous matter, they contain scarcely any potash. But it is well known that the abundance of some fertilising constituents in a manure counts for nothing in the

raising of a crop if one of the essential constituents of plant food is absent, or if the one which the crop requires most is present in insufficient amount. We therefore found that the plots manured with fish manures produced a smaller crop than any other plot save one, and that was the plot to which no potash had been applied since the beginning of the experiments.

We thus see that there have been two causes at work to lower the value of fish manures in the estimation of the farmer; in the first place he has been led to expect, from the misleading name under which it has been sold, that it would be a manure resembling in its efficacy Peruvian guano, with whose extraordinary fertilising power he had been familiar; and, secondly, the nearly total want of potash, which, though not abundant in Peruvian guano, was nevertheless present in that manure to the extent of about 3 per cent.

What, then, is needed in order to make fish manures once more attractive to the farmer? They should be sold under a name that does not raise false expectations, and they should have potash salts added to them. They would be still further improved if there were added to them some high-class superphosphate and a little sulphate of ammonia. For general purposes I would recommend a fish manure so mixed as to show from 5 to 10 per cent. soluble phosphate, 15 to 20 per cent. insoluble phosphate, 10 per cent. of ammonia partly soluble, and 4 per cent. of potash, and I feel sure that if manufacturers can produce such a manure it will rapidly become popular with farmers, and produce a good market for a substance of which there is truly an inexhaustible supply, and the result will not only be a gain to agriculture, but also a means of giving greater stability and security to our fisheries, which have lost much in the past from the wholesale destruction of valuable fish material.

Extract from a paper by Dr. A. P. Aitken, in the "North British Agriculturist," Jan. 27, 1886.



Fig. 50.—Odontoglossum schleiperianum. (see p. 268)



Fig. 51.—Odontoglossum coradinei. (see p. 268.)

BURMESE AGRICULTURE AND ECONOMIC BOTANY.

In view of the recent annexation of Burmah to the Indian Empire, some account of its vegetable products may be of interest:—

The system of agriculture is that known as *toungya*, *taungya*, or *jum*, which consists in clearing a patch of forest land, burning the fallen jungle, and sowing in the ashes a mixed crop of Cotton, Paddy, Pumpkins, and other vegetables, all maturing within about five months. In reaping or gathering the crop the stems are usually left almost entire, to be partly eaten down by cattle turned in for the purpose, what remains being finally burned on the spot; this constitutes the only manuring.

Cereals and Pulses.

Rice, locally called *saba*, is the staple vegetable product of the country. Its cultivation is carried on in the following manner:—When the first heavy rains have saturated the soil, a kind of harrow, about 5 feet long, with hard-wood teeth, 9 inches long and 1 inch wide, is dragged over it to remove old roots, stems, and weeds, which are thus collected at the margins of the field, and help to build small dykes for regulating the irrigation. The harrow is drawn by a yoke of buffaloes or oxen, the driver adding his weight by standing on the implement, if the ground is very tenacious. Seedlings about 18 inches high, having been raised in nurseries in a higher lying spot, are drawn up and transplanted in the sodden land in pairs, at intervals of about 1 foot each way, by women and children. This is the better method of planting, but sometimes the seed is merely sown broadcast, when the resulting crop is very poor. Weeding is never practised, and irrigation is most imperfect, the out-turn chiefly depending on the character of the monsoon rains. In December the grain commences to mature, and offers great attractions to myriads of birds. To scare them away, Burmese ingenuity has elaborated a system of platforms, with cords carrying articles capable of causing a great din and confusion on being shaken admirably calculated to produce the maximum effect with the minimum expenditure of work.

The ripe crop is reaped with sickles, taking only a foot of the stalk with the ear; it is stooked till dry, then carried to the threshing floor near the owner's dwelling, consisting of a levelled patch covered with a hardened coat of mud. The paddy is laid in a circle, ears inwards, and the grain is trodden out by cattle in true Eastern fashion. The grain is winnowed either by pouring between baskets at a small height, so that the wind carries away chaff and dust, or a rude wooden fan is used. It is then stored in granaries made of Bamboos and mud (wattle-and-daub), raised 2 to 3 feet above the earth, and thatched. The average quantity of seed used is about 1 bushel per acre, and the average yield of Rice 40 to 80 bushels. In the Angyi township of Rangoon, the out-turn is 80 to 112 baskets, or 23 to 32 cwt. per acre. Northwards the soil is less productive, and in some places 33 baskets (966 lb.) is a good return. In British Burmah the production and distribution of Rice occupy three-fifths of the population, and cover six-sevenths of the total area under cultivation (nearly 3,000,000 acres in 1876). There is only a single annual crop, corresponding to the *aman ropa*, or winter crop of Bengal.

Many varieties of Rice are recognised in Burmah. The Karens distinguish over forty kinds. Their upland Rice is often preferred to that grown on the Burmese lowlands, but being less nutritious it is lower priced. The colour of the grain varies from pearly-white to almost black. From the latter the Karens prepare a bread, thus:—Some seethed rice is poured into a large mortar with an excess of Sesame seeds; this is pounded by women armed with ebony pestles till quite light, and is then eaten. Another way of cooking rice is by mixing it raw with a little water, putting it into a joint of Bamboo, closing the orifice and roasting. It is extracted in the form of a sausage, and eaten with salt and butter. The Karens select only two kinds of Bamboo for this purpose, both of which impart a sweet taste to the contents. One cannot help admiration of the cook who extracts a flavour from the very cooking pot itself.

Job's Tears, or Coix lachryma, is a grain much grown by the red Karens, and often seen for sale in a parched state in the bazaars. The seed which is so hard in the wild plant is soft in the cultivated, and the kernel is sweet. Several varieties are locally distinguished.

The following plants, whose seeds afford a kind of meal, are cultivated in Burmah:—*Kalapeh*, a kind of gram (Cicer arietinum); Lentils (Lens esculentum [Ervum Lens]); a kind of *dal*, the *kasur* of India, or *tira* of Bengal (Lathyrus sativus), said to be very indigestible; the garden Pea (Pisum sativum), the *chowlee*, or Chinese Pea (Vigna [Dolichos] sinensis); two kinds of French Bean—one (Phaseolus lunatus) for its seed-pods, the other (P. adenanthus) for its tuberous roots; the Lablab (Dolichos Lablab [Lablab vulgaris]); Psophocarpus tetragonolobus, and the *pehmyit*, or Goa Bean (P. palustris); the Soy Bean (Glycine Soja), the *pehyen khyung* (Cajanus indicus), the *pehpaswon* (Cyamopsis psoralioides); and to these may be added the ground-nut, or *myeleh* (Arachis hypogæa).

Oil Seeds.

The most important oil seed is Sesame or *gingelly* (Sesamum indicum). For extracting the oil, the grain is put into a deep wooden trough, in which it is pressed by an upright timber fixed in a frame, the force being increased by a long lever, on the extremity of which sits a man who guides a bullock walking in a circle, and rotating the perpendicular timber, which crushes and presses the seed. An oil obtained from the seeds of the *kalwa* (Cerbera manghas) is used for burning.

MISCELLANEOUS.

The Burmese stall-feed their cattle during the floods, and for this purpose they cultivated large quantities of Guinea-grass (Panicum jumentorum).

Jute grows wild over a large area, and its cultivation might be vastly extended. Common Hemp (*ben*) is met with less often. The liber of the *sapshapen* (Sarcochlamys pulcherrima) affords good cordage, as does that of the *pwotsharpen* (Morocarpus longifolia) —both like Hemp, itself belonging to the Urticaceæ. Mats and basketwork are made from Bamboo strips, split stems of the *then* (Maranta dichotoma), and Pandanus leaves, either plain or covered with a black varnish that renders them waterproof.

The houses of the poor consist of posts driven into the ground, with a Bamboo grating for a floor, 2 or 3 feet above the earth. The roof is formed of Palmyra Palm leaves, or of long grass (Imperata cylindrica), twisted round and sewed to slips of Bamboo. The better houses are built of Teak and roofed with tiles. Fences are made with Bamboo and the stems of Saccharum fuscum.

Much of the writing is done with a kind of iron stylus, pointed at both ends, on prepared strips of Palm-leaf about 20 inches long and 2¼ inches wide, a number of these, with boards of the same size outside, forming a book. Notebooks called *parabeik* are also made of coarse thick paper from the bark of the *malaing* or Paper Mulberry (Broussonetia papyrifera), which, having been thickly coated with a charcoal paste, and cut into long strips of the intended width, varying from 3 to 18 inches, is then folded alternately backwards and forwards to form the leaves, something like a paper fan. These are written on with a steatite pencil, and the writing can be rubbed out as from a slate.

The stems of the *yengankhyo* (Zalacca Wallichiana) are bound together to make rafts of great buoyancy. The *pwainget* or Dammar bee (Trigona læviceps) makes a nest in hollow trees, consisting apparently of a vegetable resin collected from forest growths. This is much used for caulking boats, being first boiled in water to soften it, and then kneaded with petroleum to a putty-like consistence.

The Burmese are a nation of carpenters. Every man is expert in house and boat building, and in the fabrication of wooden articles of all kinds. Their manner of building boats exhibits some peculiarities. Generally the hulk is hollowed out of a single log, on which the bulwarks are built up. In order to open the log, a number of wooden crooks are hooked over the sides, and firmly lashed to a cross-bar, or fulcrum, on each side; levers are fixed to these cross-bars, and fire is applied underneath the whole length of the log. As the partially hollowed log expands with the heat, the levers on each side are brought into use, and the sides are forced outwards as far as possible; the crooks are then lashed tight to pegs. Carpenters next adze out the interior, and thus the processes alternate till the desired breadth is attained, and the walls are about 2 inches thick. Thwart beams are put in to prevent collapse. Several kinds of tree are used, but the best and largest boats are made from *thingan* (Hopea odorata), Teak being much too valuable commercially to be used up in this way. The boats carry a single sail, mounted on a double mast, consisting of two masts from the sides joined at the apex. The sail cloth is very light country cotton stuff, resembling coarse unbleached calico. *C. G. W. Lock.*

VIOLETS.

THERE are no plants easier to grow than these, yet I question if there be any that are less successfully grown. If the following system be followed I am quite certain good results will follow. I shall begin with the best varieties to grow, which I will confine to three double and two single varieties, viz., Neapolitan (lavender-blue), Marie Louise (dark blue), Comte de Brazza (white), Czar, and the Russian single.

PROPAGATION.

About the middle of February or even later, prepare a pit or frame. If the latter, set it on a hard dry bottom, in a sunny situation with proper facility for the escape of water, dripping from the sashes. Fill the box of the frame to within 8 inches with fresh leaves, trodden firm. On this spread 4 inches of a nice light compost, pressed down with a board to make it firm. Select from the most robust plants in the pits a sufficient quantity of the side shoots; prick these into the prepared bed, 3 inches from each other; give a good sprinkling of tepid water, and shut up closely. Admit little or no air till they have struck root, which will be in about a month, more or less. Sprinkle frequently during sunny weather, and shade from bright sun. After they are well rooted gradually inure them to sun and air, afterwards entirely removing the sashes on fine days, which, towards the middle of April, can be dispensed with altogether. Keep the plants syringed on fine mornings, and water them occasionally as required.

SITUATION.

In summer the best situation for Violet growing I have found to be a border having a wall behind it running north and south. The Violet does not succeed thoroughly when exposed to the full blaze of the summer sun the whole day; and in such a position as that recommended the sun is wholly off the beds by 2 o'clock each day.

SOIL.

The best soil for Violets is a deep, rich, and stiffish loam. When the plants of the previous year have been lifted, dig over the ground to the depth of two spades; set up the bottom spadeful in the form of a ridge, the rougher the better. About the latter end of April a sufficient quantity of new compost should be prepared wherewith to cover the ground intended to be planted, 3 inches deep. To every two barrow-loads of fresh loam add one of charred prunings and vegetable refuse, one of sifted leaf-mould or Mushroom dung, and two pecks of bone meal. Well mix these materials with the surface-soil of the border, level the ground, and throw it into the form of 4 feet beds, with a foot broad alley between.

PLANTING.

The plants must be lifted carefully from the frame with a trowel, placing them in a flat sieve or tray; plant them at a distance of a foot apart, choosing a dull day for the job. As each bed is planted a few evergreen boughs should be stuck round the margin and through among the plants so as to afford them some amount of shade and protection. In the course of ten days these boughs may be removed, and the plants syringed with clear water frequently on fine mornings. The after-treatment consists of frequently stirring the surface of the beds, and syringing the plants morning and evening on all fine days. See also that they never lack water, and remove at short intervals all runners. This operation is best performed with a pair of Vine scissors, as with these they can be removed to the base of the crown.

WINTER QUARTERS.

Towards the end of September it will be necessary to place the plants in the structures they are intended to occupy, for which purpose a shallow brick pit or garden frame in a sunny position is the best. Into this, place a sufficient quantity of leaves or spent hot-bed material, mostly leaves. Tread this firmly, and fill to within 12 inches of the top, giving it the same slope as the glass. In lifting the plants from the beds get as much soil as will adhere to them, as the larger the ball the more chance there is of success. Place the plants on the surface of the prepared bed in rows, commencing at one side of the pit or frame. Have some light soil at hand wherewith to pack firmly between the balls. When the whole is finished give a good soaking of tepid water. Do not put the sashes on, unless during heavy rains or frost. Give a good mulch of cocoa-nut refuse to prevent escape of moisture and to obviate the need for much watering.

The hardier the way in which the plants are treated the better will they withstand the rigours of the winter season. They should be frequently looked over, and any decaying foliage removed, or the plants will soon be destroyed. Cover up with mats or dry straw when there is a prospect of frost. When the days lengthen, and more air can be given, the pits or frames should receive a watering weekly, a little clear weak manure water being given occasionally. Treated in this manner the plants will give a constant supply of Violets from the beginning of October to the middle of May.

When the weather is severe, and little light and air can be given, the flowers do not colour so well; but this can in some cases be obviated by running a 2 or 3-inch hot-water pipe round the pit, just under the glass; although, as a rule, the less heat given the finer will be the flowers, as heat without air soon exhausts the plants. *Wm. M. Baillie.*

Orchid Notes and Gleanings.

THE ORCHIDS AT HIGHAM HILL, WALTHAMSTOW.

WISHING to observe the effect on Orchids more especially, and other plants, of a species of fertiliser now in the market under the name of "fish manure," we resolved to run down to Walthamstow for the purpose of doing so, knowing that the proprietor, Mr. A. Borwick, was not only the owner of an extensive fish manure factory in Norway, but of a growing collection of choice species and varieties of Orchids. It may be stated that we should not have been surprised to find "an ancient and fish-like" odour about the place, and the plants with overgrown flabby foliage and but few flowers. With regard to the smell that was feared, it was perceptible only in one house, in which the occasional dose that the plants have doled out to them had been given that morning. This odour was rather marked, but after a short stay in the house it became no longer perceptible. With regard to the effect of the agent on the plants themselves, it was little less than wonderful, notwithstanding the weakness of the solution, 1 to 100 parts water, and the long intervals at which the applications are given—once in ten days in the growing season, and sometimes even much less frequently, and during the season of rest not at all. That which struck the observer was the deep bottle-green colour of the pseudobulbs, their large size, and the very evident increase of size when compared with still plump pseudobulbs of the last and previous years' growth. The foliage also, by no means of abnormal length or breadth, was exceedingly leathery to the touch, and quite free of "spot" or sickly tint. Excepting newly bought or potted plants every other showed great vigour and hardness. The houses, three or four in number, were small span structures, with just room enough to get round them, and the roof-glass nowhere far from the tallest leaves of the plants. Full light could be enjoyed, as the roof was not covered with creepers, so that any shading that might be required in the hot months must be supplied artificially. The flowering of the plants, judging from what were seen in, or about to flower, and the stalks of flowers recently cut off, quite corresponded with the growth of leaf and bulb. Amongst the most conspicuous were noticed Lycaste Skinneri, with twenty-eight blooms; Cypripedium insigne and C. villosum, both much benefited by the manure; Maxillaria grandiflora was growing very strongly—there were several pieces of this handsome white-flowered species; Cœlogyne cristata (Chatsworth var.) had much vigour, but having outgrown its pots had been repotted, to which was attributed the fewness of the flowers; Cymbidium (Renanthera) Lowianum had three spikes with from twenty-four to twenty-seven flowers on each: this plant showed a marked improvement in strength from use of the manure; Zygopetalum crinitum had six spikes, very strong; Lycaste Harrisoni the same, especially the foliage; Oncidium ornithorhyncum was making three and four breaks from a pseudobulb, and Odontoglossum pulchellum two each from previous pseudobulbs; Lælia purpurata had eight strong sheaths, and was very robust. There is a nice collection of Cattleya Trianæ, Masdevallias, and Odontoglossum crispum. The singular-looking O. mirandum, O. Rossi, O. Cervantesi, and Sophronitis grandiflora, were in bloom; and in a small house there was seen a group of Angræcum Ellisii, sent home direct by the members of the Madagascar mission. Angræcum sesquipedale is found to be benefited by occasional watering with the manure; these were likewise sent direct from the same island. Enough was seen to prove the efficacy of the fertiliser on certain plants, and those mostly of non-epiphytal habits. From the composition of the manure we have no doubt of its excellence, provided it be used with judgment, and in small doses well diluted; but we and Orchid cultivators would be glad to receive from Mr. Julks, the gardener, fuller details than it was possible to obtain in our short visit.

LISSOCHILUS SANDERSONI.

A noble terrestrial Orchid, from Natal, with lanceolate ribbed leaves, and tall erect scapes 6—7 feet high, terminating in a many flowered raceme. Each

flower is about 2½ inches in diameter, with elliptic green sepals edged and tipped with brown. The petals are much longer than the sepals, broadly oblong, obtuse, pure white. Lip large, spurred at the base, side lobes large, rounded, erect, dark green, with brownish veins, limb pale violet, with darker purple streaks, disc pale yellow-green, studded with three rows of long papillæ. The plant was grown in a bed in a southern aspect of the Palm-stove at Kew. *Botanical Magazine*, 6858.

The Flower Garden.

THE FLOWER BEDS.

ATTENTION should be given to spring bulbs and other autumn-planted things, to see that the frost has not lifted them out of the ground; if such is the case they should be pressed down again. Any work which has been delayed by storms should now be prosecuted with all despatch. Divide and transplant Polyanthuses, Primroses, alpine Auriculas, and Daisies. If these are not frequently moved and the ground well trenched over and manured they rapidly degenerate.

PLANTS IN POTS.

Alpine and herbaceous plants in pots should also receive attention. Pot such as require it, and top-dress the others. Numbers of them, such as Saxifragas, Sempervivums, Sedums, dwarf Phloxes, &c., will thrive much better if a few pieces of quartz, or limestone be built up like a miniature rockwork, and some soil wrought in amongst them, setting the plants on the top. Hardy Ferns may also be transplanted, and those that remain undisturbed will be much advantaged by receiving a good mulching with leaf-mould in a partially decayed state.

LAWNS.

March is a good month for making new lawns. The ground should be thoroughly levelled. If any depth of soil has been moved to fill up inequalities this must be well beaten with a rammer to prevent subsidence. When filling up holes the top soil should always be preserved for surfacing, and the holes filled up with rubbish. When filled to the required height the good soil should be spread over the top. See that a uniform depth of this is placed all over, or else the lawn will soon show it, one part being of a denser green than the other. After the surface has been raked over, all stones removed, and made perfectly level, pass a heavy roller over it a few times on a dry day. After the middle of March it will be safe to sow the grasses. Previous to doing so roughen the surface with an iron rake, and immediately it is sown down pass the roller over it again.

BEDDING PLANTS, &C.

Push forward the propagation of all bedding plants. Do not allow the plants to remain in the cutting pans or beds a day longer than is necessary, as they soon get drawn. When potted or boxed off, keep them as near the glass as possible. Have them constantly pinched to make the plants stocky. Attend to newly planted trees and shrubs and see that they are securely fastened to prevent them from being blown about with the wind, as they will not root satisfactorily if allowed to do so. Some flat stones laid over the roots will serve to retain the moisture, and help to steady the plants. Let any planting of trees and shrubs yet remaining be brought as speedily as possible to a close. *W. M. Baillie, Luton Hoo.*

Plants and their Culture.

EPACRIS AND HEATHS.

THE early flowering varieties of the former should be cut back immediately they have done blooming, reducing the past season's growth to about one-third its length, otherwise they make weak growth, and get into a straggling condition. This applies to the erect-growing varieties, which are the most useful of the section. They are much benefited after being cut back by being placed where they can receive a few degrees more heat. The following sorts will be found the best to grow:—E. ardentissima, E. delicata, E. densiflora, E. Hyacinthæflora, E. Lady Panmure, E. magnifica, E. impressa, E. racemosa, E. Vesta, E. rubra superba, E. Fireball, and E. splendens. If, in addition to these, a few of the later or loose growing sorts are added, and grown in a north house for a time, they can be had in bloom in succession during the winter months and onward to June. These late sorts must be kept quite cool, and when the use of fire-heat is a necessity, if it be used more than is required to keep the frost out, the plants will be sure to start into growth, which actually should not take place until they are excited naturally by sun-heat.

HEATHS.

The greatest enemy to the Heath is mildew, to which it is very susceptible, and during the early spring months, as a rule, it is at about its worst, the air in the houses and outside being very humid. The plants should therefore be very carefully watched, and on the first appearance of mildew they should be dusted over with flowers of sulphur; the neglect of this sometimes causes the leaves to fall off in a short time, thereby resulting in unsightly bare shoots, which it is impossible to reclothe with foliage.

FORCING HOUSES.

These must be kept filled up as fast as the plants get taken away for furnishing or are put into the flowering house. Now as the days lengthen, and sunshine is more abundant, the inmates will be found to come into bloom much quicker than is the case earlier in the year. It is a good plan to take plants that have been driven hard by forcing, and place in a cooler house for a few days before making use of them; the lasting properties of the flowers being thereby increased. Batches of Lily of the Valley, Rhododendrons, Deutzias, Azaleas, Hyacinths, Tulips, Arum Lilies, Lilacs, Staphyleas, Weigelas, Gladioli The Bride and Colvillei alba, Musk, &c., can still be placed in the forcing houses. *A. Evans, Lythe Hill, Haslemere.*

Hardy Fruit Garden.

APHIDES ON WALL FRUIT TREES.

THE first difficulty after a good set of fruit has been successfully obtained, will probably be an attack of greenfly. It generally appears about the time one would like to commence a little disbudding, which, by-the-way, must be practised in a very cautious manner, so as not to deprive the young embryo fruits too early of the shelter which the shoots afford. Still some of them must be removed to enable the fly to be dealt with efficaciously, and for this purpose choose a calm sunny morning, lightly syringing the affected shoots, which should then be well dusted with tobacco-powder. This will be found preferable at this early date to the use of any liquid insecticide. It is best applied by using two fingers, throwing it well under the curled leaves. Should the shoots be badly attacked, it will probably be necessary to go over the trees two or three times, and this after a slight disbudding should be done at the same time—say, once a week. *G. H. Richards, Somerley, Ringwood.*

Fruits Under Glass.

VINES.

THE early house having been started early in November will now be making rapid progress, as the days lengthen and become brighter, although up to the present date we have had scarcely any assistance from sun-heat, but, on the other hand, frosty air finding its way through the glass day and night, leading to a large consumption of fuel. Since January 5 I have registered frost more or less every morning till February 23, with the exception of the 12th inst., when the thermometer did not go below 32°.

THINNING THE BUNCHES.

As the bunches get forward enough, attend to thinning, which can be done now easily if taken in hand as soon as the berries are large enough. Judgment must be used so as to have well shaped bunches. Avoid over-thinning, which spoils the appearance of the bunch. When this work is completed a good soaking of tepid water at the roots will greatly assist the swelling of the berries. Attend to the tying and the stopping of the shoots, not allowing them to get overcrowded. Keep up a night temperature of 65° to 70°, with a rise of 5° by day, or 10° with sun-heat before giving air, which must be given with care so as not to let cold winds come in contact with the tender berries, which would cause rust; close early and damp down all dry places. Disbud, stop, and tie later vines, as before recommended.

LATE HOUSES.

Late vineries, which will have had attention as regards cleaning and seeing to the borders to keep the their roots in healthy condition, will now be swelling buds naturally, so that it will be necessary to close at night and not give air quite so liberally on cold dull days; the rods may be syringed on bright mornings, which will assist their breaking regularly. *J. Vert, Audley End Gardens.*

The Kitchen Garden.

BRUSSELS SPROUTS.

SEED should be sown at once, either in an exhausted dung frame or in a cold one, in light fresh soil. Keep the frame closed until the seeds germinate, after which air should be freely admitted on every favourable opportunity. When the young plants are large enough prick out the strongest into cold frames or sheltered borders, the smaller and later ones making a good succession. Plants from this sowing should constitute the main crop, another smaller one may also be made in the open ground about the middle of March. I prefer a good strain of the "imported" to any of the exhibition varieties, the object being to obtain a good length of stem studded with firm sprouts the size of Walnuts. When planted out finally in deep rich soil the plants should stand at least 3 feet apart each way. Grown so, they are enabled to fully develope themselves and retain most of their leaves during the winter; this is a great advantage during severe frosts, the drooping foliage affording protection to the stems and sprouts. The practice of planting Brussels Sprouts thickly together, and afterwards denuding them of their foliage in the autumn cannot, in my opinion, be too strongly condemned. With the above, and under the same conditions, make sowings of Snow's and Early Penzance Broccoli, Veitch's Autumn and Walcheren Cauliflowers, Cabbages, and also a small one of Leeks.

ONIONS AND PARSNIPS.

After this date, whenever the condition of the ground will permit, the main crop of these should be sown. For the former the surface should be made firm and even, the seed sown in shallow drills 1 foot apart, which should then be trodden in, and finally finished off with a light wooden rake. If the situation is at all damp and wet, preference should be given to sowing broadcast on slightly raised beds 6 feet wide, and a space 1 foot wide between each bed. Parsnips may be sown in drills thinly, and preferably on a stiff sandy loam, which has been trenched without manure—a good distance is 18 inches from row to row.

OTHER SEEDS.

The following also require sowing:—Seakale, Asparagus, Parsley, and another one of Horn Carrots, Spinach, Turnips, Radishes, &c.; also of Sandringham White Celery, and Tomatos, in heat.

CUCUMBERS.

Plants that have been in bearing during the winter months, and show signs of exhaustion, should be carefully gone over, old leaves removed, the house and plants receiving a thorough cleansing; afterwards removing the old soil from around the roots of the plants, and replacing it by a fresh compost of light fibrous loam, to which has been added a small quantity of thoroughly rotten dung. An increase of heat and moisture with a liberal use of the syringe on bright afternoons at closing time will greatly assist the plants in making new growths. If not already done, young plants should be raised to supplement these for the summer supply. *J. Austin, Witley Court Gardens.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	March 1	Sale of Nursery Stock at the Bell Lane Nurseries, Hendon, by Protheroe & Morris.
		Sale of 7000 Lilium auratum, from Japan, at Stevens' Rooms.
TUESDAY,	March 2	Sale of Nursery Stock at the Wandsworth Common Nurseries, by Protheroe & Morris (two days).
		Sale of the Fourth Portion of the Collection of Orchids of the late E. K. Harrison, Esq., at Stevens' Rooms.
WEDNESDAY,	March 3	Sale of Roses, Fruit Trees, Shrubs, Border Plants, &c., at Stevens' Rooms.
		Sale of Lilium auratum, Japanese Iris, Roses, and Plants, at Protheroe & Morris' Rooms.
		Sale of Valuable Importations of Orchids, from Mr. F. Sander, at Stevens' Rooms.
THURSDAY,	March 4	Sale of Nursery Stock at the Kingston Hill Nursery, by Protheroe & Morris (two days).
		Clearance Sale of Greenhouse Plants, &c. at the Wellesley Nursery, Hammersmith, by Protheroe & Morris.
FRIDAY,	March 5	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	March 6	Sale of Roses, Fruit Trees, Shrubs, Border Plants, &c., at Stevens' Rooms.

IN our last issue we alluded to the deficiencies in the education of young gardeners, and we pointed out how the foreigner, in many cases at least, with his better education, his readiness to accept lower wages, and to accommodate himself to any position, is likely to gain, indeed, is gaining an advantage over our countrymen. In gardening matters, as in industry and manufactures generally, low priced, we will not say cheap, labour and superior technical education, are enabling our rivals and competitors to oust us from the markets of the world, and to flood us at home with products which under other circumstances, we could very well grow for ourselves.

In most instances the acquirement of anything like a satisfactory foundation in gardening science is unattainable, owing to the defective system of popular education in the country districts, whence the young men are drawn. Local horticultural societies, instead of devoting the whole of their energies to an annual outing in the Squire's park, might very profitably expend some of their funds and some of their labour in the promotion of technical education, as well as in other matters of practical importance. Exhibitions are excellent things, but they should not be looked on as the be-all and end-all of horticulture. Such societies might well take a leaf out of the book of their French and Belgian neighbours, and secure the services of some competent instructor, who should visit the different districts of the country, give instruction in the principles of horticulture, and, as far as possible, demonstrate the most approved methods of practical cultivation, call attention to recent improvements and to the varieties of plants best suited for particular purposes and particular local conditions.

The Press does its best, and for its own sake, if for no other reason, it is not likely to relax its efforts, but it cannot create a class of readers able to appreciate what is put before it, and it is no doubt apt "to shoot over the heads" of some at least of its readers.

With a view to promote the development of horticulture on a surer basis and with the desire to encourage young aspirants, we now offer for competition by young gardeners (British subjects) prizes, subject to the appended conditions, for the best essay on

ROOTS AND THEIR WORK:

comprising a discussion of their varied forms, their structure, their uses to the plant, the manner in which they accomplish their work, and the bearing of these facts on the methods of cultivation and propagation of plants grown for various purposes.

CONDITIONS.

1. Candidates proposing to compete must make application on the form which will be found on p. 288, and which must be cut out and forwarded to the Editor, on or before March 30 next, after which date no application can be entertained.

2. The prizes will consist of £10 to the most successful candidate, of £5 to the second, and of £2 to the third, in order of merit.

3. In estimating the merit of the papers, special importance will be given to the evidences of original observation and research, and relatively little value will be attached to mere compilations from books or papers. Reference must in all cases be made to the publication from which any quotation or statement of fact is taken.

4. The essays must be legibly written on foolscap paper, and on one side of the paper only. They may be illustrated by original sketches at the option of the candidate.

5. The writer of the essay should not attach his name or address to his paper, but should adopt a motto, or other device, by means of which it can be recognised. The real name and address of the candidate should be enclosed within a sealed envelope, bearing outside the same motto or device as is attached to the essay.

6. The essays should be sent in to the Editor, 41, Wellington Street, Covent Garden, W.C., on or before May 8 next.

7. The awards will be made by the Editor, assisted by practical gardeners connected with the staff of the paper, and the results will, if possible, be announced at the provincial meeting of the Royal Horticultural Society, at Liverpool, at the end of June.

8. The Editor reserves the right of withholding all or either of the prizes, if in his judgment the papers do not present sufficient merit.

9. The Editor does not undertake to publish, in the *Gardeners' Chronicle* or otherwise, any of the essays that may be sent to him, but reserves the right to do so at his discretion.

10. Essays which do not obtain an award will be returned to the writers on application, and on the receipt of stamps to cover postage.

Some general remarks on the subject will be found on p. 240 of our last issue.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—A numerously attended meeting of the General Committee was held at the "Old Four Swans" Inn, Bishopsgate Street, on the 22d inst., E. SANDERSON, Esq., President, in the chair. The application of the Dawlish Chrysanthemum Society for affiliation was accepted, and five new members elected. The report of the schedule sub-committee was presented, recommending that a sum of £75 be set apart for the expenses of the show of early Chrysanthemums in September, the sum of £177 10*s.* for the usual show in November, and £50 for the show of late Chrysanthemums in January. On the occasion of the September show a sum of £10 15*s.* will be offered in prizes for Dahlias and Gladioli, and in January prizes will also be offered for groups of Coniferæ, Ivies, Hollies, and such things as berried Solanums, Cyclamens, and Primulas. These additional prizes are provided by the Royal Aquarium Company. One feature in the report was to the effect that a class be provided for Japanese Anemone-flowered types, with their irregular quilled centres and long twisted guard petals, as distinct from the more symmetrical flowers of the Chinese group. A good deal of discussion ensued, those opposed to the division of the large-flowered Anemones asserting that it will be found very difficult indeed to do so. Eventually the report of the schedule sub-committee was carried by a large majority—Mr. C. HARMAN-PAYNE, the secretary of the schedule sub-committee undertaking on behalf of that body to classify the flowers to the best of their ability. Some important alterations in the schedule were made, among others, past winners of the 1st prize in the classes for thirty-six and twenty-four blooms of incurved varieties will no longer be allowed to compete in that for eighteen varieties. Messrs. HENRY CANNELL & SONS offer special prizes for a vase of Chrysanthemum blooms; and Mr. GEORGE STEVENS, of Putney, for six blooms of his new variety, Maiden's Blush. The revised catalogue will be completed and issued without delay. The rules and regulations of the Society were revised to agree with the three exhibitions arranged for. A cordial vote of thanks was given to the schedule sub-committee, the Hon. Secretary, Mr. W. HOLMES, and the President.

—— LICHENS IN WESTMORELAND.—At the last meeting of the Kendal Natural History Society, Mr. MARTINDALE announced the discovery in Lowther Park of two Lichens—Schizoxylon corticola and Calicium Roscidium. Both are new to the flora of Westmoreland, and the latter to Britain.

—— MESSRS. MESSENGER & CO., of Loughborough, have just been awarded by the Society of Architects the Gold Medal, the highest award, for general excellence of their horticultural buildings, at the annual exhibition, which is being held this year at Sheffield.

—— "DISEASES OF PLANTS."—The first volume of the second edition of this valuable work, prepared by Dr. SORAUER, of Proskau, under the title of *Handbuch der Pflanzenkrankheiten*, has just been issued. For the moment we content ourselves with mention of the fact. So important a work demands careful examination.

—— THE LINNEAN SOCIETY.—A meeting will be held on Thursday, March 4, at 8 P.M., when the following papers will be read:—1. "Observations concerning Seedling Plants," by Sir JOHN LUBBOCK; 2. "On Strongylus Arnfeldi and O. tetracanthus," by Professor T. SPENCER COBBOLD; 3. "Reproduction of Rhipilia and new species R. Andersoni," by GEO. MURRAY, Esq.

—— BRITISH AGRICULTURE.—It is on record that the average yield of Wheat in the United Kingdom is 28 bushels per acre; that of the United States is only 12 bushels; France, Bavaria, Austria, and Egypt furnish about 16 bushels; Spain, Belgium, Norway, Denmark, &c., vary in the yield from 22 to 25 bushels. In other cereals and in forage crops the productions of this country are also in the foremost rank.

—— ASCENT OF THE SAP.—The precise course followed in its upward course by the water absorbed by the root has been a matter of controversy. SACHS, and many with him, contend that the sap rises through the walls of the vessels and ducts by a process of imbibition. Others, again, such as BÖHM, HARTIG, and VESQUE, assert that the fluid does not pass up the sides of the vessels by imbibition as water would pass up a lump of sugar or a piece of sponge, but that it passes upward through the central cavity of the vessel. The matter might be settled if it were possible to seal up all the vessels of a branch without in any other way obstructing the process of transpiration. Thus either the branches would wither when the vessels were all sealed up, showing that their cavities are the conduits, or they would remain fresh, even though the vessels were obstructed, when, of course, the inference would be that the water passed up the side walls, and that the obstruction of the central cavity was unimportant. Professor ERRERA, of Brussels, and his pupil, M. LAURENT, have lately put the matter to the test. They made a mixture of twenty parts of gelatine to 100 of water, and added to it a quantity of Indian ink, previously ascertained to have no ill effect on the plant. The gelatine melts at 33° C. (92° F.), and remains fluid till the temperature falls to 28° C. (83° F.). A branch of a Vine (Vitis vulpina), attached to the trunk, was bent so that the base of the curve was plunged into the melted gelatine at a temperature of 30°—33° C. (say 86°—90° F.), This done, the branch was severed from the trunk, care being taken to keep the branch, while the cut is made, beneath the gelatine. Under these circumstances it is easy to trace the ascent of the gelatine to a height of from 4 to 8 inches. When the branch is cut in the manner indicated it is immediately placed in cold water, when a small thickness is again cut from the end of the branch, so as to secure contact with the water of a clean surface in which the gelatine occupies the cavity of the vessels alone without covering the cut ends of the walls of the vessel. All branches in which the cavity of the vessels is thus blocked, wither within a few hours, while test branches, cut like



FIG. 52.—TERRACE WALK, FLOWER GARDEN, AND MANSION, BASING PARK. (SEE P. 274.)

the others, under water or in air, and treated exactly in the same way except as regards immersion in gelatine, remain unwithered. If the portion of the branch infiltrated and obstructed with gelatine, be cut away, and the freshly cut surface be now immersed in water, it preserves its freshness. From these experiments, M. ERRERA concludes that the "water of transpiration" ascends through the cavities of the vessels, and explains in this manner the fact that the upward current passes through the portion of the wood formed in spring, and which is marked by vessels of large diameter, rather than through the autumn-formed wood where the vessels are narrower and thicker walled—the latter condition favourable, as it would seem, to imbibition.

—— YUNNAN ROSES.—A short time since we had occasion to give M. FRANCHET's descriptions of the species of Primula discovered by the Abbé DELAVAY in Yunnan. The Roses collected in the same province have been submitted to M. CRÉPIN, who in the *Journal of the Botanical Society of Belgium* mentions that although he has not found much novelty among the species yet he has discovered among them the wild type of Rosa Banksiæ provided (unlike the cultivated plant) with prickles, and with leaves of seven, not five leaflets. The disappearance of the spines in the cultivated plant is not remarkable, but the extra pair of leaflets in the wild form is more extraordinary.

—— ROYAL AQUARIUM, WESTMINSTER. — The Directors of the Royal Aquarium, Westminster, have under consideration a scheme for a series of four horticultural exhibitions, to take place during the spring and summer, viz., an exhibition of Hyacinths, Tulips, market plants, &c., and cut Daffodils, on March 30 and 31; a great artistic Rose exhibition, on June 25 and 26; a Strawberry exhibition and *fête*, on July 2 and 3; and a display of table decorations, bouquets, &c., on August 20 and 21. These exhibitions will be under the superintendence of Mr. R. DEAN, from whom schedules of prizes can be obtained.

—— INGA PULCHERRIMA.—The stamens constitute the chief feature of this plant as far as the flowers are concerned, and resemble clusters of small crimson brushes. They are of great length, and mimic in a remarkable manner many members of the Myrtle family, such as Metrosideros, Callistemon, Calothamnus, and others, whose ornamental value also resides in the stamens. The foliage is bipinnate, with numerous small closely arranged leaflets, and, on the whole, of a beautiful deep green colour, and exceedingly graceful. A small specimen is flowering in the Palm-house at Kew, near the south end door, and proves of great attraction to visitors. It is seldom that so elegant and graceful flowers and foliage are combined in the same plant, a sufficient reason for including it more frequently in stove collections. The Cæsalpinias, or a number of them, have finely divided foliage of a similar character, but will not flower until they attain a considerable size. The species was figured many years ago in PAXTON'S *Magazine of Botany*, 147.

—— BANANAS.—We are indebted to Mr. DIXON, of Cherkley Court, for some fruits of a Banana ripened in his stove and which are the finest we have seen, greatly excelling the miserable mawkish fruit imported into our markets. The fruits measured 7 inches in length by nearly as much in circumference, they were shortly stalked, four-sided, pointed, rich orange-yellow, with blotches of dark reddish-brown. We understand that the variety was obtained from Barbadoes.

—— THE NARCISSUS MEETING.—The Narcissus Committee of the Royal Horticultural Society will hold three meetings during the coming season, viz., on March 23, April 13, and April 27. The proceedings at each of these three meetings will be conducted as follows:—The committee will meet in or near the conservatory at 11 A.M., when a list of the specimens sent in for examination, and of questions for discussion will be presented. The committee will first determine what specimens and what questions it will take into consideration, and thereupon be adjourned in order that members of the committee may conveniently and deliberately examine the specimens. At 1.30 P.M., the committee will reassemble and proceed to the discussion of the specimens, and according to the list previously agreed upon. It is hoped that those interested in the Narcissus will send up to one or other of these meetings any new forms of Narcissus, or any specimens otherwise interesting, which they may possess. All such specimens should be sent in so as to arrive at South Kensington not later than the Monday preceding—that is, the day before the meeting—in order that they may recover from the journey before they are submitted to examination. They should be addressed "The Royal Horticultural Society, Narcissus Committee," and each specimen should bear a label (waterproof) with the sender's name, and some number or token by which it may be recognised, and be accompanied by a statement, sent by post or otherwise, of the inquiry which the sender desires to put to the committee, and of any facts which may guide the committee in their decisions. The committee will also be glad to receive communications or inquiries relating to the natural history and culture of Narcissus, also suggestions for investigations, in order that the work of the committee may be made as broad and useful as possible. Such communications should also be addressed "Royal Horticultural Society, for the Narcissus Committee."

—— A PLUMAGE LEAGUE.—A section of the Selborne Society has been instituted for the purpose of instituting a practical protest against the employment of humming-birds and other brilliantly feathered creatures as adornments for ladies' dresses and headgear. Such a measure has our full sympathy. To what an extent this fashion may be carried is illustrated by a case within our own knowledge, where a young lady (?) gave instructions to the gardener to shoot a blackbird in order to provide decoration for her dress. A fashion that can so pervert the instincts of a young English girl must be held in abhorrence by lovers of Nature. The plea of necessity cannot be alleged, as beautiful feathers can be obtained without slaughter of this kind. As "E. V. B." says, the only parallel exists in the savage, who ornaments himself with the scalps of his slain enemies.

—— SICK PAY AT KEW.—It is stated that the Lords of the Treasury have decided that those gardeners employed in the houses of the Royal Gardens at Kew shall receive sick pay for a period not exceeding three months, when attacked by illness certified by their medical attendant to be due to the nature of their employment. Outdoor workmen and labourers who have less than three years' service will not receive sick pay unless injured in the performance of their duty. This, we believe, is the same regulation as is in force in the case of workmen in the Parks. Men who have served from three to ten years get half-pay for a period not exceeding two months, and those whose service extends over three years get three-fourths of their working pay for two months when ill. The hardship of the rule as to young gardeners of less than three years' standing at Kew need not be pointed out. It is an important thing that the rule is relaxed in the case of men employed in the houses; but there is no reason that we know of why a similar privilege should not be accorded under proper conditions to all the *employés*.

—— THE MEDICINAL USES OF ORANGES.—Dr. BONAVIA sends us a long communication, which would be better fitted for the columns of a medical journal, on the medicinal value of the species of Citrus, and especially of the Lemon, in cases of debility and enlargement of the spleen after attacks of intermittent or malarial fever. For this purpose the Italian peasants make use of the freshly gathered Lemon. The good results are confirmed by English physicians in Rome and elsewhere. This leads Dr. BONAVIA to point out its importance in India, where the Lemon grows well in most places, and where an inexpensive febrifuge is so greatly needed. Dr. BONAVIA himself has tried it on a considerable scale in North-West India with very satisfactory results. For simple intermittent fever, says he, without any other complication, the decoction of Lemon and of the "Khatta" Orange is as good a febrifuge as quinine, and acts with rapidity even in tertian and quartan fevers. Dr. BONAVIA also speaks favourably of its power in reducing enlargement of the spleen. Dr. BONAVIA alludes to the subject here in reference to a paragraph in our columns, December 26, 1885, as to the depressed condition of the Lemon trade in Sicily, and suggests that instead of allowing the fruit to rot, chemists should endeavour to extract the active principle and turn it to account.

—— PUBLICATIONS RECEIVED.—*All about Blackberries*. By VICCARS COLLYER and A. W. CREWS. (J. FLEMING & Co., Leicester.)—*The Miniature Fruit Garden*. By T. F. RIVERS. (London: LONGMAN, GREEN & Co.)—*Handbook of Mosses*. By J. E. BAGNALL, A.L.S. (London: SWAN, SONNENSCHEIN, LE BAS & LOWREY, Paternoster Square.)—*The Tourist's Guide to the Flora of the Alps*. By Professor K. W. v. DALLA-TORRE. Translated and edited by A. W. BENNETT, M.A., F.L.S. (London: SWAN, SONNENSCHEIN & Co., Paternoster Square).

—— GARDENING APPOINTMENT. — Mr. H. CAWTE, of the Frame Ground, Kensington Gardens, has been appointed Gardener to Captain JEKYLL, Oakdene, Guilford.

BASING PARK,

THE seat of W. Nicholson, Esq., M.P., is situated about 8 miles from Alton, and the same distance from Petersfield. The massively built mansion occupies an excellent situation at an elevation of about 700 feet above the sea-level, is situated in a beautiful part of Hampshire, and commands most extensive views. The mansion itself is of Ionic design, and has been much improved by the present owner. It is approached from the Gosport and Petersfield Road, through handsome lodge entrances.

THE DRIVES, &C.

These are well planned, and extend for upwards of 1½ mile in a winding manner through the park, showing the beautiful undulations of the ground and fine timber to great advantage. The carriage-drives are well planted at the margins with Araucaria imbricata, Deodara Cedars, and other ornamental trees. The carriage-drive from the Gosport and Alton lodge to the Petersfield lodge is about 3 miles in length, and passes in its entire length through the beautiful tree-studded park. Adjoining the mansion, and communicating with it is a large and handsome conservatory, containing a rich and varied collection of well-grown plants; amongst them the following were more conspicuous:—Camellias and Azaleas, Tree Ferns, and plants with fine leaves; splendid seedling varieties of Tacsonias, profusely flowered, covered the walls and roof, and hung in well-ordered profusion above the other inmates of the house.

THE GARDENS.

Leaving the conservatory the flower garden is entered. This occupies the south and east sides of the mansion, the well kept lawns receding from the terraced portion near the house with a pleasingly diversified surface. On a level space at the south-west of the mansion is a geometrical garden, each component parterre being furnished with a fountain, and still further ornamented by vases, which in the season are filled with flowering plants. These flower parterres, three in number, are surrounded by groups of Rhododendrons and other evergreens, among which choice specimen plants are interspersed. On the lawns some remarkably fine specimens exist; an Araucaria imbricata is 41 feet high, the circuit of the branches being 80 feet, and girth of stem 4 feet 10 inches at some distance from the ground; Sequoia gigantea is 57 feet high, with branch circumference of nearly 100 feet; Abies Douglasii is 70 feet high, with a girth of 6 feet 6 inches at 4 feet from the ground; a Cupressus Lawsoniana measures in height 38 feet, and is 30 feet round; Cryptomeria Lobbii has a height of 36 feet, and a spread of branches of 95 feet, the girth 5 feet 6 inches at 4 feet from the ground; an Abies Nordmanniana of fine proportions is nearly 50 feet high.

On leaving the lawns the visitor arrives at the picturesque terrace walk, which, as seen in the illustration (fig. 52), passes the end of the orchard-house. Some remarkably perfect specimens of Portugal Laurels and Irish Yews are planted, with choice flowering shrubs alternating. The Rose garden and the ferneries form a most enjoyable retreat, not far from the principal lawns, and are so well arranged that they are hidden from all but the immediate locality, and yet there is no forcing of effect, good taste being displayed in the design. The orchard-house is large, and is erected against the south wall

of the kitchen garden. It is 300 feet long, with a width of 17 feet, and of proportionate height. A trellis runs the whole length in the centre of the house, on which are trained the best kinds of Peaches, Plums, Apricots, Pears, &c. This house is famous for large crops annually, and admirably shows what amount of success can be attained by the aid of this sort of protection. A rare example in the orchard-house was observed of Prunus dasycarpa, the black Apricot, very rarely seen in gardens. The fruit in this house colours well, as air can be admitted in abundance. Water is conveniently laid on by pipes and hose, so that much labour is dispensed with in syringing and supplying water to the roots of the trees.

Quitting the house, beds are passed in which, in their season, Carnations, Gladiolas, Deutzias, and Spiræas are grown in quantity. Violets are especial favourites, and occupy much space. Many varieties are grown, but Mr. Smythe finds that the Marie Louise variety is the most liked and the most trustworthy.

Kitchen Garden.

In the centre of a kitchen garden, and near the range of vineries, there is a special feature seen in an arched trellis-way covered with Pear trees. This pleasant walk is 130 yards long, and has, when the fruits hang thick, a picturesque and pleasant appearance, as was the case at the time of my visit. In this garden there is a large herbaceous border that divides the garden both lengthwise and across, which contains numbers of plants that flower at all seasons, and which are, therefore, of the utmost value. The fine ranges of glass, the vineries and forcing-houses, are entered from the kitchen garden.

Glasshouses.

The main range measures 212 feet in length, and is conveniently divided into seven compartments; one is an early Peach-house which at the time of my previous visits contained a good crop of handsome fruit. Mr. Smythe speaks highly of Princess Beatrice and Early Louise, which ripen in the order named, and are succeeded by Royal George.

Camellias in pots occupied the beds, than which healthier plants would not readily be found, and are worth a journey to see. The next division is planted with Hamburgh Vines, which are usually fruited in April; Lady Downe's, Gros Colmar, and Alnwick Seedling occupied the adjoining house and were a fine crop, some of the bunches being of 3 lb. to 5 lb. in weight. Another compartment contained Hamburghs only, very old Vines, but which carry marvellous crops every season; the bunches being not more than 1 foot apart, literally hanging all over the roof. It may be of interest to know that four houses have been built over these Vines at different times, which must, therefore, be of a great age. Another house is planted with Muscats, which usually carry crops that are splendid in bunch and berry.

The fruiting Pine stove contained chiefly Queens and Cayenne varieties, the picture of health, and the fruits in various stages of ripening. Mr. Smythe grows Amaryllis in this house; he does not rest them, but uses them as perpetual flowering plants.

Orchids occupy the back shelves of the Pine stove, and grow there luxuriantly; the following kinds were seen:—Calanthe Veitchii, C. vestita, C. lutea, and C. rosea. Dendrobiums, Cattleyas, Oncidiums, Zygopetalums, grow like weeds in this house.

The demand for cut flowers is a heavy one, so that the vineries are utilised for growing large quantities of the popular kinds of plants for the purpose. Other vineries contained examples of Foster's Seedling, which is well done, and Duke of Buccleuch.

Plant-houses.

The plant stove contains a quantity of Allamanda, Stephanotis, Clerodendron, and fine specimens of Pandanus Veitchii, Cocos Weddelliana, Ixoras, Ferns in variety, seedling Amaryllis of Mr. Smythe's raising, are amongst the more important plants, the latter having much diversity of colour, good form and substance. Eucharis amazonica was flowering splendidly. *Apropos* of this plant I may remark that Mr. Smythe has obtained a cross between Eucharis amazonica and E. Saundersii, a fine seed-pod being the result. It is likely to prove a valuable hybrid. A house is devoted entirely to the best kinds of winter flowering Pelargoniums—a useful addition to the resources of any garden where many winter flowers are wanted. The potting shed, comfortable bothy, and stokeholes are conveniently arranged, from which there is easy access to the vineries, forcing-houses, and main ranges of glass; in fact, the appointments generally are of the most complete kind.

The Evergreen Garden

is a peculiar feature of Basing Park; it is over 6 acres in extent, and of an intricate design. It is on the south side of the pleasure-grounds, being connected with them by a rustic bridge, which carries the walk over the approach to the mansion. In it is a varied collection of Coniferous plants, the walks being so arranged as to separate the various Conifers into sections according to their habitats, the whole densely planted with Laurels. *J. C.*



PRUNING.

Perhaps no stronger or more reliable proof could be given of the want of proper understanding about pruning, than the results which are produced, and may be witnessed daily. For example, one object of pruning is to reduce the size of the top of the tree, and alter its form, so as to bring it into harmony and proportion with the size of the stem or trunk. In order to this attainment, certain branches have to be cut off, or pruned more or less, as the subject to be operated upon suggests. The result of this operation in the case of a healthy tree is, that instead of diminishing the quantity of spray and branches, as intended, and also of reducing the size of the top and improving its form, the very opposite results are produced, for instead of the one branch which was pruned off, several are now produced in its stead. If only one or two branches at most are produced, they will grow so rapidly as soon to occupy the whole space the former branch did which was taken away; and if a still greater number are produced, the further result is that quite a profusion of spray is sent forth, alike abundant and sickly, which neither produces proper wood in a forest tree nor fruit in a fruit-bearing one.

If, on the other hand, instead of the pruned tree being a strong and healthy one, it is on the contrary sickly or delicate, the result of pruning in that case would be that the wound inflicted by the operation of pruning, would not readily, if at all, heal up, and thereby disease is frequently aggravated and decay accelerated, which frequently extends to the trunk and other parts of the tree, to its very serious detriment, and often ultimate destruction. Advocates of pruning say they also prune in order to preserve the balance of the tree, and make it grow straight. Now, want of space prevents me for the present from going fully into the arguments against this, which, however, may be so far met by saying we as much require bent and crooked trees as we do straight and handsome ones, and the former usually command higher prices in the market.

Again, it is said pruning is done to preserve a clean stem or trunk to a given height, and that without gainsaying is very desirable, but that object in a great measure is better attained by regulating the distance between the trees in the practice of thinning; and the branches, when they naturally die by necessary confinement should certainly be cut off close to the bark, which soon closes over the wounds, and leaves neither important mark nor blemish behind it.

That pruning where actually required does much good there can be no manner of doubt, but that the reasons generally assigned for pruning, and the objects aimed at in doing so, are false and delusive, is evident to a demonstration. The removal of large limbs from trees of advanced age is sometimes an absolute necessity, such as those overhanging roads, in arable fields, hedges, &c. This, however, is done without any thought or intention of benefiting the tree, but also too often without the consciousness that it is doing positive injury. Some trees, as the Oak, Spanish Chestnut, and Larch, which have very hard and durable heartwood, are much less injured by cutting off large boughs than others, such as the Beech, Birch, Ash, Sycamore, &c., which have it soft and liable to decay. In the former the new wood is formed and grows over the wound before serious decay sets in, but in the latter decay goes on so rapidly, that long before the wound is healed and covered over with the bark a cavity is formed of such size that healing is beyond all power, and the only matter left for consideration is, how best to prevent the total destruction of the tree. In such cases for the purpose of preventing rapid decay an application of Archangel tar is the best I know of.

Like many others I pruned much at an early period of my practice, and having had over a quarter of a century's experience of it I am now induced to prune comparatively little. The only cases where it really does good, or at least presumably more good than harm, is where the leader stem is making a wrong start, either from having a plurality of leaders or a spreading umbrella top, having been injured by game or otherwise; in all such or similar cases the knife should be used so as to obtain a leader. A forked stem at any height less than that desired for a proper trunk should be relieved of one of the branches, either by means of the knife, hand-saw, or pruning-chisel. Broken or decayed branches should of course be neatly and artistically cut off in such a manner that the act cannot be readily discovered.

In these directions let it be understood they apply only to true practical forestry as a subject of profit, and not to ornamental or fancy operations at all. The various subjects in the pleasure-grounds and pinetum are, and have a right to be, pruned and directed in growth in such a manner as to please the taste of those who are privileged to enjoy them. In matters of taste, neither principle nor rule of practice can be of any use, and therefore we leave it to those whose eye is to be pleased with the form, figure, and outline of the ornamental tree to say and direct how they wish such pruning executed. *C. Y. Michie, Cullen House, Banffshire.*

THE FERNERY.

GENERAL WORK.

It is at this season of the year that most Ferns require an extra amount of attention. If, previous to the plants starting into fresh growth, they can be gone through and carefully cleaned, it will save much trouble later on, besides which it will give the new fronds a better chance of perfect development. In the case of many of the Pteris or other dense growing Ferns, besides removing all decayed fronds, the older ones may also be thinned out. Another point of importance is, that insect pests should be thoroughly eradicated. Thrips and brown-scale are among the most troublesome insects in the fernery; green-fly will sometimes make its appearance in the spring time, but it seldom does much mischief; thrips, however, are very destructive if allowed to get established. Lomaria, Doryopteris, Pteris hastata, &c., are generally the first to suffer; these may be cleaned with a sponge, or the plants may be dipped, but this must be done before any young fronds begin to develope, and it is better to use insecticide of moderate strength, and repeat the operation two or three times. In dealing with scale it requires some care, and it will be necessary to go through the plants infested several times to effectually eradicate them; a rather stiff brush should be used, and the plants held over the insecticide, so that the scale may not be left about on the soil, or they will soon establish themselves on the plants again.

Potting, &c.

In almost all cases it is better not to disturb the roots of Ferns while the plants are in a dormant state. Young plants may be potted on at any season of the year as the case may require it; but with older plants the spring is the best time for potting. The best time will be after they are well started into fresh growth. In any case where the pots are not well filled with roots, and the soil appears to be sour, the greater portion should be shaken away from the roots, and the plants potted back into smaller pots; of course those treated in this way will require a little extra care to get them to make a fresh start; they should have a shady position and a moist atmosphere, but very little water should be given until the roots have taken hold of the new soil. In some cases where the plants do not require larger pots, and they are in a healthy condition, they may have the surface-soil removed, and a top-dressing of fresh soil. Ferns that are planted out may also be treated in the same way, but care should be taken to ascertain the con-

dition of the roots, and if dry a good watering should be given previous to top-dressing them, otherwise it will be difficult to wet the balls through, especially in the case of pot plants.

ADIANTUM CUNEATUM.

In most cases where plants have been used for giving a supply of cut fronds during the winter they will by this time be pretty well denuded of their foliage, and where such is the case water should be used very sparingly until the young fronds are well started into growth, for, if they get a little over-watered while they have little foliage to take up the water, the young fronds will start away weakly, and it will take much longer to establish good plants. After the plants are well started into fresh growth they may be re-potted at any time, and any of the plants that are getting too large may be divided; if this is done carefully, and the plants are not allowed to stand about and get withered during the operation, they will soon start away into growth again. Plants that are not divided may have a good portion of the old soil shaken away, and some of the straggling roots trimmed off, so that the plants may be kept within limited-sized pots.

It is pretty generally understood that fronds of a pale green or yellowish shade are the most desirable for cutting purposes, and it is not difficult to obtain these if the roots are restricted and the plants grown in an exposed position. Plants grown under these conditions require careful attention to prevent them suffering for want of water; but if the watering be properly attended to the sun must be very powerful to do any damage even to the most tender fronds, provided the plants have been subject to the same conditions from the commencement of their growth. Plants required for decorative purposes will also be more serviceable if grown under the same conditions, as they will withstand a dry atmosphere better than plants that have been grown in a more shady position. *H.*

AGRICULTURAL PRODUCE

STATISTICS FOR 1885.

THE report lately issued by the Agricultural Department shows that the aggregate results for *Wheat* in the year 1885 are altogether 77,587,666 bushels, as compared with 80,215,877 bushels in the preceding year; showing a decrease of 2,628,211 bushels, or 3.28 per cent. on the total produce; but there is an increase in the yield per acre of 1.35 bushels, or 4.51 per cent. The acreage under Wheat in Great Britain was 7.42 per cent. below that of 1884. The rate of yield for Wheat in 1885 was 2.51 bushels per acre above the estimated normal standard of production.

The *Barley* crop also, in accordance with anticipation, turns out, except for Scotland, to be above the standard average, which is exceeded by 1.09 bushel per acre. In Scotland the yield is very slightly below the standard average per acre. For Great Britain, in 1885 the produce was 79,251,258 bushels, and that of the previous year was 73,912,739 bushels, the average yield per acre exceeding that of 1884 by 1.03 bushel. The variations in yield have been remarkable, varying in one estimator's district from 20 to 50 bushels per acre. In some few localities the crop has suffered from drought; but in strong clay soils, where samples yield 58 lb. per bushel, it is frequently added that the grain is of high quality, and malts well.

With regard to *Oats* in Great Britain, the estimated average yield per acre has declined from that of 1884, which was 1.51 below the usual, whereas this present year's is 2.19 bushels per acre below the average, being only 36.85 bushels. The aggregate yield was 108,364,706 bushels, of which 33,407,127 were grown in Scotland, where the average yield per acre in 1885 was 31.93 bushels or 3.82 bushels below the normal standard. In some districts in Scotland, notably all Shetlandshire, the Oat crop was a total failure, and in other localities the yield was only three-fourths of the average. These considerations greatly influence the result for Great Britain. The total production in Great Britain for 1884 was 109,397,129 bushels.

Comparing the average rate of yield in 1885, as shown in the several counties in Great Britain the lowest average of Wheat is found to be 13.25 bushels per acre for the county of Sutherland, while the highest average rate was 39.48 bushels for that of Edinburgh.

As regards Barley the lowest was 11.17 bushels for the county of Shetland, the highest, 43.84 bushels per acre, for Linlithgowshire.

In Oats the variations range from 22.80 bushels as the average for Inverness-shire to 66.35 bushels per acre for Cambridgeshire.

The *Pulse* crops, as will have been anticipated, suffered from the continued dry weather, and in England and Wales except, in a few instances, the rate of yield is much below the average standard. In many districts both Peas and Beans were much blighted, attacked by aphides—large quantities of Peas here and there being returned as having little or no corn on the stems.

Among the *Root* crops, in which the unfavourable influence of the drought is specially observable, the average rate for Potatos in 1885 has been lower than the normal standard in England, Wales, and Scotland. Potatos are, however, almost invariably reported to be of excellent quality, and nearly free from disease, although somewhat small in a few districts.

For England and Wales together the rate of yield for Potatos is below the ordinary average by 0.24 of a ton per acre, while that of Scotland shows a diminution of 0.40 of a ton. In Great Britain the yield for 1885 is less than the ordinary average by 0.28 of a ton, and less than that of 1884 by 0.79 of a ton, and showing a gross produce of 3,198,504 tons against 3,743,203 in 1884, when, however, the acreage under this tuber was 16,000 more than in 1885.

With respect to root crops other than Potatos in 1885, that of Turnips and Swedes is much below the average. That crop and Mangel again present a nearly universal deficiency, particularly marked in many eastern counties.

The *Hop* crop, which has now been included in these returns, appears to have a diminution of about two-thirds of a hundredweight per acre in 1885 from the estimated ordinary average, the total produce being 509,170 cwt. It is stated that the crop is deficient in quality in some districts owing to damage done by high winds just before the produce was ready for picking. The Hop lice destroyed much in Worcestershire during the dry weather in August, though some growers saved their crops by washing the bines.

Comparing the crops in Great Britain in 1885 with the ordinary average yield per acre, the results show an increase in Wheat and Barley. A decrease is shown in Oats, Peas, Beans, Potatos, Turnips, Mangels, and Hops. The crop of hay was practically an average one.

BROAD BEANS.

IN the issue of your journal for January 30 we read a very interesting note signed "R. D.," about Longpod and other Broad Beans. What is said therein of the Seville Longpod Bean is quite correct; but it will, perhaps, be of interest to you to have the information completed. It was as early as 1855 that we procured a sample of that Bean for trial, and in 1856 we bought 1 cwt. of it for trials on a large scale. It was only in 1858 that we announced this variety for the first time in our French retail novelty list, and 1860 it was quoted for the first time in our English wholesale list, wherein it has ever since been offered. The Aquadulce Bean, which is not mentioned in the note referred to, is the original and better form of that variety. The Seville Bean is the same sort grown under less favourable conditions of soil, &c., for which reason its pods and seeds do not usually attain the same large size; but we always found it to be rather more productive. For exhibition purposes, therefore, the Aquadulce Bean should have the preference over the Seville Bean, while, where a large supply is the main object, the latter should be preferred. We have paid much attention to these fine strains of Broad Beans, and have had both varieties grown for us in Spain for a number of years, as outside of their native places they experience a very rapid degeneracy. Their sale in England had not been a large one up to ten or twelve years ago, but has been increasing since every year, and has now become quite important. *Vilmorin-Andrieux & Co., Paris.*

[We are indebted to the kindness of MM. Vilmorin-Andrieux & Co. for the opportunity of presenting our readers with the figures of these two fine varieties of Beans (figs. 53 and 54). ED.]

KUMAUN.

THE north-eastern portion of Kumaun includes the districts of Dárma and Byáns. In order to enter this part of Kumaun it is necessary either to cross over some high pass or to ascend by the Káli valley. The former journey can be accomplished during a limited time of the year only—that is, when there is a minimum amount of snow on the ground; whilst by following the latter route one is exposed for several days to great heat during any time of the year that such a journey is likely to be made. The route taken by us on this occasion obliged us to undergo to some extent the inconveniences of both extremes. This, however, was so far an advantage, as it enabled me to explore the tropical as well as the cold region vegetation of a botanically unexplored country.



FIG. 53.—SEVILLE LONGPOD BEAN: REDUCED TO ONE-THIRD: SEED REAL SIZE.

I left Naini Tál for Almora on August 9, breaking the journey at Khairna, a close steamy place at that time of the year. There had been a week's heavy rain, and the road was badly broken in several places. A good deal might be said about the vegetation all the way down from Naini Tál, and the changes from temperate to tropical forms. The most interesting plant I saw was Pellæa Calomelanos, one of the rarest of the Indian Ferns. I found it in one or two spots close to Khairna, growing on exposed rocks by the side of the road.

Almora, which I reached on the following day, is 18 miles from Khairna, and about 2000 feet higher. Transitions from tropical to temperate vegetation were observed similar to those already alluded to. The vegetation round about Almora is not nearly so luxuriant as it is at Naina Tál, there being no higher hills immediately connected with the plateau on which this hill station is situated.

From Almora I went to a place called Kháli. The climate both here and at Binsar is very suitable for the cultivation of English fruit trees, and Sir Henry Ramsay, who has for many years paid great attention to their cultivation in this province, has very extensive orchards of his own containing many excellent varieties of Apples and Pears. We remained at Kháli the night, and on the following morning started

for Bageswar on the Sarju River, descending through forests of Pinus longifolia to the level of tropical vegetation, and on the next day we reached Kapkot on the same river.

From Kapkot there is an ascent of over 2000 feet to Samá, where we encamped for the night. Above Samá the vegetation becomes more temperate in character, Oaks and Rhododendrons making their appearance, as well as Pieris ovalifolia and Symplocos cratægoides; of herbaceous plants Roscœa purpurea, Pedicularis carnosa, Satyrium nepalense, a species of Echinops, and two or three species of Anaphalis may be mentioned as characteristic. The beautiful little Violet-like Platystemma was in full flower on damp shady rocks, also Begonias, Didymocarpas, and Chirita bifolia. The trees were festooned with wild Vines, and their boughs thickly clothed with species of Polypodium and Davallia.

Passing over the ridge above Samá the road descends into the Rámganga valley. We encamped for the night near the village of Tejam, which is about 3000 feet above the sea. The close steamy air of the low Himalayan valleys during the rains induces a luxuriant growth of tall rank vegetation, and this adds very much to the fatigue of marching. From Tejam we had a hot trying march up another steamy valley; a steep ascent at the last, however, brought us to a cool and airy place called Gini, where we spent the night.

Beyond Gini the botany becomes much more interesting. Three ridges over 8000 feet had to be crossed. The road winds up through thick forests of Oak and other trees, the trunks of which were beautifully clothed with a variety of Ferns, mosses, and lichens. A few specimens of the rare and very handsome Palm, Chamærops Martiana, were seen at about 8000 feet, and a lovely creeping Bramble, Rubus nutans, hung down in masses from the rocks. After crossing over the third ridge the Gori valley is reached. This part of the valley is very wide, and the gently undulating ground is extensively cultivated. This accounts for the numerous villages known collectively as Munshiári.

From Páton to Sába the road becomes rougher, winding through forests and along steep slopes with frequent ascents and descents. The road now leaves the Gori and turns into the Rálam valley; about three miles further on is Sába, also called Sába Udiyár (cave), owing to an immense overhanging rock which shelters a very large space of ground, and on this occasion accommodated the whole of our camp.

This is the original locality for a very interesting little plant found many years ago by General R. Strachey, who with Mr. Winterbottom made very extensive and valuable collections of Kumaun plants. The peculiar habit of the plant, and the abnormal character of its floral structure, did not admit of its being placed for certainty in any known natural order.*

General Strachey thus describes his locality:—"On a wet rock near Sába Udiyár, in the Rálam valley." As it happened to be a wet day in the rainy season it was not so easy to distinguish what might be a permanently wet rock. However, after carefully examining every rock in the neighbourhood of the cave I suddenly came upon large patches of the plant, not on a rock, but on the ground amongst decayed branches of trees. The plant is an annual, not exceeding 3 inches in height. The elongated caulicle serves as a stem to support the spathulate leaves, which are arranged in close verticils, and in the axils of these leaves the minute greenish-coloured flowers are borne, succeeded by small elongated fruits, covered, except the apex, with hooked hairs. Being an annual, the plants grow close together, forming a flat surface of brilliant green.

About a mile or two further up the valley several other patches of the Circeaster were found growing between boulders on either side of the path; many other interesting plants were gathered on the way up to Rálam, including an undescribed and very beautiful species of Primula found by Mr. Reid, after whom I have much pleasure in naming it.*

During the four days we were at Rálam a large number of rare and interesting plants were collected at elevations between 11,000 and 16,000 feet. The rainfall is excessive here, and the vegetation consequently very rich.

There was little or no cultivation in the valley, though the terraces about the hamlet of Rálam showed that at one time there must have been a considerable area under crops. The only inhabitants in the hamlet were old men and women and children, the able-bodied men being away trading in Tibet. The hamlet did not appear to be in a very prosperous condition. The people are an offshoot of the Bhutias of Dhárma, though separated from that tract by a high snowy range; and they are distinct from, and somewhat looked down upon by, the Hinduised Bhutias of Milam. The Rálam valley in its upper part being wide and open and covered with good pasturage, is resorted to by people from the Milam valley; and when we were in the valley there were several sets of shepherds, in different parts, with large flocks of ewes and she-goats. At that season of the year there is little game in the valley; and the brown bear, once common in it, has now almost disappeared.

The coolies arrived from Milam on the evening of the 26th, and we decided to make a start on the 28th. After an early breakfast we started with a party of seventy, including a guide who had been over the pass before. We went up the valley to the glacier, and along the glacier for some distance until we reached the opposite side of the valley. A stiffish climb brought us at length to a level piece of beautiful ground elevated about 14,000 feet above the sea. The vegetation here is, of course, strictly alpine, the ground on which the tents were pitched being thickly studded with species of Corydalis, Saxifraga, Potentilla, Polygonum, and many other plants characteristic of alpine elevations. *Dr. Duthie, Saharanpur.*

(*To be continued.*)



Fig. 54.—Aquadulce longpod bean: one-third nat. size: seed actual size. (see p. 276.)

* Circeaster agrestis, Maxim., is the botanical name, and the Kumaun plant undoubtedly belongs to the same species. The genus Circeaster has been placed by Mr. Bentham in the natural order Chloranthaceæ; its true affinities, however, are still doubtful.

* *Primula Reidii*, n. sp.—Leaves ovate, lanceolate, clothed with silky pubescence; scape erect, firm, 2 to 4 inches long; flowers two to three, in umbels, large, drooping; calyx broad, snowy-white inside, teeth triangular acute; corolla about 1 inch across, cream-coloured, its tube exceeding the calyx, and mealy-white at the base; capsule globose.

Home Correspondence.

Garden Allotments, Labourers' Allotments, and Gardens.—The opinion of your correspondent, "D. T. F." (p. 200) is quite in accordance with my own experience in Surrey, and Sussex especially, as well as in Kent and in many other counties. "The spade and secure possession" will do all that Arthur Young declared, and although the agricultural labourers are not legally secure, they hold their cottages and their employment practically as long as they desire. Cottage gardening at the present time is greatly encouraged by the local horticultural societies. Small clubs and shows of cottage garden produce, which, if one may judge from the very numerous announcements in local papers in any county one may may visit during early autumn, must exist in almost every parish. But the natural love of gardening among all the best labourers, and the ready means they possess of fertilising the land by aid of pigs, road-scrapings, and other gatherings, and the magic of the spade, have long since occasioned the skilful cultivation of cottage gardens. In examining such gardens, I have often thought "What skill, experience, and, I might say, genius, are here displayed." Sometimes during long walks—and Mr. Ruskin is right, walking is the best way of travelling—I have wished I had written down the clever arrangement of the crops in some gardens, half-a-mile back perhaps, but I found there was no need to retrace my steps, for the next village afforded gardens or allotments in the field outside, just as well done by. It is sometimes stated that labourers do not care for plots of land. I can only say that I never knew a labourer who refused a suitable plot of suitable land in a convenient situation at a proper rent; nor is he too particular, for what could a piece of wretched clay, or, still worse, gravel, avail him if it lay too far from his pigstye, or too far distant from his home and place of rest after a long day's work? No doubt he could be easily overburdened in regard to the area of the land he

hires. A certain school of reformers is desirous of manufacturing a largely increased number of small farmers; and this idea of restoring the customs of the past, and of thus invigorating modern life, is extremely interesting; but the mending of new bottles with old leather has not always been accomplished with success, and I fear that the age of small farming has passed. But my subject is allotments—that is, garden allotments, and not small farms. A very interesting history attaches to this subject, and it is one so creditable to landowners and farmers that the true story of allotments should, I think, be retold. Briefly, then, it was only in the last century that the necessity for allotments had arisen, and in 1796 good old George III. became the patron of a society formed with the object of "increasing the comforts of the poor." According to the reports of this society allotments were strongly recommended and encouraged by it. In 1830 the "Labourers' Friend Society" was formed specially to promote allotments, and was admirably conducted with very practical results, as the report of 1835 may serve beyond all others to prove. Having reason to be "curious" on this subject, since the Central Farmers' Club have asked me to open a discussion on "Allotments and Cow Plots" some months hence, I have found by the reports of former discussions how warm an interest its members have taken in the provision of allotments for labourers. A capital discussion took place in 1858, and from this we learn that in the various neighbourhoods of the speakers the allotments in many were numbered by hundreds. I believe that within ten years of the passing of the new Poor Law Act most labourers whose gardens were too small, as they generally are in villages, were provided with allotments. Still, there is no doubt that some neighbourhoods are still unprovided with sufficient garden ground for labourers, and for that reason the "Landowners' Association for the Extension of the Allotment System" has just been formed, the President being the Duke of Westminster, and the Hon. Secretary the Earl of Onslow. The Society has already collected a mass of statistics and returns from all parts of the country, showing the number of allotments on a large area owned chiefly by the great proprietors. I think the deficiencies are generally on the lesser estates. Object 3 of the Association is to urge upon landowners the desirability of extending the system "till every resident agricultural labourer of good character has, should he desire it, an allotment of land." It is easy to legislate, and "local bodies" might be empowered to buy land for allotments at the cost of the ratepayers; but the labourers will probably obtain what they desire from the voluntary action of landowners. Lord Onslow has moved in the House of Lords for a return of the number of garden allotments exceeding one-eighth of an acre, the last return of the kind having been made more than a dozen years ago. Those who wish for further information should consult a pamphlet to be issued shortly by the Association. *H. Evershed.*

Lælia anceps.—Referring to the remarks of Mr. Blandford in the *Gardeners' Chronicle*, on p. 212, about Lælia anceps, it was certainly stated at the meeting that the plant in question was sent up to illustrate the pruning system; in fact, it was so stated in the reports. My remarks on this point have not been understood correctly. I could not tell when any back bulbs had been removed; they might have been cut off the day before, but any Orchid grower could tell that some of the back bulbs were five or six years old; the pot was full of bulbs. When Orchid pruning was first advocated, those who did so advised the cutting away of all the back bulbs except those formed in the previous year. Personally I have had nothing to say about Orchid pruning for or against. Evidently the term is a very elastic one, and not yet fully understood. *J. Douglas.*

Eucharis amazonica Planted Out.—Mr. Ward seems at a loss to understand that I should condemn his system without giving it a trial, and gives his brother's and father's testimony as to its superiority over the potting system. I thought I gave my reasons for objecting and condemning it sufficiently clear at p. 181. It is quite true that I never gave a trial to planting them out in stoves, but I may state that for a great number of years I grew them in pots in stoves all the year round. They were in excellent condition, but only flowered once a year, and it is only of late years that I started the system of giving them rest, which I find so necessary to make them produce flowers so often during the year. Now I have only a limited space in the stove that I can devote to the growing of Eucharises, and I have nearly six dozen of them in 12-inch and in larger pots about the place, in vineries and pits—wherever there is sufficient heat to make them retain foliage. I bring into the stove eighteen or so of them at a time, and consequently nearly always produce blooms. Will Mr. Ward make me believe that should I plant them out permanently in the space I have for them in the stove that they will produce more freely and more abundantly than in the way I have adopted? Certainly not. It would be necessary in order to make them to do the same to have his stove in sections, and turn off nearly all the heat from one part while he was forcing the other, for withholding water in a hot stove would be no rest, indeed doing so in borders such as he describes close to hot-water pipes would certainly cause them to lose foliage in a short time. So for continuous blooming, which very few will find fault with now-a-days, I will still say Stick to the potting system. *A. Macdonald, The Gardens, Royal Asylum, Cheadle.*

National Auricula Society.—I am sorry Mr. Douglas does not reply to the point I raised, viz., How can the schedule be amended so as to attract the Northern Auricula growers to the Southern show? His only suggestion is that the Northern Auricula growers subscribe additional funds for their own prizes, and he states, virtually, that two of the large home subscribers will withdraw their subscriptions if the schedule is altered so as to be open to Northern competition, as proposed by me! Mr. Douglas makes several wrong statements, which I must correct. He says the Southern schedule was not in the hands of members at the time of the Northern meeting, and that I contrived to produce a wrong impression thereby. The new schedule was in my hands when I made my statement, as I had a copy forwarded to me the day after the London meeting. The information, therefore, that I submitted was perfectly correct. He next says the carrying out of the resolution was left to Mr. Horner and Mr. Barlow. This was not so. The resolution was passed unanimously, and was as follows:—"Carried: That the Secretary express to the Southern Section, and in the report of this meeting, that the opinion of the Northern meeting is that a reduction of prizes in the smaller classes only, in the Southern schedule, is calculated to discourage distant growers." This very reasonable resolution was forwarded to Mr. Douglas, and it was my duty, as chairman of the meeting, to use all the influence I could to help forward the matter. I simply put my suggestions in such form as, in my opinion, met the case. The matter was not left altogther in other hands, as stated by Mr. Douglas. I suppose, from what was said at the luncheon after the Auricula show at South Kensington last year that it was considered very desirable to attract more of the true amateur growers from the North. My remarks were made, then, in furtherance of this object, and with the same purpose I brought the matter forward at the Manchester meeting, and in your columns. If Mr. Douglas persists in his present action, no progress will be made, and there will be very few exhibitors from a distance at the next show—that is all. *W. Brockbank, Brockhurst, Didsbury.*

Peat Moss as a Manure.—Having had some experience in using peat as a manure after it had been employed as bedding for horses, the particulars respecting it may be of service to "W. M. B." (See "Enquiry," p. 216.) For three seasons it took the place of straw in the hunters' stables here, and we made use of it during that time for various kitchen garden crops, such as Peas, Beans, Onions, those belonging to the Brassica family, &c. For Peas, Beans, and such crops, for which the ground was trenched in the autumn, it was used very liberally, and was incorporated with the soil as the work proceeded, and of course lost its rankness before the crops were sown; in other cases it was dug in and the ground cropped while it was in a raw state, and the results were in each case similar to those derived from the use of straw manure. We had misgivings as to its value as a fertiliser, and closely observed its effects, and the Celery crop was the only one that appeared to suffer from its use; but as we used it for one year for this crop, and then under rather unfavourable circumstances, I should not be justified in attributing the deficiency wholly to the manure. The Potato was the only vegetable that we considered was improved from its use. I ought to mention our soil is a retentive clay, naturally cold and wet, upon which the peat wrought some improvement in the way of lightening and causing it to break more freely when subsequently worked. A light soil would not be improved in the same way by its use. We discontinued it here in the stables because straw was preferred on account of cleanliness. *Thos. Coomber.*

Primula floribunda.—The Floral Committee did wisely in awarding a First-class Certificate of Merit at their meeting on the 9th inst. It is so easily managed, and such a persistent bloomer, that it can be grown by almost any one having a knowledge of plants. It seeds somewhat freely; the seeds soon germinate; plants six months and less from seed will flower; and there appears to be an inexhaustible fertility of blossom, as new flower-stems are constantly being produced. It is a plant that will bear a good amount of exposure, but must not be regarded as hardy. Excessive moisture is perhaps likely to harm it, but at this season of the year it should be kept fairly dry, and in an atmosphere just warm enough to keep frost at bay. *R. D.*

Hybridisation of Wheat with Rye.—In the *Farmer* of February 8 there is a notice of some interesting experiments in hybridisation of Wheat with the pollen of common Rye, in which the product appears to be a true hybrid. It struck me you would like to give the readers of the *Gardeners' Chronicle* an opportunity of reading an account of what has been done in this matter. The *Farmer* appears to have quoted Charles Barnard in *Century* magazine The *Farmer* is published at 291, Strand. *William Marshall.*

Acacia cyclopis.—There is perhaps sufficient interest in the seeds of this plant to call for my remark, that the long coiled-up funicle is not probably for the purpose of hanging the seed out of the pod to dry and mature (see *Gardeners' Chronicle*, Feb. 13, p. 209). The seed did hang out of the pod by the funicle in Mr. Boscawen's hand, but this, I believe, was purely accidental, because I never saw it happen on the plant. The funicle does not uncoil, so far as I have seen, but falls with the seed to the ground, where the one with the other looks like a pheasant's eye, according to a remark made to me. This attractiveness seems rather for the purpose of inviting birds, and of course the bright and unusual colour would not be required in a contrivance for merely hanging out the seed. Proof is of course difficult, but in either case the circumstance is one of considerable interest. *R. Irwin Lynch.*

Potato Apples.—We have been so accustomed to regard the seed-pods of the Potato plant (except for the production of seed) as superfluities that one reads of the proposal to utilise these seed-apples for food with wonder if with no other feeling. If it be proposed to devote these products to some purpose of utility, we shall doubtless have to secure, first, a race of Solanum tuberosum, which shall prove false to their appellation by omitting to produce tubers at all, but simply fruits. Not but there are some kinds, which, in ordinarily favourable seasons, fruit abundantly—so much so, in fact, that this wealth of produce becomes to the cultivator a nuisance. I can mention Woodstock Kidney, Radstock Beauty, and Grampian as heavy fruiters even when producing good root crops. I picked last year a cluster of fruit from Radstock Beauty, and found twenty seed-apples. On the whole I think Woodstock Kidney is the most abundantly fruiting of all kinds, and its remarkable fertility is all the more incomprehensible because its even more robust brother, International Kidney, never sets a bloom, and the parents, Dawe's Matchless and another, were neither of them free seeders. Whilst these kinds show, however, that some will produce large crops of seed-balls and tubers; at the same time, it is equally obvious that were seed-balls to become an article of food or of commerce, we must allow the plants to produce these alone if they are to be of profitable size and bulk. No doubt most readers regard the proposal so to utilise these seed-fruits of the Potato plant as an amusing illustration of the odd suggestions which now and then are offered for the edification of humanity. If there are any latent properties in these seed-balls that

if properly developed or converted, can render them valuable, the sooner these properties are known the better. Specially to Potato growers would such information just now be acceptable, as the remarkable prolificacy of modern Potatos allied to the apparent decadence of the disease has rendered the crop very abundant and cheap, so that the demand is limited. Should the Peronospora, however, revisit us in a destructive form, I fear the seed-apple would become a prey to it even before the subterranean tuber, which, if too susceptible, is at least somewhat protected from assault. *A. D.*

An Orchid Society.—I notice in your impression of the 13th that a whole column is devoted to the National Auricula Society, and on another page an account of the Royal Horticultural Society dinner, at which both Mr. Harvey and Sir Trevor Lawrence asserted that an Orchid society was not necessary. Is an Auricula society necessary, except to promote the culture and love of Auriculas, any more than an Orchid society? Why should they stimulate the culture of Auriculas and we be satisfied with an Orchid Conference once a century and a few prizes for Orchids thrown in anywhere at provincial shows? The fact is, the large English amateurs are afraid of damaging the Royal Horticultural Society, already in a shaky condition, if they have undue prominence given to the culture of Orchids; but this is all nonsense: as well say the various special clubs for dogs have damaged the Kennel Club Show, which is this year the largest ever held. On the contrary, these special societies do a world of good by consolidating and intensifying the interest taken in their special subjects, and by helping with prizes the funds of flower shows all over the country. Scotland is riddled with Pansy societies, and what is the result? An impetus given to the cultivation of these flowers which meets the eye at every turn. Any village up North could beat the Royal Horticultural Society at Pansies. That is the necessity for an Orchid Society—to draw together the Orchid talent, and by various means to increase our knowledge of these wonderful plants, which is still in its infancy. I earnestly hope that others, abler and more fitted for the task, will not let this movement fall to the ground, and by their actions show that they rate Orchids a little higher than either Auriculas or Pansies. *Walter T. Ogilvy.*

Tomatos.—From fifteen to twenty years ago Tomatos were only to be met with in large gardens, and those principally where French cooks reigned in the kitchen. Now, however, so amazingly has the acquired taste for Tomatos spread, that they are grown in almost every garden in the country, as well as by many cottagers; and this can scarcely be wondered at, seeing that the plant is of such easy culture, and its fruit wholesome and nutritious. So highly is the Tomato appreciated by some, that a supply of it is required all the year round; and to meet this, small span-roofed or lean-to houses—the latter, if facing due south, being the more suitable for winter work—have been specially erected. In such houses the plants, growing in narrow, shallow, and well-drained borders of sandy loam over the front hot-water pipes, and trained thinly to the wire trellis fixed within 10 or 12 inches of the glass, showed the best results when managed skilfully. Assuming that these plants are intended to yield a supply of Tomatos during the winter and early spring months, they should have set a nice crop of fruit by the middle of September, so as to supplement the supply previously obtained from plants trained somewhat thinly against sunny walls out-of-doors. I find from experience that Tomatos yield better results when they are not allowed too much scope for root-action. The necessary amount of nutriment in the shape of weak liquid manure, with an occasional surface-dressing of Beeson's manure, can easily be applied at the roots at the proper time, but if large borders be allowed the plants make a too luxuriant growth, with the result of an indifferent "set" of fruits. Experience goes to show that good returns can be obtained from plants grown in 14-inch pots, if kept well supplied with water at the roots when necessary, and treated as recommended below. In gardens in which there is no special accommodation provided for forcing Tomatos—and they are not few—but where still a supply is expected from the middle or end of April until they can be gathered out-of-doors in July, plants raised from seed sown towards the end of October, or early in November, and properly treated during the interval, should be ready for shifting into 14-inch pots by the end of the present month. These should be amply drained, so that there need be no fear that the pots would get waterlogged. The plants should be thoroughly moist at the roots when shifted into the larger pots, a condition which should be observed at each of their preceding shifts, after which they will not require water at the roots until these have pushed into the new soil. This should consist of three parts of rich fibrous loam and one of lime rubble and horse-droppings. The shoots, as already stated, should be trained thinly to a wire trellis under the roof, or if this method of training is not convenient the plants should be trained singly to stiff sticks between 5 and 6 feet long, one to each plant, and placed in the best position that can be given them near the glass. All lateral growths should be pinched back to within one joint of the main stem. When the plants are in flower a drier and more airy atmosphere should be maintained, and with a view to securing a good set the individual flowers should be touched over about mid-day with a camel's-hair brush to distribute the pollen. It will be advisable to withhold stimulants from the roots until the plants have set their fruit, when they may have liberal supplies, and if large fruit be aimed at the clusters should be thinned out, leaving of course the best shaped and most even-sized fruits. The latter should be kept well exposed to the influence of the sun by keeping the shoots and leaves well thinned and stopped. From the time the plants have set their fruit until the latter is ripe a night temperature of from 55° to 60° should be aimed at, and by day 65° to 70°, running it up to 85° with sun-heat, and plenty of atmospheric moisture at closing time. Hathaway's Excelsior and Stamfordian are two of the best varieties for indoor cultivation; and where plants have not been raised in the autumn as indicated above, a pinch of seed of these varieties should be sown at once; and in order to prevent the plants being subjected to a check in the process of being repotted in the seedling state it is better to sow a few seeds in the centre of 3-inch pots, afterwards thinning them out to one plant in each pot. They should be grown in a warm pit or house near the glass, to prevent them making a weakly growth, and be shifted into larger pots as they require more room, and before they become root-bound, until they are finally shifted into the fruiting pots as indicated above. *H. W. Ward.*

The Darlington Wall Cover.—In your last issue, at p. 243, you state with regard to the above, that the roof is not movable, but ample ventilation seems to be secured by the front sashes sliding over one another. This is not exactly the case, as the top glass, which forms the roof, can be easily taken out of the framework, and two men could easily remove it from a length of 100 feet in half an hour. All the glass in the structure can be either put in or taken out without the use of a single tool, and yet it is perfectly secure and tight. You will agree that it is important that the trees are exposed to the rain during a considerable portion of the year, and this has been provided for in these covers. *R. W.*

Charles Turner Memorial. — This important testimony in remembrance of the most accomplished florist of modern times might be quickly and honourably completed if every man who believes in good florists' work would contribute a little. On hearing from me that we wanted a little more money, Mr. Shirley Hibberd made a collection in his own way, and has for the result sent me a cheque for £10, which I have passed on to the treasurer. Half-a-dozen such workers would carry the cause to a successful issue. *James Douglas, Great Gearies.*

Root Proliferation in Platyceriums.—In perusing the article on the above subject in your issue of February 13, I find the writer asks for information from any one who has noticed root-proliferation in Ferns. As it may interest some of your readers, I have pleasure in bringing forward the following. For years we have taken advantage of the proliferation on Fern roots as a means of increasing our stock, of not only Platyceriums, but of Asplenium planicaule (fragrans), which is exceedingly proliferous, producing large numbers of plants from root-bulbs; also Hypolepis Bergiana, a species in which this phenomenon is seen; Adiantum amabile (Moorei), A. diaphanum (setulosum). We have now examples of this root-proliferation, not only in the case of the Asplenium, Hypolepis, the Adiantums named, and Platycerium alcicorne, but also in Platycerium alcicorne majus, P. Willinckii, P. biforme, and P. stemaria. Herewith we send you a plant of Adiantum diaphanum, in which you will perceive nearly all the roots are studded with small tuberous excrescences, which are really buds, and in two or three instances you will noticed they have developed and produced plants. *W. Birkenhead, Sale, February* 18. [The roots of the Fern sent were covered with small round nodosities, which would doubtless produce plants. ED]

The Corsican Pine at Kew.—With regard to the notice of this tree in the *Gardeners' Chronicle* of February 20, there was an inadvertent mistake with regard to the date. It should read, "In 1825 the tree was 20 feet high, and on Mr. Salisbury visiting the garden in that year he informed me that he in 1814 brought it from the South of Europe with him—then a small plant—and that he presented it to Mr. Aiton (then Director of the Royal Gardens), the spot where it now stands being within the precincts of the original pinetum planted by the first Aiton." *J. Smith, ex-Curator.*

The Narcissus Committee. — It has been arranged that the Narcissus Committee appointed by the Royal Horticultural Society will hold three meetings at South Kensington, in March and April, viz, on March 23, April 13, and April 27. It may therefore be time to say a few words to the public about the work of this committee. I must, however, first say that I am myself responsible for the opinions I express, and do not compromise my colleagues by anything I say. The appointment of the committee seems to have been made with two objects:—1st, to reduce to order and consistency the very confusing nomenclature of the garden varieties of Narcissus; and 2d, to collect materials for improving our knowledge of the natural history of this perplexing genus. As regards the first, a great deal of laborious work has been got through. The garden varieties of Narcissus are so many, and their number increases so rapidly year by year, that it is hardly possible to keep up a register of all of them; all that the committee can do in this way is to protest against names objectionable from their length or their form, and to suggest improvements: they hope that when names have been authorised by them, gardeners will, as far as is possible, adopt and keep to these names, so as to avoid confusion; still when there are 200 or 300 names already, it is perhaps too much to expect that no confusion will arise. With respect to the horticultural merits of the plants named, it belongs to another—the Floral Committee of the Royal Horticultural Society—to pass judgment on them when the flowers are in due course presented at their meetings. It is the second of the objects mentioned above to which I now wish particularly to draw public attention. It is the desire of the committee to obtain information about, and specimens of, any uncommon varieties of Narcissus, especially such as are not known to be of garden origin. Any remarkable variety found wild or naturalised in any part of the United Kingdom, or growing in any garden, and, above all, kinds which have been brought from abroad, would be very welcome at any of these meetings. The specimens sent, however, should be accompanied or preceded by a letter containing precise information about their history as far as it is known to the sender. I am well aware that there is too good reason why the exact spot in which a rare or curious flower is to be found should not be made public; but we ask only to know the county or the country, if foreign—whether the Pyrenees, or Central Spain, or the Maritime Alps, or Greece, and so on. But it is most desirable that the information should be as far as possible authentic. The committee are not intending to attempt any botanical rearrangement of the genus Narcissus. Their present aim is to have as many forms as possible brought under their notice, to record them, and keep them in sight, that information may be stored for future use. It is of course likely that many varieties will be sent which are already well known to some of the members of the committee; but they will do their best to notice all that are of interest. It is, therefore, hoped that all who have any forms of Narcissus not generally known, will send flowers of them, with the stalks tied in damp moss, and wrapped round with

waxed or oiled paper, that wet may not come in contact with the flowers, and packed so as to be secure from rattling inside the box. They should be addressed to the Narcissus Committee, Royal Horticultural Society, South Kensington, S.W. The sender's name should always be conspicuous either inside or outside the package. I have frequently received specimens of flowers without any clue to the sender, and have, perhaps, been thought very negligent for not acknowledging them. The flowers should arrive a day before the meetings of the committee, to give time for them to recover in water the effects of their journey; and a letter addressed to the Secretary, Royal Horticultural Society, South Kensigton, S.W., had better precede the flowers a day or two, giving their history. *C. Wolley Dod. Edge Hall, Malpas.*

Pontederia crassipes.—I have read in the *Gardeners' Chronicle* of January 23 about the rarity of Pontederia crassipes flowering; this is due to the plant being treated as a floating plant alone, but if planted in yellow loam it will form its elongated footstalks and flower freely. I treat it as a pot plant, planting a clump of the inflated footstalks, which are freely produced in autumn, about this time, in the centre of a 32-pot, leaving sufficient margin for 1 inch or a little more of water between the loam and the rim of the pot, and water overhead every day. Thus treated they grow fast and soon begin producing their elongated stalks, and by June or July throw up their fine spikes of flowers, which are very fine and showy. I never retain the old flowered pieces when planting, as the clumps produced at the end of the runners which overhang the pots make fine plants. They even flower here in the open, though the spikes are not so fine as under glass. Pistia stratiotes present larger specimens, and flower and seed better than as floating plants when treated with loam for them to root in. The Pontederia is well worth a place in a house where fine flowers are desired—the secret of flowering them, as you see, being such a simple thing. *Chev. J. Monteiro, Portugal.*

Reports of Societies.

MANCHESTER HORTICULTURAL IMPROVEMENT.

PLANT REPRODUCTION.—The ordinary meeting of the Manchester Horticultural Improvement Society was held on Thursday evening, February 18, in the Memorial Hall, Albert Square, when a paper was read by Mr. T. W. Stansfield, of Sale, on "Modes of Reproduction in some of the Lower Orders of Plants," Mr. Bruce Findlay, President of the Society, in the chair.

The Chairman said they all knew there was but one natural mode of reproduction or propagation of plants, that is by seeds or spores; all other modes, as striking from cuttings, budding, grafting, or division, are artificial; yet the only way of perpetuating many kinds is by adopting the artificial mode of increase, and but for this mode many valuable varieties of plants would be lost to us, inasmuch as they do not come true from seed. The class of plants to be brought under their notice that night are replete with interest and wonder, and notwithstanding the little attention they commonly excite, they are important objects of study, inasmuch as they pave the way to the higher developments of vegetable life. However much Art may, for convenience, reduce the productions of Nature to isolated groups, and divide them into separate sections, and although relatively distinguishable, they are not absolutely separable, for, however diverse the distant members may appear, they are all intimately connected and essential to each other, and form in their respective subordinations but integral parts of one harmonious whole.

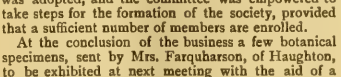
Mr. Stansfield said he assumed that all present were more or less acquainted with that peculiar substance called protoplasm, which Professor Huxley has described as the physical basis of life. Wherever there is life there is protoplasm, and the simplest forms of life are little bits of protoplasm. All forms of reproduction consist in the splitting up of protoplasm. By means of the black board he demonstrated the modes of reproduction by this splitting up of protoplasm into two or more pieces. In the next place he described the reproduction which takes place by the mixture of one portion of protoplasm with another, which he called the sexual process. He then explained the process of reproduction in Ferns by means of this intermingling of protoplasm.

The Chairman, at the close of the lecture, said Mr. Stansfield had treated his subject in a scientific manner, and perhaps some of the gardeners present were asking themselves, *Cui bono?*—What's the good of it all? Franklin once put a counter question, What's the use of a baby? for no one will venture to inquire what is the use of a man. Ferns have spores little differing from those of Mushrooms and of mosses, and, like them, they are most prolific, for a single frond has been computed to produce upwards of a million spores. So minute are the reproductive spores of Ferns that their existence was for a long time doubted, and before microscopes exposed them to our sight this belief was common, and many references are made to it in our older writers. Shakespeare, in allusion to this then popular opinion, observes, "We have the receipt of Fern seed; we walk invisible." However, if the lecture only awakened in them a desire to examine into the structure and existence of these plants they would not have met in vain. *Manchester City Press.*

NORTH OF SCOTLAND HORTICULTURAL.

THIS Society held its monthly meeting on the evening of the 19th inst., in the Christian Institute, Aberdeen, under the chairmanship of Mr. Peter Harper. Papers were read on "The Propagation of Roses," sent by Mr. Innes, gardener, Blairgowrie; and "The Construction of Fruit and Vegetable Gardens," sent by Mr. Forrest, gardener to the Earl of Aberdeen, Haddo House. Discussion followed both papers, and votes of thanks were passed to the contributors of them. Mr. Henderson, Cults, communicated the report of the committee appointed at a former meeting to consider the advisability of forming a society on the lines of the United Horticultural Benefit and Provident Society, London. The committee recommended that a society should be formed, and that the rules of the United Society, some of which were read and explained to the meeting by Mr. Henderson, should be adopted in full. On the motion of Mr. Robson (of Messrs. Smith & Son's), the committee's report was adopted, and the committee was empowered to take steps for the formation of the society, provided that a sufficient number of members are enrolled.

At the conclusion of the business a few botanical specimens, sent by Mrs. Farquharson, of Haughton, to be exhibited at next meeting with the aid of a microscope, for the purpose of illustrating a paper by that lady on "Fern Spores," were submitted to a preliminary inspection, superintended by Mr. Roy, secretary of the Aberdeen Natural History Society.



Law Notes.

CUTTING DOWN GARDENIAS WITH PRESUMED MALICIOUS INTENT.—A case of some importance to nurserymen, gardeners, and others was recently heard before Mr. Hannay, one of the magistrates of the Worship Street Police Court. Mr. Robert Coombs, of Holly Lodge, Stamford Hill, one of the partners in the firm of Clarke, Nicholls & Coombs, wholesale confectioners, of Hackney Wick, charged his late gardener, George Rogers, with having maliciously destroyed a large number of plants of Gardenias and Ficus elastica by cutting them down just at a time when they were most valuable for purposes of sale. The plaintiff some time since erected a number of plant-houses in the rear of his residence at Stamford Hill, for the purpose of growing plants and cut flowers for market. About the middle of January last the prosecutor had in his possession a large number of Gardenias, estimated at 1800, many of them young plants in large 60-pots, dwarf and bushy, just coming into bloom; and a number of these in 32-pots, 2 feet or so in height, and also well furnished with buds; and in addition some large specimen plants of Ficus elastica, 6 feet or so in height, with young growths. Mr. Coombs deposed that finding the business of growing plants for market did not pay, he determined to sell the Gardenias, and advertised the same in various gardening papers. Becoming dissatisfied with his gardener, George Rogers, the defendant, he gave him notice to leave, and after having done so it was averred that Rogers had cut down almost close to the pots a very large number of the Gardenias that were just coming into flower, thus destroying their value for present sale purposes, and also cut away the leading shoots of Ficus elastica. Plaintiff set forth that he had not given the defendant any instructions to do this; moreover, that he had distinctly told him he should sell off the plants, and he charged the defendant with having cut them down with a malicious intent, and for the purpose of depreciating their value. The branches cut away from the plants were thrown on to a rubbish-heap, and were not in any way used for propagating purposes.

The defence set up was that the Gardenias were foul through being affected with mealy-bug; that they were cut down for the purpose of rejuvenating them; and that the shoots of the Ficus were cut off for the purpose of making cuttings; and further, that it was the proper time of the year to do this, and also to cut down Gardenias.

The section of the Act under which the case was tried sets forth that the malicious act must be with the intent to destroy: but witnesses for the prosecution admitted that the plants were not actually destroyed by being cut down: but simply materially depreciated for present purposes of sale. The magistrate at this point stopped the case, ruling there was no proof of the defendant's intention to destroy the plants; but he was willing to rehear the case under another section of the Act, when in all probability the case would be sent for trial. The defendant was allowed £6 as costs.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 24, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 32 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
Feb.	In.	In.	°	°	°	°	°	°			In.
18	29.97	+0.16	38.0	31.6	6.4	34.4	— 4.8	32.3	92	E.N.E.; N.N.E.	0.00
19	29.94	+0.13	34.7	31.0	3.7	32.2	— 6.6	28.1	83	E.	0.00
20	30.01	+0.20	36.0	30.8	5.2	33.3	— 5.6	30.1	88	N.; E.N.E.	0.00
21	30.05	+0.25	38.0	28.8	9.2	33.5	— 5.5	28.2	81	N.W.; N.N.E.	0.02
22	30.22	+0.41	38.6	26.2	12.4	32.9	— 6.2	26.3	77	N.; N.N.E.	0.00
23	30.10	+0.29	34.5	28 5	6.0	31.3	— 7.9	27.0	83	E.N.E.	0.02
24	29.97	+0.16	36.3	23.4	12.9	30.4	— 8.9	23.0	73	N.E.	0.02
Mean	30.04	+0.23	36 6	28.6	8.0	32.6	— 6.5	27.7	82	E.N.E.	0.02

Feb. 18.—Dull day.
— 19.—Dull.
— 20.—Dull.
— 21.—Fine and bright till 1 P.M., overcast afterwards.
— 22.—Fog in early morning, bright sunshine at times.
— 23.—Slight fall of snow in early morning, dull cold day, fine night.
— 24.—Very fine bright morning, dull afternoon.

LONDON: *Atmospheric Pressure.*—During the week ending February 20, the reading of the barometer at the level of the sea decreased from 29.90 inches at the beginning of the week to 29 80 inches by 9 A.M. on the 14th, increased to 30.03 inches by 9 A.M. on the 15th, decreased to 29.90 inches by 5 P.M. on the 16th, increased to 30.20 inches by 1 P.M. on the 18th, decreased to 30.10 inches by 5 P.M. on the 19th, and was 30.20 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.04 inches, being 0.30 inch lower than last week, and 0.05 inch higher than the average of the week.

Temperature.—The highest temperature in the shade in the week was 43°, on the 14th; on the 16th the highest temperature was 34°.3. The mean of the seven high day temperatures was 37°.4.

The lowest temperature was 30°.8 on the 20th; on the 14th the lowest was 36°. The mean of the seven low night temperatures was 32°.3.

The greatest range of temperature in one day was 7°, on the 14th; the smallest, on the 16th, was 2°.3. The mean of the seven readings was 5°.1.

The mean temperatures were, on the 14th, 39°.8;

on the 15th, 37°.4; on the 16th, 33°; on the 17th, 33°; on the 18th, 34°.4; on the 19th, 32°.2; and on the 20th, 33°.3; and these were all below their averages (excepting the 14th, which was 1° above) by 1°.3, 5°.7, 5°.7, 4°.8, 6°.6, and 5°.6 respectively.

The mean temperature of the week was 34°.7; being 3° higher than last week, and 4°.1 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 48°.5, on the 14th. The mean of the seven readings was 40°.8.

The lowest reading of a minimum thermometer placed on grass was 29°, on the 20th. The mean of the seven readings was 32°.1.

Rain.—Rain fell on two days, to the amount of 0°.08 inch.

ENGLAND: *Temperature.*—During the week ending February 20, the highest temperatures were 50° at Truro, 49° at Nottingham, 48°.2 at Plymouth; the highest at Newcastle was 41°, at Sunderland 42°, at Liverpool 42°.1. The general mean was 45°.4.

The lowest temperatures were 22°.3 at Nottingham, 23° at Newcastle, 24° at Cambridge and Wolverhampton; the lowest at Brighton was 32°, at Preston 31°, at Blackheath 30°.8. The general mean was 27°.2.

The greatest ranges were 26°.7 at Nottingham, 23°.5 at Wolverhampton, 22° at Truro; the least ranges were 11°.9 at Liverpool, 12°.2 at Blackheath, 15° at Sunderland. The general mean was 18°.2.

The mean of the seven high day temperatures was highest at Truro, 44°.1, at Plymouth 42°.7, at Preston 42°.6; and was lowest at Cambridge, 36°.8, at Blackheath 37°.7, and at Bristol 37°.6. The general mean was 39°.5.

The mean of the seven low night temperatures was highest at Truro, 34°.9, at Plymouth 30°.9, at Brighton, 33°.8; and was lowest at Wolverhampton, 29°.2, at Sheffield 30°.3, at Cambridge 31°. The general mean was 32°.1.

The mean daily range was greatest at Preston, 9°.7, at Wolverhampton 9°.3, at Truro 9°.2; and was least at Blackheath, 5°.1, at Brighton 5°.3, at Sunderland 5°.6. The general mean was 7°.4.

The mean temperature was highest at Truro, 39°, at Plymouth 37°.9, at Preston 37°.4; and was lowest at Wolverhampton, 33°.4, at Cambridge 33°.5, at Sheffield 33°.9. The general mean was 35°.4.

Rain.—The largest fall was 0.38 inch at Newcastle, 0.36 inch at Sunderland, 0.33 inch at Bristol; the smallest falls were 0.01 inch at Sheffield, 0.03 inch at Truro, 0.08 inch at Blackheath. The general mean fall was 0.18 inch.

SCOTLAND: *Temperature.*—During the week ending February 20, the highest temperature was 48°, at Perth; at Edinburgh the highest was 43°. The general mean was 45°.4.

The lowest temperature in the week was 20°, at Perth; at Paisley the lowest temperature was 29°.3. The general mean was 26°.3.

The mean temperature was highest at Greenock and Paisley, 35°.8; and lowest at Edinburgh, 34°.2. The general mean was 35°.1.

Rain.—The largest fall was 0.79 inch, at Edinburgh; the smallest fall was 0.29 inch, at Glasgow and Greenock. The general mean fall was 0.52 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, February 22, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been gloomy or dull in nearly all parts of the kingdom, with much haze or fog. Slight showers of cold rain, sleet, and snow have been general over Great Britain, and in the South of Ireland some heavy falls of rain were experienced towards the end of the period.

The *Temperature* has been below the mean in all districts, the deficit ranging from 3° in "Scotland, N.," and over Ireland, to 6° in "England, N.E.," and "England, N.W.," and to 7° or 8° in all the other English districts. The highest of the maxima, which in most places were registered either on the 20th or 21st, varied between 51° in Ireland, 49° in "England, S.W.," and 40° in "England, N.E." Over the greater part of England the daily maxima were generally very low, the thermometer only rising to a few degrees above freezing point. The lowest of the minima, which were recorded on different days in the various districts, ranged from 20° in "England, N.E.," to 27° in "Scotland, W.," and 34° in the "Channel Islands."

The *rainfall* has been slightly in excess of the mean in "Scotland, E.," but less elsewhere. Over eastern, central, and southern England the fall has been scarcely appreciable.

Bright sunshine shows a decided increase in "Scotland, N.," but a considerable decrease in all other districts. The percentage of the possible amount of duration in "Scotland, N.," was 43, whence it decreased to 21 in "Ireland, N.," and to between 1 and 10 at the English stations.

Depressions Observed.—During the whole of this period pressure was highest over Scandinavia, and lowest over the Bay of Biscay and the South of France; the only depression which appeared over our islands was a very small and shallow one, which was shown over Scotland and the North of England at the end of the week. Moderate to light winds from the erstward were most prevalent on our coasts, but over Ireland and Scotland a moderate southerly wind was experienced from the 19th to the 21st.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

A GOOD ASPARAGUS: *A. Woodward.* Connover's Colossal.

ASPARAGUS BEDS: *Young Subscriber.* Trench and manure the beds heavily with farmyard manure, digging it well into the soil; the trenching should be three spades deep if possible. You can then plant in April or May one or two year old plants in rows 2½ feet apart, and letting each plant be 3 feet from its neighbour in the line. Beds of three rows can be made, or you may plant in rows wide apart and put other crops between the rows as you like. At the end of the year you can elevate the beds or lines 2 inches at a time by throwing up the soil out of the alleys over them, which must be done annually, owing to the gradual elevation of the roots of the Asparagus.

BROMUS SCHRADERI: *E. H.* We believe this is perennial in all climates suitable to it. Here it is apt to be spring tender. Mr. Martin J. Sutton, in his recently published book, *Permanent and Temporary Pastures*, says it is "not strictly perennial," nevertheless he strongly advocates its culture for temporary pasture.

CORRECTIONS: MR. PHILBRICK'S ORCHIDS.—In last week's number, p. 235, for P. citratum read Angræcum citratum.—In correction of some slight errors into which our correspondent was led in the account of Messrs. J. Carter & Co.'s nursery last week, p. 245, we are requested to state that Chrysanthemum George Glenny was introduced in 1872, not 1882; and instead of Golden Queen of England, 1884, it should read Golden Empress of India, 1874.

EUCHARIS MITE: *J. K. P. & Sons.* Yes, plenty; burn the affected bulbs.

FERN FOUND AMONGST ORCHIDS: *Sir C. S.* Nothochlæna hypoleuca.

INSECTS: *J. P.* It is one of the great family of weevils. They are all destructive to vegetation in some way, and should be caught. The insects feed at night, and are caught in great numbers by shaking them from plants, shrubs, and fruit bushes, on a white sheet spread underneath. The insects can be killed in the day time by watering under stones and other lurking places with diluted carbolic acid and paraffin, and the maggots killed in the soil by dressings of lime and soot.

MUSHROOMS: *T. C.* An extraordinary sample, for size and quality.

NAMES OF PLANTS: *G. H.* Dendrobium speciosum Hilli. See *Gardeners' Chronicle*, vol. vii., p. 112.—*T. Brewster.* We cannot name plants from the leaves only. 1 and 2 are in that condition; 3, Begonia heracleifolia nigricans; 4, Humata (Davallia) Tyermanni; 5, Pteris longifolia; 6, a very bad specimen, probably Lomaria gibba.—*A. W. Adlam.* 1, Anemone Fannini, Harv.; 2, Pelargonium flabellifolium, Harv.; 3, Gomphocarpus albens, Dene.; 4, Rauwolfia natalensis, Sond.—*G. B.* 2, Gomezi (Rodriguezia Barkeri); 1 and 3 we have failed to identify, but will try again and give names next week if determined.—Cœlogyne flaccida (*single Orchid flower sent, name of sender mislaid*).—*J. B. D.* Oncidium species, not enough material to detetmine which.—*A. B. H.* The Orchids are Cœlogyne flaccida, Dendrobium Falconeri; greenhouse shrub, Eriostemon pulchellum.—*W. Scott.* 1, Correa brilliantissima; 2, Rodriguezia species; 3, Correa cardinalis; 4, Artemisia species.

NANNAU: *T. L.* If you would send the photographs we could then decide.

ODONTOGLOSSUM PULCHELLUM: *A. O.* The term sky-blue was perhaps rather too indefinite, the colour being not pure white, but white with a blueish tinge, as seen in watered milk.

ORCHID IMPORTING CO-OPERATIVE SOCIETY: *D.* We do not think this would work. We have received no other letter than your own on the subject, from which we infer that others share our opinion. The trade will, no doubt, do the work better than any co-operative association could do, and the balance of advantage, it seems to us, is on the side of the present system.

PRIZE MONEY: *C. F.* We should suppose that were a letter sent to the secretary of the association it would be the right course for you to take.

ROSES: *Young Subscriber.* It is not proper to graft on to Manetti Roses in the open air; what you must do is to bud the root-stock below the ground any time from July to September. Grafting Roses takes place in heat in early winger.

ROYAL HORTICULTURAL SOCIETY.—We are informed that the omission of Mr. Dick's name, which has caused some surprise in many quarters, was purely accidental. The Council highly value Mr. Dick's long services, and have lately given substantial proof of their appreciation. The retiring secretary, Major Mason, warmly eulogised Mr. Dick, and the auditors expressed publicly their sense of the manner in which his duties were performed.

WINE FROM ORANGES: *W. J.* Try Messrs. Burgoyne, Peter Boyd & Co., Importers of Australian wines, 50, Old Broad Street, E.C.

WOODLICE IN TOMATO-HOUSE AND WORMS IN THE SOIL: *W. Day.* These insects hide in the crevices between the soil of the beds and the walls. If you were to go suddenly into the house with a lantern and a watering-pot full of boiling water, you could kill myriads by simply pouring the water into the crevices. If this plan of extirpation be carried out—say three times—at intervals, during successive nights, the mature insects will be got rid of; the young broods then must be watched for and destroyed. Traps of flower-saucers, tightly filled with hay and inverted, are useful for catching woodlice, as they run readily under these on the approach of light. These pans should be emptied daily into a vessel of hot water or brine. The worms may be brought to the surface and collected by watering the borders with a mild solution of fresh lime in tepid water.

CATALOGUES RECEIVED.

JAMES CARTER & Co., High Holborn, London—Farmers' Handbook.

I. DICKSON & SONS, Edinburgh, N.B. — Agricultural Seeds.

WEBB & SONS, Wordsley, Stourbridge—Farm Seeds.

E. P. DIXON, Hull—Farm Seeds.

S. W. SKEAGRAVE, Sheffield—Vegetable and Flower Seeds.

VILMORIN-ANDRIEUX & Co., Paris—Seeds, Trees and Shrubs, and Greenhouse Plants

J. C. VAUGHAN, Chicago—Seeds, Bulbs, and Tools.

O. H. ALEXANDER, Charlotte, Vermont—Fruits and Vegetables, Corn, &c.

J. A. BRUCE & Co., Hamilton, Ontario—Seeds.

KETTEN BROTHERS, Luxembourg—Spring Catalogue of New Roses.

COMMUNICATIONS RECEIVED: Dr. Bonavia.—E. J. B.—D. T. F.—F. A. B.—Dr. Ritzema Bos. Wageningen, Holland.—J. C. S.—Dr. Soraucr, Proskau.—E. V. B.—Owen Thomas.—Bruce Findlay.—C. P.—C. W. D.—F. W. B.—P. I. Ingram.—N. E. B.—A. Rawson, next week.—Pope.—C. M. O.—W. C. Andaatje.—W. C.—J. F.—H. W. W.—G. H. R.—T. B.—W. H. Chadwick.—K. D.—B.—A. H.

Markets.

COVENT GARDEN, February 25.

BUSINESS remains the same as in last report. House goods are still in good demand. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	1 0	3 0	Lemons, per case	8 0	10 0
— Canadian, barrl.	10 0	14 0	Pine-apples, Eng., lb.	1 0	..
Grapes, per lb.	.. 2	6 5 0	— St. Michael, each	2 6	8 0
Kent Cobs, 100 lb.	.. 30	0 ..			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mushrooms, punnet	1 0	1 6
Asparagus, Eng., 100	10 0	..	Mustard and Cress, do.	0 4	..
— French, bundle	18 0	25 0	Onions, per bushel	4 0	..
Beans, Kidney, lb.	2 0	..	Parsley, dozen bunch	2 0	3 0
Beet, red, per dozen	1 0	2 0	Parsnips, per dozen	1 0	..
Broccoli Sprts., bush.	9 0	..	Potatos, per cwt	.. 4 0	5 0
Capsicums, per doz.	0 6	..	,, kidney, per cwt	4 0	5 0
Carrots, per bunch	0 6	..	Salsafy, per bundle	0 9	..
Cauliflowers, per doz.	2 0	3 0	Savoys, per dozen	.. 2 0	..
Celeriac, per root	0 3	..	Scorzonera, p. bundle	1 0	..
Celery, per bundle	1 6	2 0	Seakale, punnet	.. 2 6	..
Coleworts, doz. bunch	4 0	6 0	Shallots, per pound	0 3	0 0
Cucumbers, each	1 0	1 6	Spinach, per bushel	4 0	6 0
Endive, per dozen	1 0	2 0	Sprouts, per pound	0 6	..
Herbs, per bunch	0 2	..	Sprue Asparagus, per bundle	1 0	..
Leeks, per bunch	0 0	..	Tomatos, per lb.	1 6	2 6
Lettuce, per dozen	1 0	1 6	Turnips, bunch	.. 0 6	..
Mint, green, bunch	1 6	..			

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.
Aralia Sieboldi, doz.	9 0–18 0
Arbor vitæ (golden), per dozen ..	6 0–18 0
— (common) dozen	6 0–12 0
Arum Lilies, dozen..	9 0–12 0
Azaleas, per doz.	24 0–42 0
Begonias, per dozen	6 0–12 0
Bouvardias, doz	12 0–18 0
Cinerarias, per doz.	10 0–12 0
Cyclamen, 12 pots	12 0–24 0
Cyperus, per dozen.	4 0–12 0
Daffodils, per dozen	9 0–12 0
Dracæna terminalis, per dozen ..	30 0–60 0
— viridis, per doz.	12 0–24 0
Ericas, various, doz.	12 0–24 0
Euonymus, in var., per dozen ..	6 0–18 0
Evergreens, in var., per dozen ..	6 0–24 0
Ficus elastica, each..	1 6– 7 0
Ferns, in variety, per dozen ..	4 0–18 0
Foliage Plants, various, each ..	2 0–10 0
Genistas, per dozen	0 0–15 0
Hyacinths, per doz.	6 0– 9 0
Lilies in clumps, or pots, per dozen.	18 0–30 0
Marguerite Daisy, per dozen ..	8 0–12 0
Myrtles, per dozen.	6 0–12 0
Palms in var., each	2 6–21 0
Pelargoniums, scarlet, per dozen	6 0– 9 0
Primulas, single, 12 pots ..	4 0– 6 0
Solanums, per dozen.	8 0–12 0
Spiræa, per dozen	12 0–15 0
Tulips, 12 pots	6 0– 9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.
Acacia (Mimosa), Fr., per bunch ..	1 0– 1 6
Arum Lilies, 12 blms.	4 0– 8 0
Azaleas, 12 sprays..	0 6– 1 0
Bouvardias, per bun.	0 6– 1 0
Camellias, 12 blms..	2 0– 4 0
Carnations, 12 blms.	1 0– 2 0
Chrysanth., 12 blms.	2 0– 4 0
— 12 bunches ..	9 0–18 0
Cyclamens, doz. blms.	0 4– 0 6
Daffodils, per bunch	1 0– 2 0
Epiphyllums, 12 blms.	0 6– 1 0
Eucharis, per dozen	4 0– 6 0
Gardenias, 12 blooms	12 0–24 0
Hyacinths, Rom., 12 sprays ..	0 9– 1 6
— red, 12 blooms ..	1 0– 2 0
Lilac, French, bunch	2 0– 7 0
Lily-of-the-Valley, 12 sprays ..	0 9– 1 6
Marguerites, 12 bun.	4 0– 8 0
Mignonnette, 12 bun.	4 0– 9 0
Pelargoniums, per 12 trusses ..	1 0– 1 6
— scarlet, 12 trusses	9 0– 1 0
Primulas, double, per bunch ..	1 0– 1 6
— single, per bunch	0 4– 0 6
Roses (indoor), doz.	3 0– 9 0
— Tea, French, doz.	2 0– 2 6
— red, French, doz.	2 0– 4 0
Snowdrops, 12 bun.	1 6– 3 0
Tropæolums, 12 bun.	2 0– 3 0
Tuberoses, 12 blms..	2 0– 3 0
Tulips, doz. blooms	0 9– 1 0
Violets, 12 bunches	1 0– 1 6
— Czar, Fr., bunch	1 6– 2 6
— Parme, French, per bunch..	4 0– 6 0

SEEDS.

LONDON, *Feb.* 24.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, report that the attendance on the seed market to-day was poor. Red Clover seed meets with more favour. The continued heavy export to the United States has greatly relieved our markets both here and on the Continent. There is no variation in the value of white Clover, Trefoil, or Alsike. The trade in Italian and perennial Rye-grassses is not very brisk; rates continue steady. Spring Tares experience a good sale at full currencies. Hemp and Canary seed continue in meagre request. For blue Peas there is rather more inquiry; the same is the case with Haricot Beans. The prolonged cold weather stimulates the demand. There is nothing fresh to note with regard to quotations for feeding Linseed.

FRUITS AND VEGETABLES.

COLUMBIA (East London): *Feb.* 24. — Fair supplies of fruit and vegetables; trade brisk, prices good. Quotations:—Apples, 3*s.* to 6*s.* per sieve; Savoys, 5*s.* to 10*s.* per tally; Cauliflowers, 8*s.* to 12*s.* do.; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve; Sprouting Broccoli, 3*s.* to 3*s.* 6*d.* do.; Brussels Sprouts, 3*s.* to 4*s.* do.; bunch Greens, 3*s.* to 4*s.* per dozen bunches; do. Turnips, 2*s.* 6*d.* to 3*s.* do.; do. Carrots, 1*s.* 6*d.* to 2*s.* 6*d.* do.: do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Celery, 6*s.* to 12*s.* per dozen bundles; Onions, 3*s.* to 6*s.* per cwt.; Carrots, 20*s.* to 40*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 27*s.* 6*d.* to 30*s.* do.; Mangels, 19*s.* to 29*s.* do.

STRATFORD: *Feb.* 23.—There was a good supply of produce, and a fair trade at the following prices:—Savoys, 5*s.* to 9*s.* per tally; bunch Greens, 3*s.* to 3*s.* 6*d.* per dozen; Sprouts, 4*s.* to 5*s.* per sieve; do., 2*s.* 6*d.* to 3*s.* per half sieve; Mangels, 20*s.* to 21*s.* per ton; Swedes, 22*s.* to 25*s.* do.; Turnips, 55*s.* to 70*s.* do.; Onions, 100*s.* to 120*s.* do.; Carrots, cattle feeding, 25*s.* to 30*s.* do.; do. household, 30*s.* to 35*s.* do.; Apples, 3*s.* to 3*s.* 6*d.* per basket; Celery, 8*s.* 6*d.* to 12*s.* per dozen bundles; Horseradish, 6*s.* per bunch; Parsnips, 6*d.* to 1*s.* per score; Beetroot, 3*s.* to 4*s.* per sieve.

POTATOS.

BOROUGH AND SPITALFIELDS: *Feb.* 23.—There were fair supplies and a quiet trade, at the following quotations:—Regents, 60*s.* to 90*s.*; Magnum Bonums, 50*s.* to 90*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *Feb.* 24.—Trade fair for good samples. Quotations:—Champions, 45*s.* to 55*s.*; Victorias, 55*s.* to 65*s.*; Regents, 55*s.* to 70*s.*; and Magnums, 50*s.* to 75*s.* per ton.

STRATFORD: *Feb.* 23.—Quotations:—Magnums, 50*s.* to 70*s.*; Regents, 50*s.* to 75*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 1042 bags Hamburg, 155 bags 97 baskets Boulogne, and 88 cases from Malta.

HAY.

CUMBERLAND (Regent's Park): *Feb.* 23.—The supply, which was large, was more than equal to the demand, and a dull trade. Quotations:—Clover, best, 90*s.* to 100*s.*; second, 70*s.* to 90*s.*; hay, best, 75*s.* to 85*s.*; seconds, 65*s.* to 70*s.*; and straw, 28*s.* to 35*s.* per load.

STRATFORD: *Feb.* 23.—Hay, 70*s.* to 80*s.*; Clover, 75*s.* to 100*s.*; and straw, 30*s.* to 35*s.* per load.

Government Stock.—Consols closed on Monday, Tuesday, Wednesday, and Thursday at 101⅛ to 101⅜ for both delivery and the account.

Forest Trees, &c.

MUNRO BROTHERS, Inverness, N.B., offer very fine, well-grown:—LARCH, 9 to 18 inches, 1½ to 2 ft., 2 to 3 ft., 3 to 4 ft. FIR, Scotch, 2-yr. 1-yr. transplantee; 2-yr. 2-yr., and 6 to 12 in., and 9 to 18 in. PINE, Black Austrian, 6 to 12 in., 9 to 18 in., 15 to 20 in. SPRUCE, 6 to 9 inches, 9 to 12 inches, 12 to 18 inches, 1½ to 2 feet. With all other Trees and Shrubs. Prices (moderate) on application.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

4*d.* per bushel; 100 for 25*s.*; truck (loose, about 2 tons), 40*s.*; 4-bushel bags, 4*d.* each.

LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks 25*s.*; sacks, 4*d.* each.

BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; sacks, 4*d.* each.

COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* per half ton, 26*s.* per ton in 2-bushel bags, 4*d.* each.

YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1*s.* per bushel.

SPHAGNUM MOSS, 8*s.* 6*d.* per sack.

MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—**H. G. SMYTH**, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

COWAN'S VINE and PLANT MANURE. —This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18*s.*; ½-cwt., 9*s.* 6*d.*; ¼-cwt., 5*s.*; ⅛ cwt., 3*s.*; tins containing 7 lb., 2*s.* 6*d.*; 2½ lb., 1*s.*

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool,

Can also be had from all Nurserymen and Seedsmen.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

Peat—Peat—Peat.

FOR Rhododendrons and common purposes. For Stove and Greenhouse Plants, Heaths, Ferns, &c. For Orchids (specially selected fibrous), in sacks or barrels.

Fresh SPHAGNUM, very superior LEAF MOULD, LOAM, Fine and Coarse SILVER SAND.

Trade liberally dealt with. Prices on application to GATERELL AND SON, Wholesale Peat Merchants, Ringwood, Hants

12-oz. Sample Packets, free by post, 12 Stamps.

FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, finest quality for Orchids, Stove Plants, &c., 4*s.* 6*d.* per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton per Truck. Sample Bag, 5*s.*; 5 Bags, 22*s.* 6*d.*; 10 Bags, 45*s.* Bags included Fresh SPHAGNUM, 10*s.* 6*d.* per Bag. SILVER SAND, Coarse or Fine, 5*s.* per Truck of 4 Tons. WALKER AND CO., Farnborough Station, Hants.

GENUINE GARDEN REQUISITES,

as supplied to the Royal Gardens.

FRESH COCOA-NUT FIBRE REFUSE, 4-bushel Bags, 1*s.* each; 30 for 25*s.*—bags included; 2-ton Truck, free on Rail, 25*s.* BEST BROWN FIBROUS KENT PEAT, 5*s.* per Sack; 5 for 22*s.* 6*d.*; 10 for 35*s.*; 20 for 60*s.* BEST BLACK FIBROUS PEAT, 4*s.* 6*d.* per Sack; 5 for 20*s.*; 10 for 30*s.* COARSE BEDFORD SAND, 1*s.* 6*d.* per Bushel; 14*s.* per ¼ Ton; 25*s.* per Ton. SPECIALITÉ TOBACCO PAPER, 10*d.* per lb.; 28 lb., 21*s.*; cwt., 70*s.* FINEST TOBACCO CLOTH, 8*d.* per lb.; 28 lb. for 18*s.* LEAF-MOULD, 5*s.* per Sack. PEAT MOULD, 4*s.* per Sack. YELLOW FIBROUS LOAM, 3*s.* per Sack. CHARCOAL, 2*s.* 6*d.* per Bushel; Sacks, 4*d.* each. BONES, GUANO, SPHAGNUM, &c. LIST Free. Special Prices to the Trade for Cash.

W. HERBERT & CO., Hop Exchange Warehouses, Southwark Street, S.E. (near London Bridge).

GARDEN REQUISITES.

TWO PRIZE MEDALS.

Quality, THE BEST in the Market. (All sacks included.)
PEAT, best brown fibrous .. 4*s.* 6*d.*, per sack; 5 sacks for 20*s.*
PEAT, best black fibrous .. 3*s.* 6*d.* ,, 5 sacks for 15*s.*
PEAT, extra selected Orchid 5*s.* 6*d.* ,, 5 sacks for 25*s.*
LOAM, best yellow fibrous .. } 1*s.* per bush., sacks included).
PREPARED COMPOST, best }
LEAF MOULD, best only .. }
PEAT MOULD, ,,
SILVER SAND, coarse, 1*s.* 3*d.* per bush., 12*s.* half ton, 22*s.* ton
RAFFIA FIBRE, best only .. .. .. 1*s.* per lb
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 12*s.*
TOBACCO PAPER ,, (Spécialité) 8*d.* lb., 28 lb. 18
MUSHROOM SPAWN, finest Milltrack .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each; 10 sacks, 9*s.*; 15 sacks, 13*s.*; 20 sacks, 17*s.*; 30 sacks, 25*s.*; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

CHUBB, ROUND & CO.,

WEST FERRY ROAD, MILWALL, LONDON, E.

HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite.

BENJAMIN FIELD, F.R.H.S. (Son-in-law and Successor to J. Kennard), Swan Place, Old Kent Road, London, S.E. Established 1854.

FIR TREE OIL INSECTICIDE (Soluble in Water)

Effectually clears all **Insects** and **Parasites** from the Roots or Foliage of Trees and Plants. Kills all Vegetable Grubs, Turnip Fly, &c. Cures Mildew and Blight. Clears Grapes from Mealy Bug, &c., and makes a good Winter Dressing. Of all Seedsmen and Chemists, 1*s.* 6*d.*, 2*s.* 6*d.*, and 4*s.* 6*d.* a bottle, per post 3*d.* extra. Per gallon, 12*s.* 6*d.*, or less in larger quantities.

"Pamphlet," "Fir Tree Oil, and its Application," sent free to any address, by the Manufacturer,

E. GRIFFITHS HUGHES, Manchester.

Wholesale from HOOPER & CO.; CORRY, SOPER, FOWLER & CO.; C. E. OSMAN & CO., and all the London Seed Merchants and Wholesale Patent Medicine Houses.

J. JENSEN & CO.'S NORWEGIAN FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash. Per Cent.		Herring and Potash. Per Cent.
7·0	Ammonia	8·30
20·0	Phosphates	9·0
15·0	Potash	15·0
10·0	Magnesia	10·0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are £10 per Ton (bags included) for the **COD**, and £9 for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.

IN TINS.—2 lb. for 1*s.*; *and*

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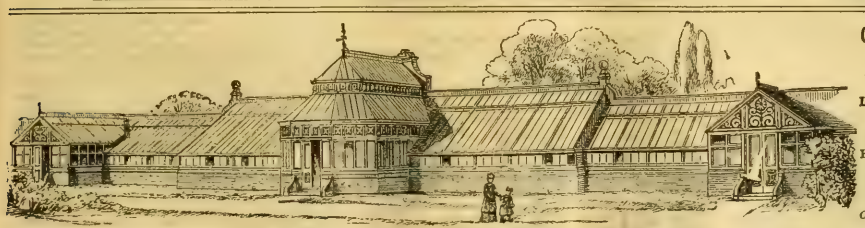
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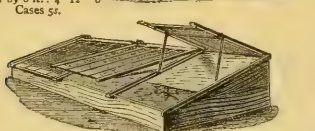
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8 ft. by 6 ft.	3	4	6
12 ft. by 6 ft.	4	12	6

Cases 5s.



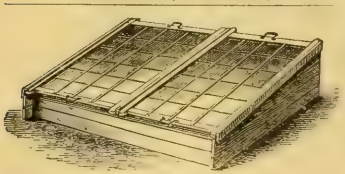
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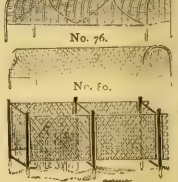
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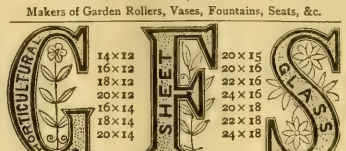
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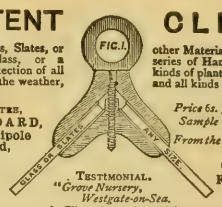
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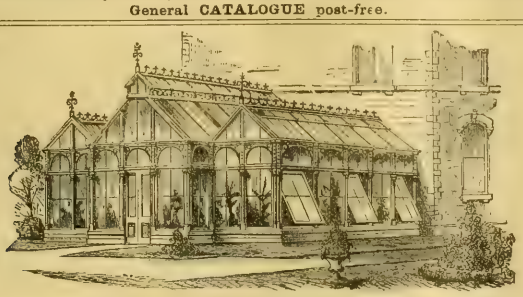
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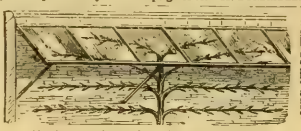
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KENT PEATS or LOAM supplied at lowest rates in any quantities.
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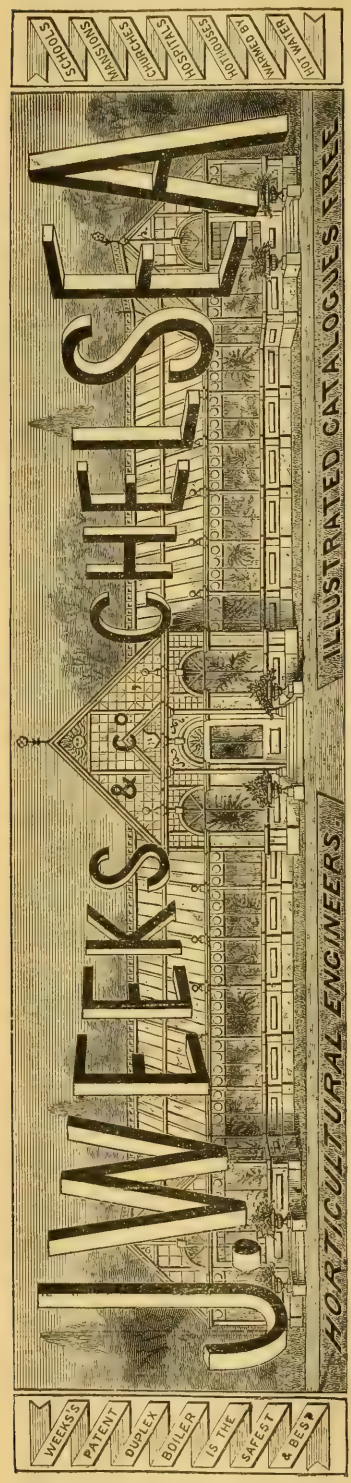
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Form of Application.

From .....

Full Name and Address of Competitor here.

*It is my intention to compete for the Prizes as announced in the "*GARDENERS' CHRONICLE*" of February* 27, 1886, p. 272.

My present employer is—

Full Name and Address of Employer here.

And whose Certificate of my Age, &c., is attached.

Signature of Competitor .....

Date, ...

I hereby certify that .....

is in my employ as Gardener, and to the best of my knowledge and belief his age is ..... *years.*

Signature of Employer. .....

Date, ...

Intending Competitors must cut out and fill in the above Form, which should be forwarded to

The Editor,
GARDENERS' CHRONICLE,
41 WELLINGTON STREET, STRAND, W.C.,
ON or BEFORE MARCH 30 NEXT.

The Conditions under which the Prizes are offered are stated on p. 272.

G. C.
Feb. 27, 1886.

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THE

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On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7112.)

ROSES, FRUIT TREES, BORDER PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 10, at half-past 12 o'Clock precisely, First-class Standard and Dwarf ROSES, including all the leading varieties: Pyramid and Dwarf-trained FRUIT TREES; CARNATIONS, PICOTEES, PINKS, and other Border Plants in quantity; also SHRUBS and CONIFERS, Home-grown LILIUMS of sorts, TUBEROSES, GLADIOLI, &c.

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Thursday Next.—(Sale No. 7113.)

The Fifth Portion of the extensive COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, March 11, at half-past 12 o'Clock precisely, the Fifth Portion of the above Collection, including fine plants of CATTLEYA WARNERI, C. MOSSIÆ, C. MENDELII, C. TRIANÆ, LÆLIA AUTUMNALIS ATRO-RUBENS, MASDEVALLIAS, DENDROBES, and CYPRIPEDIUMS; also several hundred unflowered plants of ODONTOGLOSSUM ALEXANDRÆ, O. VEXILLARIUM, O. PESCATOREI, LÆLIA PURPURATA, &c.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in Flower will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 17, and he will be glad if Gentlemen desirous of entering Plants for this Sale will please send particulars of same not later than Thursday next.

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On view morning of Sale, and Catalogues had.

Friday Next.

Very VALUABLE IMPORTATIONS.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, March 12, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA TRIANÆ, just received in specially fine order from the same district whence C. Trianæ Leeana and many other rare forms have come. Many fine and compact specimens among them. Also splendid importations of SACCOLABIUM ILLUSTRE in extra condition, the rare and beautiful AERIDES HOULLETIANUM, a fine lot of CATTLEYA SKINNERI, C. SCHOFIELDIANA, LÆLIA XANTHINA, SACCOLABIUM species, 2000 ODONTOGLOSSUM ALEXANDRÆ, very best type; and many other ORCHIDS.

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THRIFT, pure White-flowered, fine edging and Spring Flower.

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MALVA MOSCHATA, Rose Honesty, Purple, Rose, and White.

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SWEET WILLIAMS, the finest dark and giant Auricula-eyed.

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NEW CELERY (Pink), Fisher's No. 1; warranted the earliest, largest, and best flavoured Celery grown. Seed packets, for present sowing, *1s.* each free.

All free for cash with order from

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEE MEETINGS, Fruit and Floral, at 11 A.M. in the Conservatory; Scientific at 1 P.M. in the Lindley Library, on TUESDAY NEXT, March 9. Promenade and Band from half-past 3 o'Clock. Admission, *2s. 6d.*

N.B. Entrance for Fellows and the Public, N.E. Orchid-house, Exhibition Road; and Exhibitors' entrance, west side of the Royal Albert Hall.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of SPRING FLOWERS.

The FIRST EXHIBITION of the Season will take place on WEDNESDAY, March 24. Schedules of Prizes now ready.

The Dates of the SUMMER EXHIBITIONS are WEDNESDAYS, May 19, and June 9. Schedules of Prizes now ready.

ROYAL BOTANIC SOCIETY Gardens, Regent's Park, N.W.

VEITCH PRIZES FOR AMARYLLIS.

The Prizes offered for Amaryllis on MARCH 24 are ONLY OPEN to Amateurs and Amateur Gardeners: NOT to the Trade.

CRYSTAL PALACE.

SPRING FLOWER SHOW, MARCH 26 and 27.

Schedules of this and other Flower and Fruit Shows during 1886 to be had on application to

Mr. W. G. HEAD, Garden Superintendent.

Crystal Palace.

LIVERPOOL HORTICULTURAL ASSOCIATION.

POSTPONEMENT OF SPRING SHOWS.—The Fourth Grand Spring Flower Show of Hyacinths, Tulips, Narcissus, Azaleas, Rhododendrons, Roses, and Forced Hardy Plants, will be held in St. George's Hall, on THURSDAY, March 18. Schedules on application to

EDWARD BRIDGE, Sec.

3, Cedar Terrace, Huyton.

BATH BULB SHOW, WEDNESDAY and THURSDAY, March 24 and 25.

18 HYACINTHS, Open, £3, 1st; £2, 2d; £1, 3d.

12 HYACINTHS, Amateurs, £2, 1st; £1, 2d.

6 ORCHIDS, Distict, Open, £3, 1st; £1 10s., 2d.

And several other Classes, for PLANTS, CUT-FLOWERS, FRUIT and VEGETABLES. 49 Classes in all. For Prize Schedules apply to

BENJ. PEARSON, Sec.

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Great EXHIBITION of HYACINTHS, &c., MARKET PLANTS, and CUT DAFFODILS, on MARCH 30 and 31.

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FARNINGHAM ROSE and HORTICULTURAL SOCIETY.

The ANNUAL EXHIBITION will be held at Farningham, on WEDNESDAY, June 30.

W. and S. HODSOLL, Hon. Secs.

FLOWER SHOW and GALA, will be held in the Abbey Park, Leicester, on TUESDAY, August 3. Particulars in future Advertisements.

100 Herbaceous and Alpine Plants for 25s.

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Carnations and Picotees.

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To the Trade.

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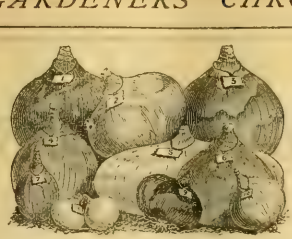
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Samples and lowest prices, stating requirements, on application.
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It will give you friend Barrow's and thinkers' ideas,
Which is enough and to spare to drive the raiser to tears.
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A MAGNIFICENT LOT OF
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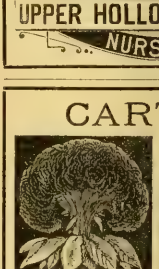


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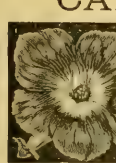
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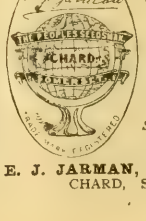
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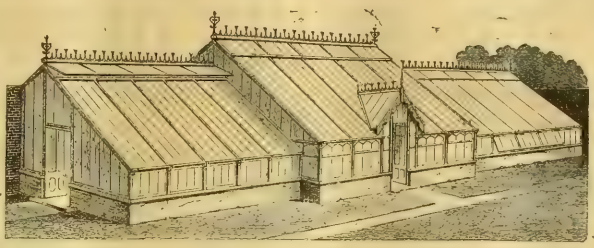
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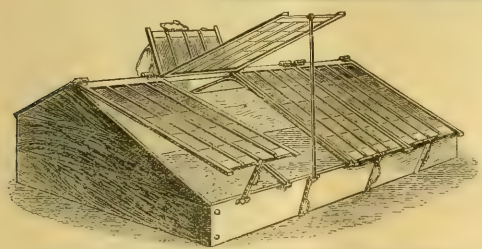
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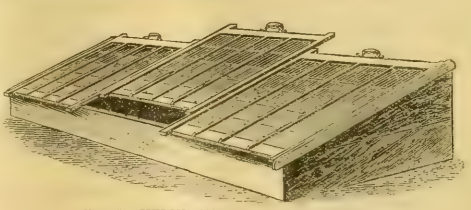


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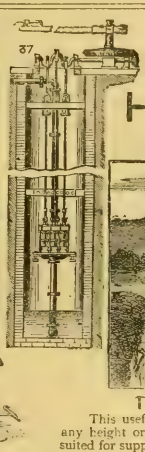
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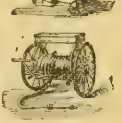
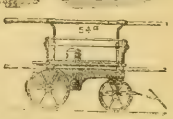
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2. The Prizes will consist of £10 to the most successful candidate, of £5 to the second, and of £2 to the third, in order of merit.

3. In estimating the merit of the papers, special importance will be given to the evidences of original observation and research, and relatively little value will be attached to mere compilations from books or papers. Reference must in all cases be made to the publication from which any quotation or statement of fact is taken.

4. The Essays must be legibly written on foolscap paper, and on one side of the paper only. They may be illustrated by original sketches at the option of the candidate.

5. The writer of the Essay should not attach his name or address to his paper, but should adopt a motto, or other device, by means of which it can be recognised. The real name and address of the candidate should be enclosed within a sealed envelope, bearing outside the same motto or device as is attached to the Essay.

6. The Essays should be sent in to the Editor, 41, Wellington Street, Covent Garden, W.C., on or before May 8 next.

7. The awards will be made by the Editor, assisted by practical gardeners connected with the staff of the paper, and the results will, if possible, be announced at the provincial meeting of the Royal Horticultural Society, at Liverpool, at the end of June.

8. The Editor reserves the right of withholding all or either of the prizes, if in his judgment the papers do not present sufficient merit.

9 The Editor does not undertake to publish, in the *Gardeners' Chronicle* or otherwise, any of the Essays that may be sent to him, but reserves the right to do so at his discretion.

10. Essays which do not obtain an award will be returned to the writers on application, and on the receipt of stamps to cover postage.

Some general remarks on the subject will be found on page 240, Feb. 20.

Form of Application.

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Full Name and Address of Competitor here. .....

It is my intention to compete for the Prizes as announced in the "GARDENERS' CHRONICLE" of February 27, 1886, p. 272.

My present employer is—

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Date, ...

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is in my employ as Gardener, and to the best of my knowledge and belief his age is ..... *years.*

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THE

Gardeners' Chronicle.

SATURDAY, MARCH 6, 1886.

FLOWERS AND INSECTS.

THE chapter which treats of the relations existing between flowers and insects is one of the most fascinating in the whole range of natural history. Whether we view it from the elevated standpoint of the harmonious application of natural laws in their severe simplicity, or from the more utilitarian standpoint of advantages secured to the human race by these mutual relations, the whole subject is teeming with details of the most interesting nature and variety.

In the limited space at our disposal it will only be possible to take a rapid survey of some of the more important of these details, for the subject is both vast and many-sided; but we may first glance at the utilitarian side of the question, passing on to consider the part which both flowers and insects play in the economy of Nature, and some of the complex relations existing between them; and, finally, we may enquire into the very origin of flowers, and their subsequent history and development. It will be understood that the references to insects in the following remarks refer only to those which are more or less dependent on flowers for their subsistence, and that they are throughout subordinate to the main question of the economy of flowers.

HONEY.

The first direct use to man which occurs to our minds in the mutual relations of flowers and insects is the production of honey; a commodity which we recognise as an important article of consumption; and which is also much appreciated and sought after by certain other animals, who of course never think of collecting it for themselves. Honey is alone collected and stored for future use by those bees which live together in colonies, and which are called social bees. These industrious creatures collect it whenever the weather permits and flowers are to be found; but they are not always allowed to enjoy the fruits of their labours unmolested, as the aforementioned animals concur with them in their fondness for honey, and are prepared to obtain it by force or strategy. They do not however always escape unrewarded for their cupidity. The bees are armed with stings, with which they are prepared to defend their legitimately gotten treasure to the last, laying down their very lives in defence of their homes; for it is well known that bees rarely succeed in withdrawing their sting from the wound they inflict—more frequently they leave it behind them, and soon perish.

All these feed on honey; most of them collect it, together with a dust-like substance known as pollen, and on these substances they feed their young brood. But there is a set of bees, lazy, hulking fellows, who have lost the habit of nest building and rearing their young, and have earned for themselves the opprobious epithet of cuckoo bees. They lay their eggs in the nests of other bees, and like their namesakes, leave them to the charge of their hosts.

*

It is not necessary to collect statistics as to the amount of honey produced annually by the bees for the use of man, nor yet as to its commercial value, but we know that both are very large. In our own country the amount collected in good honey yielding years is something considerable. The hive bee has been introduced to America, where it has thriven and multiplied enormously, especially in the Western States. It is said to be still known among the Indians as the "white man's fly." American honey is now a considerable article of commerce, but it has been whispered that some of the article sold under that name has had little to do with the bees which are commonly supposed to have produced it, and that were the whole race to be banished from the country, it might somewhow happen that the supply of honey would be little diminished, and that Yankee enterprise might supply the deficiency.

Fruit-Setting.

Another benefit conferred by the mutual relations of flowers and insects, though somewhat less direct and almost undreamt of for ages, is of far greater importance. It is the production of fruits of various kinds for human consumption. Let us select an example to illustrate this point. There is an article in commerce under the name of Vanilla, and which is used for flavouring various articles of confectionary, and in the preparation of chocolate. This spice is prepared from the fruit of an Orchid, a native of Mexico and Central America, where it forms a considerable article of commerce. The plant was long ago introduced into our European hothouses, and then transmitted to India; but although it grew freely and produced flowers in abundance, no fruit could be induced to develop. This was very curious, and clearly showed something wrong. But the discovery that the production of fruit depended on the intervention of an insect at once showed where the fault lay, and also suggested a remedy. It was not the supplying of the deficiency by the introduction of the insect, but of performing artifically for the plant that office which in its native home is performed by the insect. Before explaining how this is effected, we will anticipate matters a little to consider the fundamental principles which govern the production of fruit in general, which will also explain the function of flowers.

Flowers.

Flowers represent the initiatory stages of the production of fruit; and to this end, and the consequent reproduction of the species, they are alone produced. Overlooking for the present the great diversity in the structure of flowers, we must ascertain how far they use one common means to attain this end.

Every species of flowering plant produces two distinct kinds of bodies, which are known respectively as pollen and ovules. The ovules are the immature seeds of the plant, and are usually borne in a receptacle called the ovary. The pollen is a dust-like substance, consisting of very minute granules, and is borne in a special organ called the anther. Sometimes the pollen and ovules are both present in the same flower; sometimes they are borne in distinct flowers on the same plant; and sometimes they are borne on separate plants. There is one particular part of the ovary which is specially developed for an important function, and usually covered with a sticky exudation. It is called the stigma, and it is essential for the production of fruit and seeds that the pollen should be applied to this specialised portion. This constitues the act of fertilisation. After it is effected the ovary is stimulated to develope and mature fruit and seeds, but if the pollen fails to reach the stigma the ovary soon shrivels up and falls away. Here we see what are the really essential organs of a flower. Later on we shall see how little may constitute a perfect flower, and that most of what is popularly understood by the term represents organs which are merely accessory to the act of fertilisation, and therefore termed unessential organs.

Returning now for a moment to the Vanilla plant, we first note that the pollen and ovules are borne in the same flower, and yet are incapable of effecting the work of fertilisation without assistance. The pollen-grains, instead of being free and dust-like, are united together in two membranous pouches, and concealed behind a covering known as the anther-cap. To effect fertilisation this cap must be removed, and the pollen-masses carried to the stigma. This important act is performed by the insect, and in the following manner:—It pushes its head into the flower, the anther-cap is ruptured with a slight touch, and the pollen-masses become firmly attached to the head of the insect by a little stalk. It now flies away to another flower, and again pushes in its head, when the attached pollen-masses come in contact with the stigma. This being covered with a sticky exudation they become glued to it, and when the insect withdraws its head some of the pollen remains attached to the stigma. The artificial way in which man performs the operation is to introduce a pointed stick or pencil, which removes the pollen-masses in precisely the same manner as the insect. They are then carried to the stigma of another flower by a similar operation. But what should induce the insect to perform an act which in the case of man we see to be done from purely interested motives? Not a pure love of work for its own sake, but motives equally selfish. Probably the insect objects to the load on its head, rather than not, but has learned to tolerate it, for the simple reason that unless it does so it cannot obtain the sweets secreted by the flower, deep down in its tube, with the sole object of inviting the insect to come and perform an office which it has found itself incapable of performing unassisted.

This remarkable dependence on external aid runs with tolerable uniformity throughout almost the whole of the large Orchid family; and is also present in most other flowers, though often in a smaller degree. The red Clover is another case in point. It is a native of Europe, and is largely grown as a fodder plant. For this purpose, it was introduced to New Zealand; but, strangely enough, after its introduction there no seed was produced. This arose from the fact that the Clover is largely dependent on humble-bees for its fertilisation, and these insects are not natives of New Zealand. Some years ago an attempt to remedy this defect was made, and two nests of humble-bees were placed in boxes, and duly delivered into the charge of a member of the New Zealand Council, who was provided with every necessity for them during the voyage. They were to arrive in January, which is about midsummer at the Antipodes. I infer from a paragraph in *Nature*, which records the fact, that the hive-bee was already introduced as a honey-producer; for it remarks that the proboscis of the common bee was too short for the necessary work. The honey lies at the base of a tube 9 to 10 millimetres long, and in order to reach it the bee must have a proboscis of the same length. Professor Hermann Müller, who has studied the subject very carefully, has observed no less than twelve distinct species of humble-bee which in central Germany frequent this flower—all of them for the purpose of sucking the honey, and some of them also for the purpose of collecting pollen. All these bees have tongues longer than the corolla-tube of the flowers. He has also shown that two other species of humble-bee—degenerate creatures—habitually extract the honey by biting through the corolla-tube at its base, and then inserting their proboscis, but in this way they cannot perform the work of fertilisation. It is comforting to think that such a burglarious proceeding would soon meet with its just reward were the plant left to the tender mercies of these species, for as, without aid, no seed would be produced, and consequently no Clover plants, they would soon have to seek for fresh hunting-grounds; but we must pity them, after all, for their tongues are shorter than the tube which secretes the honey, and they cannot reach it. The secret is, that flowers with shorter tubes are their natural feeding-grounds. They have been intelligent enough to discover a way to cheat the red Clover flower, and may even have been driven to this by fierce competition.

The hive-bee has a tongue only 6 millimetres long, and red Clover honey is clearly not meant for her. But she is an observant little creature, and has found out how to obtain it by using the holes which the humble-bees have made. Müller tells us he has occasionally seen large numbers of hive-bees all busy collecting pollen from the red Clover, and when thus engaged they, too, perform the work of fertilisation.

The tube of the white Clover flower is only 3 millimetres long, so that shorter-tongued insects can obtain it. The white Clover is one of the best of all plants for the hive-bee, which thrives wonderfully wherever the plant is abundant. The white Clover retains in a small degree the power of self-fertilisation, but if the plant be carefully covered with a gauze net only one-tenth as much seed is produced as when insects are not excluded. *R. A. Rolfe.*

(To be continued.)

New Garden Plants.

Lælia anceps var. Kienastiana, *n. var.*

This would be Lælia anceps Dawsoni itself were it not for the rosy hue of the fine broad petals. The edges of the side-laciniæ, too, are of a fine rosy colour. The first knowledge of the colour was founded on the narrative of Indians, who have proved very trustworthy. As to myself, I feel very happy that this plant bears the name of Herr Consul Kienast, who is surpassed by nobody in the love of Orchids, and whose excellent judgment in growing Orchids, observed so often in a wild state by himself, produces effects which surprise the numerous visitors to his fine collection. *H. G. Rchb. f.*

Lælia anceps var. munda, *n. var.*

This is very fine. It would be L. anceps Shroderiana were not the yellow colour confined to the three keels on the base of the mid-lacinia. The fine and rich purple veins of the side-lacinia stand on a white ground, as white as the sepals and petals. Column partly green. This is also an introduction of Consul Kienast's, Hirslanden, Zurich. *H. G. Rchb. f.*

Kalanchoe carnea, *N. E. Brown: n. sp.*

The genus Kalanchoe contains several very ornamental species, but there are few among them, I think, that are more attractive than the present novelty; its pretty pink flowers, which are disposed in flat-topped corymbs, and their agreeable fragrance, are sure to prove an attraction with lovers of this class of plants. For a specimen of this pretty species I am indebted to Mr. H. Laver, of Colchester, from whose account of it I learn that its native country is somewhat doubtful, since he writes as follows:—"This plant was among some which Dr. Wallace said came from Nepaul, but Mr. Horseman says it came, he thinks, from the Cape." Mr. Laver also states that "by age it forms a large lump on the surface, which I can only compare to the top of an old pollard, and from this branches are produced which flower in January and February, but they do not die down to the stumps after flowering." The following is a description of the plant:—

Stems glabrous, green, faintly somewhat four-angled, terete above, arising in old plants from a large bole. Leaves petiolate; petioles of the lower leaves an inch or more long, of the upper ones shorter, channelled down the face, convex on the back,

glabrous; lamina 3 to 5½ inches long, 1½ to 3 inches broad, elliptic-ovate, rounded or somewhat truncate at the base, rather obtuse at the apex, margin crenate, with alternately larger and smaller crenations, glabrous, green, with a brownish hue towards the margins and apex, the upper leaves much smaller, lanceolate, those at the base of the cyme about ¾ inch long and entire. Cyme corymbose, 2 to 3 inches across, flat-topped, compact. Pedicels, 4 to 6 lines long, glabrous, with two small bracts, 1 line long, at or near their base. Calyx glabrous, four-parted, the segments ¼ inch long, lanceolate acute, green. Corolla with a quadrangular greenish tube ½ inch long, inflated at the base, and four elliptic ovate, acute, pink, spreading lobes, 3½ lines long, 2½ to 2¾ lines broad. Hypogynous scales filiform, 1½ line long. Flowers fragrant. *N. E. Brown.*

KUMAUN.

(Continued from p. 277.)

Over the Rálam Pass.—There was a little rain in the night, and everything was frozen hard the next morning; the outer flys of the tents, too, were quite stiff, like planks of wood. We had to make as early a start as possible, not being at all sure as to the actual distance across the pass, or the extent of the obstacles we might meet with on the way; knowing, too, that not a particle of fuel could be obtained until we were well over the pass. The firewood used at this last camping-ground had to be carried up from the valley on coolies' backs.

The day's work began by a steep ascent to the top of a 16,000 feet ridge. The vegetation became more scanty as the elevation increased; the plants, however, were none the less interesting on that account. Amongst those occurring near the highest limit of vegetation were gathered specimens of a Delphinium with dense heads of pale lavender-coloured flowers, and having the peculiar odour characteristic of D. Brunonianum. On the very summit of the ridge the following plants were observed: — Saxifraga Jacquemontiana, Potentilla argyrophylla var. leucochroa, and Polygonum affine.

On the other side of the ridge we found a valley containing a snow-covered glacier. A descent of about 400 feet brought us to the edge of the glacier, where we halted for breakfast. This glacier is hemmed in on all sides by high snowy ranges without any apparent inlet or outlet, and not a speck of vegetation could be seen anywhere.

After crossing the glacier obliquely we had a disagreeable and rather dangerous ascent to make along the steep side of a mountain covered with large loose blocks of rock and *débris*. We were now approaching the edge of an upper portion of the glacier which we had crossed, and a very awkward piece of ice had to be got over somehow. To walk for any distance along a steep slope of solid ice is difficult enough, but at the same time one had constantly to be on the look-out for stones of various sizes which came flying down from a cliff of ice above us. It was about 2 o'clock in the afternoon, the worst time of the day perhaps for crossing such a place, as the sun's heat, even at this elevation, produces torrents of water from the melting ice; in this way boulders and *débris* are liberated as the melting proceeds. After another hour's rough walking we reached a comparatively level part of the glacier which extends up the foot of a high ridge, and this we now discovered to be the actual pass.

By this time the coolies were tired out, and every one was suffering more or less from the effects of the high elevation: there was no alternative, therefore, but to stay where we were for the night. The elevation of this place by our aneroids was 17,400 feet above the sea. We had no fuel, and a very scanty supply of provisions. We managed to pitch all the tents, using rocks instead of tent-pegs, Mr. Reid and I sharing one tent, whilst the rest of our tents and *fals* sheltered the servants and coolies. Our tent was pitched on the solid block ice of the glacier, and all through the night we heard the loud cracking of the ice underneath us. It was snowing a little at daybreak when we roused the camp. Our loads were quickly packed, and we started off as soon as we could across the snow towards the pass.

After three or four hours stiff climbing over loose boulders and *débris* we at length reached the summit of the Rálam Pass, elevated 18,700 feet above the sea. The threatened snowstorm had passed away, but it was cloudy, and no distant views were visible. We had still a long and tedious journey before us, and not a little dangerous in many places. We were now at the head of the Nipchang glacier, which extends down for several miles towards Shibu, the nearest village in these parts. The upper portion of the glacier descends in great cliff-like steps of clear ice, whilst lower down the ice becomes obscured by the accumulation of boulders and *débris*, which are constantly being brought down by avalanches on either side of the glacier. The mountains about here are very steep and bare of vegetation.

We were heartily glad, coolies and all, to find ourselves in a comfortable camp that night, and none the worse for the rough experience of the last two days. The elevation of our camp was about 14,500 feet. The botany all the way down to Shibu is most interesting. A new and very distinct species of Kobresia (K. Duthiei, C. B. Clarke) was growing in abundance close to our tents, also a handsome Pedicularis (P. macrantha), with cream-coloured flowers and purple falcate upper lip. Some specimens of a new Sedum (S. tillæoides, n. sp.) were also gathered. Further down the valley the following were found:—Leontopodium alpinum, var. Stracheyi, and a new species of Senecio (S. kumaonensis, n. sp.).

The Leontopodium is abundant in the valley above Shibu up to 13,000 feet, growing in large patches amongst the rocks and low scrub. It has quite the habit of an Anaphalis, but with the characteristic cottony flower-heads of Leontopodium alpinum, the Edelweiss of Switzerland. The only representatives of shrubby vegetation noticed above 13,000 feet were Juniperus Wallichiana and two species of Caragana (C. crassicaulis and C. pygmæa); below this Betula bhojpattra, Spiræas, and Loniceras occur, also Ephedra vulgaris, Clematis orientalis. Rosa sericea and Ribes grossularia (the common wild Gooseberry) are abundant in the neighbourhood of Shibu. Pyrus aucuparia also grows here; some specimens of the curious Papaveraceous plant, Stylophorum lactucoides, were found growing on the steep banks of loose shale.

The following crops were under cultivation at Shibu when we were there:—Wheat, Buckwheat, Bakla (a kind of Broad Bean), Cabbages, and Mustard.

At Shibu arrangements were again made to lighten our loads preparatory to crossing the Lebung Pass into Byáns. We started on September 3 for Ráma, a camping-ground in the Dhauli valley. The Lissar joins the Dhauli a few miles below Shibu. The road over the Lebung Pass ascends by the Dhauli valley as far as Bidang, and then turns sharp to the east to the foot of the pass. As the botany of this part of the country had never been explored before, we arranged to make very short marches each day. After reaching Ráma there was ample time left for a careful examination of a large extent of ground in the immediate neighbourhood of our camp. In the valley below Shibu the following plants are abundant:—Parnassia ovata, Inula grandis, Stellaria crispata, Berberis vulgaris, var., and Cotoneaster bacillaris. On the steep rocks near the junction of the Lissar and Dhauli streams a pretty Silene (S. Moorcroftiana) was gathered, and in the crevices of the rocks a curious little dwarf variety of Buxus sempervirens (common Box) finds a home; also Campanula argyrotricha, Asplenium viride, and Saxifraga Brunoniana. Senecio quinqueloba, was gathered in the Birch forest close to Ráma.

Some very interesting plants were found in a side valley near Ráma. Anemone rupicola is very common on open rocky places in company with Caragana crassicaulis. In open grassy spots in the Birch forest some specimens of a rare Pedicularis (P. trichoglossa) were gathered. This species was known before only in Sikkim. Lonicera purpurascens, Viola biflora, and Saxifraga Stracheyi were also observed.

Bidang was reached on the following day (September 4). The elevation about 13,500 feet. In the afternoon I made a careful search along by the cliffs on the south side of the Lebung valley, returning by the lower end of the glacier. Pedicularis trichoglossa was found again, also a white flowered variety of Delphinium Brunonianum. Two dwarf kinds of Parnassia were gathered close to the glacier, one being P. pusilla, and the other may prove to be a slender alpine form of P. nubicola. Other interesting plants met with were Lagotis glauca, Arenaria glanduligera, Stellaria subumbellata, Aster heterochæta, Pleurogyne carinthiaca, Primula elliptica, Pedicularis macrantha, and Saxifraga Jacquemontiana.

At night, in the moonlight and round the large camp-fire, we had an entertainment that gave us much amusement. There was a large following with our camp, and not far off were a few small Hunia and Tibetan encampments. All the available people, men and women, were collected, and for two hours and more they gave us specimens of their songs, dances, and round games, into which they entered with all their heart. Some of the more plaintive songs were pleasing to the ear, and in the dances, which went to the accompaniment of the dancer's own singing, some of the people, both men and women, showed much grace of movement, as well as merriment and freedom of manners that were highly diverting. We could not help contrasting the light-hearted freeness of the whole company, and the zest with which all of them entered into the entertainment, with the more constrained and half-hearted and forced frolic of gatherings of natives in the Indian plains.

Another short march was made on the following day further up the valley, and alongside the Lebung glacier to an elevation of over 15,000 feet. The vegetation now becomes scanty; a few plants find shelter in crevices of the bare precipitous rocks which surround the upper portions of this valley. A new and beautiful species of Saxifrage (S. lycopodioides, n. sp.; probably = S. afghanica, Aitchison and Hemsley) was gathered on the moraine on the way up, also Saxifraga ramulosa.

An early start had to be made next morning, as we were anxious to get past some rather dangerous ground before the sun had gained power to loosen the icebound stones. The path at first follows the course of a narrow rocky chasm, and at length by a series of steep zigzags reaches the top of the pass, which is about 18,000 feet above the sea. A few specimens of the new (?) Delphinium (D. densiflorum) were growing on ledges of the rocky chasm, also the dwarf var. frigida of Senecio arnicoides.

The views from the top of the pass were very fine: to the west the five conspicuous peaks of the Panchachuli stood out clear against the sky, and in the opposite direction were several snowy ranges towards and beyond the Tibetan frontier, with peaks rising to over 20,000 feet.

We encamped at Jolinka, which is about 3000 feet below the pass. Vegetation began to be met with as high as 17,500 feet above the sea, and some very interesting plants were secured, including Adonis chrysoscyathus, Delphinium densiflorum, Callianthemum cachemirianum, Draba sp. with large yellow flowers, Stellaria subumbellata, Arenaria glanduligera, A. ciliolata, Potentilla nivea, P. sericea, several species of Sedum and Corydalis, Antennaria nana, Allardia tomentosa, and Woodsia hyperborea, &c.

The Jolinka camping-ground is close to the Kutti Yangti River, which rises near the Lankpya Pass on the Tibetan frontier. The configuration of the ground about here is very remarkable, and bears distinct evidences of the former extension of glaciers. The old moraines are now completely turfed over, and boulders of enormous size are scattered over the ground, several of them forming lovely rock gardens of alpine vegetation. The junction of some of these moraines descending from adjacent valleys has given rise to the existence of small shallow lakes, one of which we visited on the following morning.

The road from Jolinka to Kutti is a gradual descent nearly all the way. The hillsides afford good pasturage, but there is no great variety of species. Of the more interesting plants observed the following may be mentioned:—Anemone rupicola, Aconitum heterophyllum, var. alba; Sisymbrium himalaicum. Potentilla fruticosa, var. ochreata, is very common, also P. bifurca, which forms a considerable portion of the turf near Jolinka. A third species with finely-cut leaves, P. multifida, was collected. A new species of Saxifrage (S. Stolitzka, Duthie), allied to Cæsia, was found at an elevation of about 14,000 feet. Birch trees begin to make their appearance in this valley at about 500 feet lower. A tall handsome dark blue flowered Campanula, allied to C. linifolia, was found amongst bushes of Juniper and Caragana pygmæa.

After crossing the river there is rather a steep ascent to the village of Kutti, where we remained for two days, in order to explore the botany of the neighbourhood. *Dr. Duthie, Report of Botanic Garden, Saharanpur.*

(To be continued.

ROSA POMIFERA MAJOR.

In the beautiful county of Wicklow, which has again and again been called "the Garden of Ireland," plants generally grow with a luxuriance scarcely to be believed by those who have not seen them. One little spot in particular is so full of interest that no gardener who has ever seen it could ever forget it, even if he would. The place is "Mount Ussher," an old millhouse, surrounded by a garden of hardy flowers. To see this place in autumn is like a beautiful dream. The Wistaria leaves are of a golden-green; Tropæolum speciosum is clambering up walls and dangling over fences, scarlet with flowers, or covered with its rich blue berry-like fruit: the Virginian Creeper is of all colours between green and scarlet, and with scrambling Clematis covers the roof and side-walls; while all around this little Eden the Elms and Chestnuts are changing from green to gold. The mill-wheel is silent, and the mill-race is now a rivulet running between rocky banks, enriched with the hardy blossoms of other lands. Here a rare Fern, there a Bell-flower or a Saxifrage or a Primrose, graces the mossy stones. As we have said, the mill-wheel is silent; so also is it beautiful in its well earned rest. Some green shrub has sheltered it, and over this a Clematis has thrown its veil of purple flowers. If you are there in summer time the blue of Delphinium is everywhere, and so in early spring the melodious hum of bees among the Crocus owers is like a pastoral from Chrysostom. No words could paint a garden so homely and unpretentious and yet withal so satisfying; and it was here I first came on a great bush of the "great Apple Rose," laden with its glowing orange-crimson Pear-shaped fruits, and experienced again the leaping heart-throb—that mysterious rising in the throat—a gladness which ever comes to the discoverer in all lands, be it at home or abroad. Mr. George Walpole, who was host in his brother's absence, told me that he had had this old Rose brought from the Devil's Glen, where it had evidently long existed as a naturalised visitor even if not as a native plant. Ireland has such a genial climate, and is, as a rule, so hospitable to all who set foot on her fertile shores, that it is most difficult to be certain whether many plants found there are really native, or whether they are immigrants that have become naturalised. Tussilago fragrans is known not to be a true native, and yet it fringes the roadsides and canal banks near Dublin for miles and miles. In the case of Rosa pomifera it would be very interesting to know if it exists apparently wild elsewhere in Europe. Is it figured elsewhere than in Parkinson's *Paradisus*, or do dried specimens exist in herbaria? Parkinson's figure is rude enough, but his description is so quaintly accurate that one need scarcely offer an apology for presenting it here:—

"The stem or stock of this Rose is great, covered with a darke grayish barke, but the younger branches are somewhat reddish, armed here and there with great and sharpe thornes, but nothing so great or plentifull as the Eglantine, although it be a wilde kind. The leaves are of a whitish-green colour, almost like unto the first white Rose, and five alwayes set together, but seldome seven. The flowers are small and single, consisting of five leaves, without any sent, or very little, and little bigger than those of the Eglantine bush; and of the very same deep blush colour, every one standing upon a rough or prickly button, bearded in the manner of other Roses, which when the flowers are fallen, grow great, somewhat long and round, Peare-fashion, bearing the beards on the tops of them; and being full ripe, are very red, keeping the small prickles still on them, wherein are many white, hard and roundish seeds, very like unto the seed of the heppes or Eglantine berries, lying in a soft pulpe, like unto the Hawthorne berries or hawes. The whole beauty of this plant consisteth more in the gracefull aspect of the red Apples or fruit hanging upon the bushes than in the flowers, or any other thing. It seemeth to be the same that Clusius calleth Rosa pumila, but that with me it groweth much higher and greater than he saith his doth." (See *ante*, p. 237, Feb. 20.)

My sketch of this old fruiting Rose was made from specimens given to me by Mr. Walpole, and as I have sown seeds also of his giving, I hope to be able to rear plants for distribution amongst those correspondents who have inquired for them.

N.B. — Since I sent you the above note Mr. George Walpole has been so kind as to send me the following account of its history so far as his plants of it are concerned, and of their connection with the Devil's Glen, county Wicklow:—"When we first obtained this Rose we thought it was undoubtedly wild, but since that time we have discovered the site of what was evidently a woodland garden, made with some care, not far removed from the position of the old Rose tree, which was growing at the edge of the rough road overhanging the ravine. I think it is more than probable it was thrown out of the garden with the rubbish, and so found a foothold where we got it—undoubtedly many years afterwards, for the original tree was a very old one. We must have grown ours from cuttings, and it must be a vigorous grower, and might perhaps prove useful as a stock for budding, like the Manetti. My brother tells me that the leaves are slightly scented like Sweet Brier." It is possible that this beautiful fruited Rose may exist in English gardens. Mr. Walpole's plants are the only ones I know of, or ever saw. Lindley, in his *Rosarum Monographia*, places Rosa pomifera under Rosa villosa, which according to Woods is wild in Northern England. The flower is pale rosy purple, and not particularly showy, but a strong and healthy bush of this plant in autumn, when covered with its glaucous foliage and clusters of prickly pear-shaped fruits, is a very effective object. *F. W. B.*

NARCISSUS BULBOCODIUM, VAR. NIVALIS.

This plant, which, so far as I know, seems to be the smallest of all the "hooped petticoat" Daffodils,



Fig. 55.—Narcissus nivalis: flowers pale yellow.

has long been known to botanists (*v.* Graell's *Indic. Pl. Nouv.*, p. 9), but until quite recently was not so well known as a living plant in our gardens. Mr. Octavius Corder collected it in flower at Estrella last season, and the sketch herewith given (fig. 55) has been carefully made from a flowering specimen now blooming in a cool greenhouse in the Botanical Gardens of Trinity College, Dublin. The bulb is about the size of a wren's egg; the leaves, 3 to 5 inches in length, are extremely slender, but erect. The flower-scapes are shorter than the foliage, also slender, and the flowers are not an inch in length, ovary included. In colour they are of a bright clear yellow, the perianth segments being narrow, acute at their apices, and barbed inside with a tuft of hairs, which gives to them a crochet-needle-like appearance when viewed laterally. This curious process is, however, evident in most of the Narcissi, and Parkinson, in describing M. viridiflorus in his *Paradisus*, alludes to it as "a prick or thorn."

As compared with all other varieties of N. bulbocodium known to me, this is the veriest pigmy of the whole group, even Sweet's N. bulbocodium tenuifolius being a giant when compared with our present plant. In a word, this little mountain gem is to N. Bulbocodium just what N. (Ajax) minimus is to N. Pseudo-Narcissus—*i.e.*, the smallest member of the group.

The stamens of this plant are not always exserted, and the style varies very much in length, being sometimes included and sometimes exserted, so that one cannot rely on either circumstance as a constant character. *B.*

CONSERVATORY AT LESSNESS, BELVIDERE, KENT.

The conservatory recently constructed for George J. Mitchell, Esq., of which we give an illustration (fig. 56), was built by Messrs. Messenger, of Loughborough, Leicestershire; the rockwork and fountains were constructed by Mr. Harpham, of Church Street, Edgeware Road, the stone being brought from Matlock, Derbyshire. Amongst the rockwork there is a waterfall, together with three fountains, and various small jets of water. When the water is turned on it has a very pleasing effect, especially of an evening, as there are several different coloured pendent lamps, which throw coloured lights on the water. The conservatory is entered from the drawing-room by a large window. Mr. Harpham also constructed the winter-garden at the foot of the grounds, and the alpine garden at the opposite end of the little valley. The rockery, which stretches up the wall of the house to the roof, has been handsomely draped with Ferns in charming variety, plants of a drooping or trailing habit of growth being intermixed with them in well-arranged profusion. In the foreground Alocasias, dwarf young specimens of various Palms, Cordylines, and Begonias, are visible; while good examples of Palms in variety tower above all. Such an arrangement is much to be preferred to growing conservatory plants always in pots, especially as it admits of considerable alteration being effected each year in its features.

Orchid Notes and Gleanings.

ORCHIDS AT DOWNSIDE, LEATHERHEAD.

The magnificent Cattleya-house belonging to William Lee, Esq., is just now resplendent with many hundreds of blooms of Cattleya Trianæ, many of them being new and flowering now for the first time, while with them are fine specimens of all the best named kinds which they are expected to excel in some important feature before they are considered worthy of a distinguishing name. This is rather a hard test, for in size and boldness of flower it is almost impossible to beat C. T. Leeana for brightness of the glowing violet-crimson tint of the labellum; C. T. Osmani; and for purity of white, the best form of C. T. alba; yet between these and other known kinds which will perhaps never be beaten by varieties near enough to put in competition with them, there is room for any number of distinct things, and the Cattleya Trianæs, which may be regarded as a group of fine florists' flowers, seem bent on amply supplying the vacancies. Many of the specimens at Downside have each from twelve to twenty gorgeous blooms, and the whole length of the house (100 feet) having a bank of flowers on either hand, the display is most effective. Among the many fine things in bloom among Mr. Lee's Trianæs the following are the best:—

C. T. Emiliæ (Mrs. Lee's Trianæ) is one of the most beautiful of the medium sized flowers. Sepals and petals pearly or blush-white, lip bright dark mauve, edged with a crimped border of pale lilac. The specimen has some two dozen blooms.

C. T. Leeana, famed as the 250-guinea Cattleya, still holds its place as the largest and boldest flower, some of them being 8½ inches across, with petals 3½ inches broad. The whole of the flower is suffused with a warm rose tint, and the labellum is of the darkest crimson.

C. T. eboracensis is a very fine flower, the main distinguishing feature in which is the predominance of bright yellow in the tube and front of the handsome labellum.

C. T. e. superba is a Downside variety, and a better thing than the one previously named, the sepals and petals being almost white, which shows up the fine yellow and crimson of the labellum well.

C. T. Vestal.—The flower is clear white, the tube

of the labellum included, the only colour being a yellow tinge in the throat, and a rich crimson front portion to the lip.

C. T. deltoides.—A finely formed flower, with crimped-edged labellum, sepals, and petals.

C. T. magnifica.—This is almost as large as C. T. Leeana. Sepals and petals lilac, lip crimson, throat sulphur-yellow.

C. T. Emperor is grand in form; sepals and petals veined with rosy-lilac, lip mauve-crimson, throat orange.

C. T. Osmani is one of the most charming of Trianæs, new or old; sepals and petals light rose, lip broadly expanded, the front being of the most glowing crimson.

C. T. Bella.—This is of the delicata section, and and petals pale lilac; lip bright ruby-crimson; orange throat.

Cattleya speciosissima also grows and blooms well at Downside, where they have some superb forms of it, such as Reginæ. They often bloom at odd seasons, and even now one or two with flowers very nearly resembling C. gigas are out.

The fine show of Lælia anceps is finishing with some well-flowered masses of the pretty white L. a. Hilliana and L. a. Veitchiana with its pretty blue-tinted lip. This variety seems to flower the last, or last the longest generally. Among the other plants in flower in the large Cattleya-house are some of the earliest of the Vanda tricolors, some showy orange-scarlet Lælia harpophylla, and some huge specimens of all the varieties of Cœlogyne cristata, including one plants, the centre being occupied with Phalænopsis, and the sides chiefly by the warm house Cypripediums, Odontoglossum Roezlii, &c. A good display of Phalænopsis Stuartiana and its varieties, P. Sanderiana, P. Schilleriana, P. amabilis, P. grandiflora, P. Luddemanniana, and P. rosea is made by the plants for which the house was built, and on the side stages some rare Cypripediums are blooming, including the superb C. Schroderæ, C. selligerum majus, C. cœnanthum superbum, C. tessellatum, C. Morganæ, (not yet in flower), C. Harrisianum splendens, C. Rœbelini, C. barbatum Warneri, C. politum, C. Dayanum, C. conchiferum (very pretty, like a large C. Pearcei), C. euryandrum, C. vexillarium; a new form of C. caudatum, C. Ashburtoniæ, &c.

In the Aërides-house, where abides the pure white

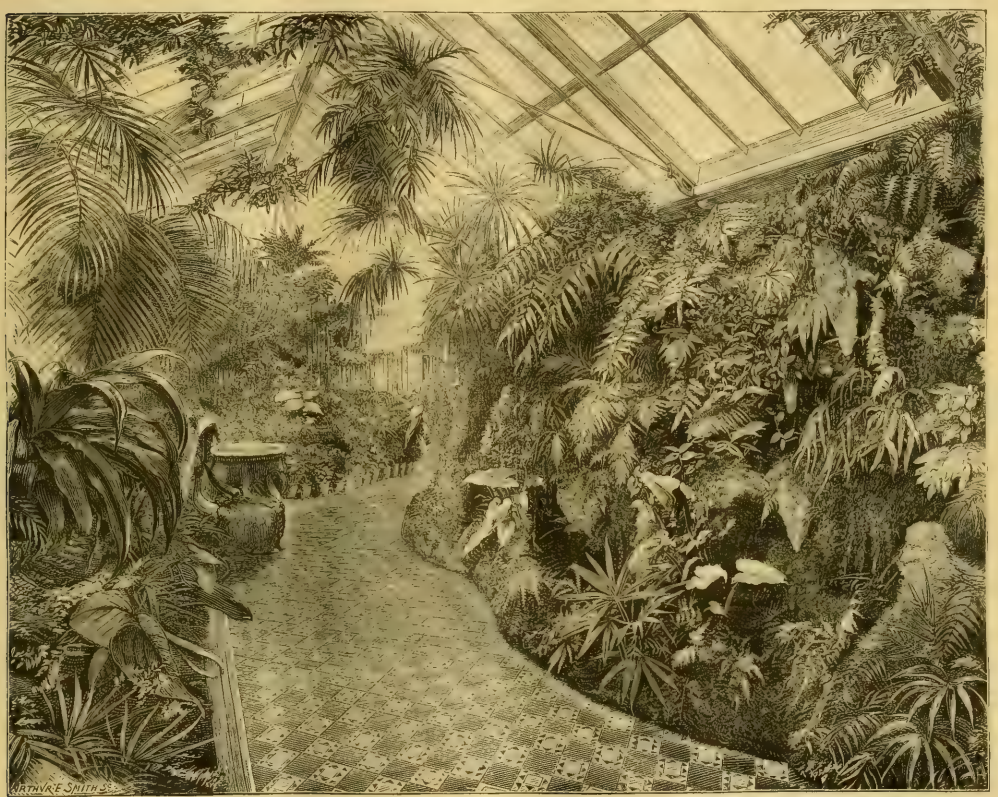


Fig. 56.—Conservatory at Lessness. (see p. 300.)

the best of its class. The whole flower is white, faintly tinged with lavender on the petals, and prettily marked with lilac on the labellum.

C. T. bellicosa is a fine bold flower, with sepals thrown well back, and maroon-crimson lip.

C. T. implicata magna is something in the way of C. T. eboracensis, but veined on the outer side of the folded tubular portion of the labellum.

C. T. alba.—Of this there are several fine forms in flower, wholly snow-white, except a slight yellow stain in the throat.

C. T. Backhousiana.—Sepals and petals light rose, the petals having a crimson feather towards the tips; lip rich dark velvety-maroon.

C. T. Normani resembles C. T. Backhousiana in all but the feathered petals, but is perhaps a brighter flower.

C. T. Victoria Regina is perfect in form; sepals of the spotless C. c. alba (hololeuca) with eleven spikes of four flowers each.

In the lobby is a curious collection in flower or bud, which, together with the many other odd plants at Downside, must tax Mr. Woolford's well-known skill heavily at times. Here a fine mass of Keferstеinia graminea is putting forth many of its curious black and silver flowers. Phaius tuberculosus is growing and flowering well in several examples. Some pans of the profuse flowering white Cœlogyne sparsa are very pretty. Colax jugosus rufinus is very showy with its rose-barred lip, and other rare things promising well in bud.

The new Phalænopsis-house is built like two houses, forming two sides of a square, but not divided at the angle. It is fitted with a bed planted with Cyrtodeira, Pilea, Tradescantia, Fittonia, and other pretty leaved plants, and over this the open stage for the Saccolabium Heathii, Saccolabium Harrisonianum has eight spikes of sweet white flowers; S. bellinum has many of its quaintly marked blooms. S. violaceum, Aërides Larpentæ, Cattleya amethystoglossa, Stanhopea grandiflora, Dendrochilum glumaceum, Angræcum eburneum, A. citratum, and other things are in bloom, two of the most attractive being the curious Epidendrum pseudepidendrum with greenish petals and showy orange-scarlet labellum, and E. Stamfordianum which literally hides its base with long sprays of yellowish, chocolate-spotted flowers; very charming.

The Dendrobe-house is, as usual, very gay, principally with well-flowered D. Wardianum, one of which bears forty-three large flowers on one pseudobulb; the pure white variety is also in bloom, as also many Dendrobium heterocarpum, D. Ainsworthii, D. splendidissimum (the best of its section), D. cras-

sinode, that best of nobiles, D. nobile nobilius, Epidendrum xanthinum, E. arachnoglossum, and E. crassifolium.

In the cool houses there is the beginning of a good show of Odontoglossum Alexandræ, many being already open, as well as O. mulus, O. brevifolium, finely flowered; O. mirandum, O. aureum, O. Phalænopsis, O. crispum clarum, O. Ruckerianum, O. Œrstedtii majus, O. Rossii majus, O. aspersum, O. Humeanum, O. maculatum, O. pulchellum majus, many Lycastes and Zygopetalums, and many good specimens of the scarlet Sophronitis and its rose-coloured variety.

The Masdevallias have for showy flowers the many handsome varieties of M. ignea, M. Lindeni, M. Chelsoni, and the earliest of the Harryanas; but the smaller and curious varieties give some wonderfully attractive flowers in M. melanoxantha, like a claret-coloured M. leontoglossa; M. gibberosa, with warted stems of fly-like flowers; M. polysticta, M. melanopus, M. xanthocorys, and other small but wonderfully constructed things.

Mr. Lee, while continually adding to his houses and increasing his collection, does not allow even the smallest of his curiosities to suffer. *J. O'Brien.*

Flowering of Cattleya Lawrenciana.

We have succeeded in flowering the new and beautiful Cattleya Lawrenciana, having just now two plants, one with a spike of three flowers, the other plant with two flowers and one other on another bulb. The colour is clear purple-lilac, the lip dark purple, with yellow markings in the upper part. *John Laing & Co., Forest Hill, S.E.*

Florists' Flowers.

OUTDOORS: THE DAHLIA.

Seeds of the single varieties of D. variabilis, &c., should be sown at once, if not already sown. They soon appear above-ground if the pots in which the seeds are sown are placed in bottom-heat over a hot-bed, or in a forcing-house. We have not long placed our store roots into a vinery, where the temperature is about 55° at night. The tubers have been planted in boxes of damp soil. As soon as the cuttings are long enough, they are taken off, and planted as advised for the Hollyhock. If the ground on which the plants are to be set out was trenched in the autumn, it will now be a good time to fork it over, to give it a chance of drying up well.

Under Glass: The Pelargonium.

Although the weather has been very cold for many weeks, it has been sunshiny at intervals, so that the specimen Pelargoniums have now started well into vigorous growth. This must be guided aright, and to do so ventilation must be ample; but the cold east winds ought not to be allowed to blow directly upon the plants, and they should be in close contact with the glass roof—at least, they ought to be as near as possible to it. The pots are well filled with roots, and as an aid to the perfect development of the flowers, weak manure-water should be applied about twice in a week. The shoots ought to be trained out as they grow, and be regulated to cover the whole space evenly from the rim of the pot to the centre—that is, if the best exhibition plants are required. Plenty of space must be allowed between each plant. These large specimens should be grown in 8-inch pots; but it is only fair to observe that the most useful plants are those that can be grown in 6-inch pots. They make handsome medium-sized specimens the third year from the cuttings, and produce better trusses than old specimens. With the increasing heat greenfly appears on the plants; but the moment this takes place fumigation with tobacco smoke will destroy them. Growers for exhibition keep their plants in perfect health by fumigating the house where they are whether there is greenfly on them or not. The small-flowered or fancy kinds are liable to be injured by the attacks of aphides. This section requires rather more heat than the others, and this in itself is an encouragement to the fly.

The Hollyhock.

This is the time to see that all cuttings are taken off and rooted in a little bottom-heat. They form roots most freely in a propagating-house with not too much bottom-heat. Each cutting should be removed by cutting close to the stem with a sharp knife, so that a heel is attached to it. They must be planted singly in thumb-pots, using fine sandy soil, which ought to be moderately moist at the time of using it. The cuttings rot off at the base if water is applied too freely to them before roots are formed. As soon as they are rooted gradually inure them to a cooler place, and in ten days pot them into larger pots. The autumn-struck plants should also be potted into suitable sized pots. As they have been wintered in cold frames they will not as yet have made much growth, but it is better to repot them in good time, as their growth is seriously checked if the plants become pot-bound.

The Calceolaria.

This must be classed with the good old-fashioned flowers; and in its present improved form it is one of the most gorgeous of greenhouse plants when in full flower. They succeed the Cinerarias and give a distinct feature to the greenhouse and conservatory. They are now pushing up their flower-spikes and require to be kept clean, even more so than the Pelargoniums. Very few people care to propagate these plants now from cuttings or layers, as it is much easier and in every way more satisfactory to grow them from seeds. The plants are now in the pots in which they are to flower; and in order that they may be grown to the highest state of perfection it is necessary to place them in a house or pit by themselves, where they can be arranged near the glass. The cultural requirements are simple enough, and consist at present in keeping them quite free from greenfly, and taking care that no single plant amongst them suffers for want of water. Over-dryness at the roots will cause a check from which permanent recovery is hopeless. Artificial heat is injurious to them, it is much better to allow of slow development, and use the heating apparatus merely to keep out frost. They require manure-water to the same extent as Pelargoniums, Cinerarias, and other plants of this class. *J. Douglas.*

ORCHIDS FOR AMATEURS.

(*Continued from p. 237.*)

Cœlogyne flaccida.—This plant has a number of ovate pseudobulbs, which are quadrangular and ribbed, surmounted by two narrow coriaceous leaves of a dark green; the leaves are very narrow at their base, so that they appear almost stalked. The flowers are borne on a drooping raceme, and are from five to twelve in number; they are about 2 inches in diameter, pure white. The lateral lobes of the three-lobed labellum are veined with purple, and the central lobe has a saffron-yellow ocellus or spot, shaped like a horse-shoe. It flowers in January and February, but has an unpleasant musky odour.

C. speciosa.—This is a very remarkable plant; the pseudobulbs resemble those of Lycaste; they bear broad ribbed leaves. The flowers are solitary, 3 inches or more in diameter. The sepals and petals are a pale olive-green; the lateral sepals and petals droop, the latter are linear. The lip is very broad, the great round terminal lobe is covered with small wart-like elevations, and has a broad white border, stained with yellow; the throat and lateral lobes are yellow, deeply veined with deep crimson and brown; the centre of the lip is raised into two broad verucose or warted lines. It is undoubtedly one of the most splendid flowers in the order. It is a native of Borneo.

C. pandurata.—Like the last, this is a native of Borneo. The pseudobulbs resemble those of Brassia, but the leaves are broader. The flowers are 4 inches in diameter. The sepals and petals are pale green; the lip is three-lobed, but the lateral lobes are bent down, giving it a striking resemblance to a violin, hence the name. The lip is green, veined and marbled with an intense black, and elevated into ridges of papillæ. It is one of the most striking plants in cultivation. It flowers in May and June, and exhales a delicious perfume. It flowers from the apex of the pseudobulbs like an Epidendrum.

C. Parishii.—This plant is a native of Moulmein, and is very like the last, except that the flowers are not half the size, and the black veins and spots on the lip are far less developed. The bulbs are prismatic, and surrounded at their base by broad brown bracts.

C. Lowii, or C. asperata.—This Orchid has pseudobulbs 5 or 6 inches long, slightly curved, and surmounted by two leaves. The flower-stem is a foot long, and bears two rows of pale sulphur-coloured flowers. The labellum is white, with radiating lines of deep chocolate-brown. It is a native of Borneo, and flowers in June and July.

C. Massangeana is a rare variety of C. Lowii, with larger buff-coloured flowers.

The above species, from C. speciosa, all require a high temperature and moist atmosphere; they are best grown in pots, and require more compost than he white-flowered Indian species.

C. fimbriata.—This is a dwarf Cœlogyne, from China, and needs cool treatment; the pseudobulbs are ovate, from half an inch to three-quarters of an inch in diameter, each with two bright green leaves. The habit is straggling, as the bulbs are separated by long slender stems. The flowers are about an inch in diameter, a pair on each flower-stalk. The sepals and petals are pale buff, and the labellum, which is fringed, is veined and marbled with intense brown approaching black. It is very floriferous. The flowers are produced in autumn, and although small are exceedingly pretty. It would do well in a warm greenhouse, and should be planted in a basket or hanging pot. The flowers at a little distances might almost be mistaken for a swarm of humble-bees. This little Orchid deserves a wider appreciation than it obtains. *B. T. L.*

(*To be continued.*)

The Apiary.

POLISH BEE-KEEPING.

I have been deeply interested lately in reading a book called *How to Make the Land Pay*, by the Rev. Henry P. Dunster. One of the chapters of this interesting and instructive book is devoted to the subject of bee-keeping. Mr. Dunster has travelled in every country in Europe, and has made good use of his eyes in his travels. He says Southern Russia, Austria, Germany, and especially Poland, make large profits by bee-keeping. To make this article more complete I have been corresponding with Mr. Lusicki, of Warsaw, who also sent me a Polish bee-book, and a beautiful picture of a Polish bee farm printed in colours. It would appear from general statistics that the Poles (as well as Russians) keep bees more for the wax than the honey, as wax is so much used for candles in the Roman Catholic and Greek churches. Mr. Lusicki tells me that at Warsaw there is a large apiary, with a practical school attached. In this school or cottage there are 500 students of both sexes who listen to lectures in school, and then go out into the apiary to practise what they have been taught. Mr. Lusicki is the director of a museum at Warsaw, where various products of bees are publicly displayed, such as wax candles, wax flowers, hives of all nations, and books on the subject. At the school the students are taught to make various preparations of honey, especially a kind of gingerbread, which is getting more popular as an article of food year by year. It seems as though the taste for honey products is an "acquired taste," like the daughter-in-law elect in *Mikado*. Remembering that bees formerly lived in trees, the Poles ignore straw, and always make their hives of wood: they use boards of Pine or Oak 1½ inch thick. Mr. Dunster says the hives are conical in shape, about 8 inches in diameter at the top and 20 inches at the bottom. The entrance for the bees is of a triangular shape, and here I do not agree with them, for the simple reason that mice would certainly think that shape peculiarly delightful. At the back of the hives is a door, where the honey can be removed. The Polish bee-keeper takes good care that the bees have enough for winter, and, as far as I can gather, does not kill them. He studies the season, and when he thinks there is just sufficient summer left for the bees to get enough for themselves, he goes to a hive in the evening, lifts it up, and stands it on an empty hive, which it is sure to fit, as they are made to scale. He then smokes the bees downwards, and when they are all gone down into the bottom hive, he takes away the full hive, and the bees energetically set to work to prepare for winter. Should the honey season suddenly cease, of course feeding must be resorted to. Just one word of advice this cold weather about bees—let them alone. *Walter Chitty.*

The Flower Garden.

ROSES.

A few more Roses may be pruned, but the general lot had better be left over for a few weeks, especially in favourable situations. I am surprised that more Roses are not grown on the pegging-down system. Moss and Provence Roses succeed admirably thus treated; I have also found hybrid perpetuals thrive well under the same circumstances, and they have a better opportunity of ripening their growths, as the young shoots which spring from the centre of the plant have all the light and air to themselves. After the Roses have lost their leaves cut out all the old shoots of the previous year, select five or six of the young growths, cut them of the requisite length, and peg down with a strong hooked stick almost close to the ground. Thus treated I have had hybrid perpetuals making growths from 7 to 8 feet high. *W. M. Baillie.*

The Orchid Houses.

VANDAS.

In the East Indian house Vanda trees will need careful attention just now to well ripen the growths. As the sun appears, shading and moisture are generally used accordingly, but with V. teres and V. Hookeri no shading ought to be used, and as little moisture for a few weeks as possible. The object in doing this is to force the flowers out of the previously made growth. Of course, with weakly, unhealthy plants there would be a risk of losing the plants by this treatment, as they are just now showing an inclination to grow. Specimens of Vanda Sanderiana that may have grown leggy and are backward in growing may be helped by wrapping sphagnum round their stems, and keeping it well moistened.

ONCIDIUMS.

Oncidium Papilio (the butterfly Orchid) certainly grows and flowers very freely when grown in the Vanda-house. Any pieces that may be growing on cork I would strongly advise to be taken off at once. I find they do far better on Teak blocks, so much so that I have entirely dispensed with the cork and Teak baskets too. It should be borne in mind that these keep flowering on the old flower stem. Oncidium Lanceanum is quite at home on the north side of this house. It seems to revel in the moisture with the Phalænopsis with a bed of sphagnum moss under them, they are just sending out their long roots, and will shortly be running along the sphagnum bed. It is important that the plants should be kept well above the rim of the pot when potted. This Oncidium must neither be exposed to the sun nor syringed.

CATTLEYA-HOUSES.

In these, while attention is being paid to the flowering Trianæs, in watering, potting, and cleaning, the Mossiæs must be carefully watched, for if too much water be given before they start into growth, the flower-buds will be blind, and probably cause the rotting of the leads, too. The same caution is required with plants of C. Mendelii, or they will perhaps show the yellow leaves so much dreaded by Orchid growers. Much better keep on the side of dryness till active growth commences. There will be no necessity to shade Cattleyas just yet, except to prolong the bloom, or retard any varieties. C. Dowiana and C. aurea are about starting to grow, and it is most important that these should have a position very near the glass, but not much water, and only shaded during the brightest sunshine of the very hot summer weather.

DENDROBIUMS.

Those that are not yet starting into growth will require frequent sponging, as thrips, &c., are sure to be found on these if there are any in the house. D. Wardianum is now growing very freely and must have abundance of water. This Dendrobium should be grown quickly with plentry of air, and hanging quite close to the glass. Calanthe Veitchii ought not to be allowed to become too dry or shrivelled during their resting period. These will be shortly starting to grow, and should then be potted, and have a good place close to the glass on the south side of the house.

COOL-HOUSES.

In the cool-houses any newly imported pieces of Odontoglossum, Epidendrum, &c., that have been potted with only charcoal or broken crocks during winter, may now be furnished with very fibry peat, charcoal, and living sphagnum; too much care cannot be taken to secure the latter for all Orchid potting. *A. Bradshaw, Waddesdon, Feb* 24.

Plants and their Culture.

TEA ROSE HOUSE.

Where a separate house is set apart for these—and it is a useful addition to any garden—and plants are in sufficient numbers, that they may be taken into the house in batches, there will be little difficulty in having a succession of bloom from the end of September until June. Where plants have been started early they will by this time be much benefited by having a thin mulching of loam and manure in equal quantities, with a good soaking of soot-water twice a week given to them. They should be well syringed on all fine days, shutting up the house early to utilise sun-heat, thereby pushing on the young growths. The undermentioned varieties I find to be the most useful, and which stand indoor treatment the best:—Catherine Mermet, Safrano, Madame Falcot, Etoile de Lyon, Belle Lyonnaise, Goubault, Isabella Sprunt, Madame de St. Joseph, Maréchal Niel, Perle des Jardins, Seline, Sunset, Rubens, Souvenir d'un Ami, Niphetos, Madame Bosanquet, Homer, and Marie van Houtte. I may mention that all our plants are grown in pots and tubs, so that after the flowering season is over they are removed to the open garden for the space of three months, and the house is used for growing Azaleas and other plants. It is seldom that I prune the indoor Tea Roses, merely taking out weakly shoots and any bare shoots that are not wanted. Mildew is their worst enemy, next to this is red-spider, &c.; the former is kept under by dusting the foliage on the first appearance with sulphur mixed with a third part of lime slaked and sifted fine; washing the hot-water pipes over occasionally with this is a good preventative. Red-spider is destroyed by keeping the foliage well moistened, the house steamed once or twice a week. Greenfly is sometimes troublesome, but this pest is easily killed by a little fumigation with tobacco. The soil most suitable for the Roses is good fibrous loam, half-inch bones, and a little charcoal, but where the loam is at all stiff or of a sticky nature some good fibrous peat should be added to keep it sweet and open for the large quantities of water required during the growing season demand that efficient drainage of the soil be secured. A temperature of 50° to 60° will be found to suit them best for general work. Hybrid perpetuals that are being prepared and brought on gently will stand a few degrees more heat now the days are getting longer, although the rise in temperature should be regulated according to the time when the blooms are most wanted. The plants if in pots will now be benefited by having water in which has been steeped soot, or some of the artificial manures now so much in vogue may be employed. *A. Evans, Lythe Hill Gardens.*

Hardy Fruit Garden.

WALL-TREE BORDERS.

When the nailing of trees on walls is finished, the path at the base of the wall should receive a slight digging over with a fork, during which operation all suckers springing from the roots of the trees should be sought for, followed down carefully to the roots from whence they spring, and then be cleanly cut away with a knife. The vitality of trees is much impaired, without the cultivator being aware of it, owing to the presence of these robbers. They not only rob the trees directly of nourishment, but they also rapidly emit roots on their own account, which impoverish and dry up the soil for a distance round them, to the detriment of the parent tree. The break-up of the hard trodden surface in front of trees on walls is a most esssential practice. In artificially made fruit tree borders, generally of strong soil, when much trodden the soil is converted into a kind of impervious crust, nearly air and moisture proof. In fact, when strong loamy soil is used for such fruit trees something of a looser texture should be placed over it to form the alleys. Alleys on fruit tree borders made last season may require raising a little, with a fresh addition of soil.

BORDERS FOR PEACH TREES.

It is best to mark off from the borders permanently good sized alleys for the convenience of attending to the trees, and also to be brought simply under shallow cultivation as above indicated. These should have at least an area of 3½ feet (twice that distance is not too much if it can be afforded) from the base of the wall, and certainly on each border the uncropped and shallow worked alley should extend still further from the base of the wall. In consideration of the welfare of the Peach trees, no one I am sure would object to sacrifice a little vegetable ground. If it is necessary to crop the ground close to the base of the wall leave a yard each side of the stems uncropped. Those who are making new Peach tree borders would do well to make them narrower than usual and allow the Peach tree roots to be the sole occupants. By proper treatment the roots could then be maintained nearer the surface than would be possible if the border were worked for vegetable culture. A border 6 or 7 feet wide is quite large enough to support healthy vigorous trees covering a wall 12 or 14 feet in height.

MISCELLANEOUS.

Netting which has been stored away shou'd be examined occasionally in order to ascertain that vermin have not reached it. Large packing cases with tight-fitting lids supply capital accomodation for storing netting, tiffany, and such-like. The cases should of course be placed in a thoroughly dry shed. During bad weather the stock of nets may be examined; any that would repay such work should be repaired with fine twine, thus saving time at a busy season of the year, when the nets are brought into constant use. Where Strawberry plants are not in cold frames for the purpose of supplying ripe fruit to come in between the last crop in pots and the first earlies out in the open, and in the absence of better appliances, a few old frame lights may be usefully employed placed over the earliest variety out in the open, in order to obtain an intermediate supply of ripe fruit. *G. H. Richards, Somerley, Ringwood.*

The Kitchen Garden.

LIFTING CELERY, PARSNIPS, AND LEEKS.

Celery will soon show symptoms of running to seed, and with the object of retaining them as long as possible fit for use, they should be lifted from the trenches, and laid in ashes in a cool shady position, the leaf-stalks being first secured with a strip of matting. This prevents any dirt or ashes from getting into the heart of the plants. The cleared Celery ground, after being dug over and levelled, would be very suitable for either of the main Onion or Carrot crops. Parsnips and Leeks should also be lifted, the former being stacked in heaps and covered with ashes or straw litter, and the latter laid-in similar to Celery.

SPEAR MINT.

Usually at this season there is great demand for this herb. Roots lifted from the open, planted into pots or boxes, and then placed in heat as required, is the general practice for obtaining a supply. A much better one is to plant now for next year's forcing, in boxes about 2 feet long, 1 foot wide and 9 inches deep, and afterwards stood out-of-doors and duly attended to throughout the summer with water, &c. If treated as above it becomes thoroughly established, and when placed in gentle heat in winter produces an abundant supply. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	March 8	Sale of 7000 Bulbs of Lilium auratum, from Japan, at Stevens' Rooms.
TUESDAY,	March 9	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committees, at 1 P.M.
WEDNESDAY,	Mar. 10	Sale of Roses, Fruit Trees, Border Plants, Shrubs, Bulbs, &c., at Stevens' Rooms. Sale of 4000 Japanese Lilies and Irises, Roses, Plants, and Bulbs, &c., at Protheroe & Morris' Rooms.
THURSDAY,	March 11	Sale of the Fifth Portion of the Collection of Orchids formed by the late F. K. Harrison, Esq., at Stevens' Rooms. Meeting of the Société Botanique de France.
FRIDAY,	March 12	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
SATURDAY,	March 13	Sale of Roses, Fruit Trees, Border Plants, Shrubs, Bulbs, &c., at Stevens' Rooms.

EUROPEAN Horticulture, and a host of friends in all countries, have suffered a severe loss in the somewhat sudden death of Professor EDWARD MORREN of Liège, on February 28. The Professor was so well known in this country, and his learning, his versatility, his oratorical powers, his geniality, were so much appreciated, that the shock will fall upon many with all the poignancy of a personal loss. For ourselves, we have lost a friend of twenty or more years' standing, one with whom we have been more or less intimately associated in almost all the great horticultural meetings and congresses in this country and abroad, from the first "International" at Brussels in 1864 to that of Antwerp in the year just past. It is hardly too much to say, that in all the principal events in European horticulture during that period MORREN took an active part.

His somewhat sudden death is thus the severance of ties of friendship and of professional relations of no ordinary character. MORREN was both accomplished and learned, for he was a scholar and a man of science. Those who knew him admired his powers as an orator, envied his grasp of his subject, his fluency and lucidity as a lecturer, and marvelled at his energy. Above all, those who were privileged to know him intimately appreciated him as a warm-hearted, faithful friend. We have said that his death was somewhat sudden; in point of fact he had been a sufferer for many years, and few who were struck with the energy and gaiety of manner of the late Professor could have guessed that he was an habitual sufferer from the malady to which he eventually succumbed. Those who saw him in the Presidential chair at Antwerp last autumn, however, noticed a sad change, and predicted that which has now happened. Still it is only a few weeks since he gave one of those academic discourses in Brussels, evincing fulness of knowledge, firmness of handling, and elegance of style for which he was so well known. In the ordinary course this address would have been made the subject of comment in these pages, but its author has passed away before we have found an opportunity of alluding to it. In it he reviewed the whole subject of sensation and motion in plants in the light of recent discoveries, and showed how exact is the correspondence between vegetables and animals, the phenomena presented in the two kingdoms being identical in kind, if not in degree.

EDWARD MORREN was the son of a distinguished father, whose memory he venerated, and whose plans for the reorganisation and extension of the Botanical Institute of Liège, but much enlarged and modified, he had the happiness of carrying to a satisfactory completion only a short time since. CHARLES MORREN was a Professor at Ghent, where his son EDWARD was born in 1833. The father had many of the characteristics which afterwards became apparent in the son. He, too, was not only a man of science, but a scholar and an administrator. It is singular indeed to see how closely the son followed in his father's course, and if the son was anywise less versatile than the father it is because the advance of science has become so pronounced that it is no longer possible for any one, however eminent, to master more than a portion of any one branch. In 1835 the elder MORREN was transferred to Liège, and there continued to occupy himself, not only with his professorial duties and his botanical researches, but with agricultural and horticultural literature. The education of his son naturally occupied much of his attention. EDWARD MORREN was carefully and thoroughly educated for the law as an introduction to a political career, for father and son were patriots in the best sense, and the father took part in those events which have made Belgium what she is now—one of the most prosperous and contented of states. During his legal studies EDWARD MORREN turned his facile pen to account as a journalist, sometimes in the gaiety and light-heartedness of youth writing in support of some measure of domestic reform in one journal, and against it in another, summing up it may be the whole case *pro* and *con* in yet another! The law and journalism, however, offered less attractions to him than natural science. Chemistry, geology, entomology, botany—these were his favourite pursuits; and his father, perceiving his son's bent, wisely fostered these tendencies, and aided and encouraged him to such good purpose that he took his degree at the University with the highest distinction. The Belgian Academy of Science proposed about this time as the subject of a Prize Essay the subject of leaf structure and the green colouring matter of plants, and MORREN encouraged his son to work at the subject with a view to compete. This he did, to such purpose that he obtained the prize, and thus enriched science with the first of a long series of memoirs. After a few years the elder MORREN was stricken with disease, and the son, though little more than a youth, was called on to undertake his father's duties in the University, and the management of his affairs generally. So well did he accomplish the task that, on his father's death, EDWARD MORREN was appointed full Professor, and from that time to this has continued his multifarious duties. In Liège he will be specially remembered for the reorganisation and development of the Botanic Garden and its laboratories and lecture-rooms, an account of which, with illustrations, was given in our columns in 1884. To our readers he will best be known as the energetic Secretary of the Federation of Belgian Horticultural Societies, the Editor of the *Belgique Horticole*—a publication commenced by his father,—of the useful *Correspondance Botanique*,—and as the most unwearied investigator of the Bromeliads. Of these plants he had, we believe, the most complete living collection, and he had been for many years accumulating notes, drawings and observations, with a view to the publication of a complete monograph of this interesting and beautiful family. How far his notes may be in a fit state for publication we do not know, but if it were at all possible their issue would form an appropriate monument to the patient investigator.

Thus has come to an end a career marked by incessant work and noble aim. EDWARD MORREN has died in the maturity of his powers, before the force of his intellect had in any way been diminished by natural decadence. We might indeed have confidently expected several years more useful work from him. "*Diis aliter visum.*" We can but honour his memory, and tender our cordial sympathy to his afflicted relatives. EDWARD MORREN leaves a widow and other relatives but no direct descendant.

—— ODONTOGLOSSUM INSLEAYI SPLENDENS.—The accompanying illustration (fig. 57), taken from a fine example grown by Mr. A. BRADSHAW, gardener to Sir FERDINAND DE ROTHSCHILD, at Waddesdon, gives a good representation of the showy appearance and noble proportions of this stately Orchid, which was fully referred to, together with cultural note, in "The Genus Odontoglossum," at p. 268 of our last issue. In giving its portrait it will be unnecessary to describe the flower further than to say that the sepals and petals are yellow, clouded and shaded rather than barred with brown; lip very showy, bright yellow, blotched with dark scarlet. It is a charming Orchid, and by the few only which have appeared out of the original importations of Messrs. HUGH LOW & Co. and Messrs. BACKHOUSE and F. SANDER & Co., it seems to be a varietal form brought about by much the same influence as that which gives us the handsome spotted and barred O. crispums, and if so it is never likely to become common.

—— PRIMULA CONFERENCE.—It is to be feared that the prolonged and severe winter which still prevails on the Continent may prevent some intending exhibitors from carrying out their intentions. Some of the foreign growers have, however, intimated their intention of being present. Seeds of rare species have been received from Canada and the Himalayas, which have been distributed among the leading Primula growers as far as circumstances permitted. These plants will be available on some future occasion.

—— DR. DE REGEL.—This gentleman, whose name is so well known to British horticulturists and botanists, has resigned the post of Director of the Botanic Garden, St. Petersburg, and is succeeded in his office by DR. ENGLER, lately of Breslau.

—— BROMELIADS.—M. ANTOINE's noble publication advances with regularity. The seventh part, now before us contains figures of Karatas Carolinæ, Meyendorfiids spectabilis, Binoti, and Morreniana, with accompanying text. The plates are partially coloured lithographs, showing the plants of life size.

—— ROYAL MICROSCOPICAL SOCIETY.—The next meeting of the Society will be held on Wednesday, the 10th inst., at 8 o'clock precisely, when the following paper will be read by A. D. MICHAEL: "Life History of an Acarus, one stage of which is known as Labidophorus talpæ, and upon an unrecorded species of Disparipes."

—— THE WEATHER.—Daffodils and swallows will be daring indeed if they come while this weather lasts. Our neighbours on the other side of the Channel, and, indeed, on the other side of the Atlantic, are no better off. From Massachusetts, from New York, even from Florida we hear of severe cold. Switzerland is locked in rude winter, and at Baden-Baden the Primroses are buried in snow, with their roots in frozen soil. The prospects of the Primula Conference, so far as foreign exhibits are concerned, are as above stated not encouraging. Some from whom collections were expected will be, it is feared, wholly unable to send specimens.

—— BIRMINGHAM AND MIDLAND COUNTIES GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.—The programme of this Association shows that an excellent start has been made. The new members now number about 180, and it is intended to establish a library in connection therewith, contributions of books, &c., to which will be very acceptable.

—— COOMBS *v.* ROGERS: CUTTING DOWN GARDENIAS.—We are requested to state, in reference to this case, a report of which was given last week, that the defendant's solicitor asked for the sum of £15 as damages, but the magistrate thought the claim would be fully met by awarding the sum of £6.

—— FIXTURES FOR HORTICULTURAL SHOWS IN MARCH.—The Royal Horticultural Society will hold its first spring meeting of the three committees on the 9th, with another on the 23d.—The Royal Botanical and Horticultural of Manchester will hold a two days show on the 16th and 17th.—Bristol Spring Show on 17th and 18th.—Liverpool Horticultural Association Spring Show on the 18th.—The Glasgow and West of Scotland Horticultural Society will hold a show of Hyacinths and spring flowers in St. Andrew's Hall, on the 24th, and an exhibition of a similar character will take place on the 30th and following day, at the Royal Aquarium, Westminster.—The Bath Bulb Show takes place on the 24th.

—— Royal Horticultural Society.—At the invitation of the committees of the Royal Horticultural Society a supper was given to the men employed in the gardens at Chiswick and South Kensington on Friday evening, February 26, at the Bolton Hotel, Chiswick, when Dr. Hogg, member of the Council, took the chair. The meeting was designed as an acknowledgment of the services rendered by the workmen in the various trials and experiments, and as a means of promoting a mutual good feeling between the workers in different departments of the Society's business. Dr. Hogg gave a very interesting historical retrospect of the work of the Society and of those who had taken part in it, from T. A. Knight downwards. Mr. Shirley Hibberd, on whom the labour of organisation mainly fell, exerted himself most successfully to promote the success of the meeting, and the mixture of grave and gay, substantial and imaginative, was so much appreciated, that a wish was expressed that the feast might be made an annual one. Meetings of this character are always pleasant, and every one who has experienced (as so many of our readers must have done) the courtesy and attention to the wants of visitors paid by the *employés* of the Society at Chiswick, must acknowledge that they have amply earned this expression of gratitude and goodwill.



Fig. 57.—Odontoglossum insleayi splendens. (see p. 304)

—— A Market Produce Sample Depôt.—Amongst the most practical of the market arrangements in Berlin is that recently inaugurated by the market authorities in that city. A permanent exhibition is now established of samples of all articles of daily consumption, and includes those sold by grocers, dealers in colonial wares, luxuries, drugs, country and garden produce of every kind. The purpose of the sample depôt is to facilitate the sale of such goods by means of the permanent exhibition, and by the publication of future sales and offers; and, further, the object will be attained —1. By means of a show of samples, sample books; by exhibiting price currents, telegraphic announcements, address cards, prospectuses, &c., which will be open to public inspection without charge. 2. By undertaking the business of a commission agency and acting as representatives of merchants, importers, and

exporters. 3. By advertising in the public prints free of charge to those showing samples. 4. And by undertaking to carry out sales by auction on the behalf of inland or foreign traders. The exhibitors will subscribe for the services of the sample depôt authorities the sum of 20 marks yearly, and the legal tariff fixed for commission agents. The space required by the exhibitor for the due exhibition of his wares will be alloted without charge. These arrangements would seem to be well suited to both buyer and seller alike, as the former can inspect, free of cost, any article he is desirous of buying either wholesale or retail, and the latter is certain of finding a market for his goods without any further charges than those mentioned. Measures will be taken to prevent any abuse by dishonest persons of the information at the disposal of the depôt by its being afforded only to buyers of known probity.

—— HORTICULTURAL CLUB, 1, HENRIETTA STREET, COVENT GARDEN, W.C. — The usual monthly dinner and *conversazione* will take place on Tuesday, March 9, at 6 o'clock; the discussion will be opened by Mr. SHIRLEY HIBBERD, on "The Preservation of our Native Flora."

—— PISONIA GRANDIS A SPARROW CATCHER.—We learn from an Australian paper that at a meeting of a gardeners' society in Victoria, one of the members (Mr. SMITH) showed some seeds and leaves of Pisonia grandis, a natural sparrow-catcher. The seeds are like an elongated barleycorn, and are covered with a very sticky gum, which adheres to the legs and feathers of any bird that comes in contact with them. Mr. SMITH stated his plant had caught over 100 sparrows. The birds dropped to the ground, and were unable to fly away. The tree is very ornamental, and grows freely. There are three known specimens of the tree.

—— A COLD FEBRUARY.—Mr. G. J. SYMONS, F.R.S., addressing the *Times*, writes:—"For twenty-seven years at least, and for how much longer I do not yet know, February has not been so cold as in 1886. The average temperature in this part [north-west] of London at 9 A.M. on every day in February from 1859 to 1878 was 40°.3, and the seven subsequent years, 1879 to 1885, give nearly the same value, so that 40°.3 may be regarded as the temperature to be expected. In 1886 it has been only 32°.9, and this has followed a December and a January each below the average. As regards February, there have been since 1858 only two years in which the average was below 35°—viz., 1875, when it was 34°.8, and 1873, when it was 34°.6. The low mean temperature has not been due to intense frost. In 1864 and 1865 the frost was more intense than on any day in last month, but it did not continue. February, 1886, is specially remarkable as the only February in twenty-seven years in which the temperature never once reached 50°, the highest having been 47°.7. There were only eight days in the month on which the temperature even rose to 40°, and the ground was frozen every night but two. The characteristic of the month has, therefore, been, not severe frost, but persistent—in fact, almost uninterrupted—low temperature."

—— THE NEW PARK AT EXETER.—We learn that Messrs. LUCOMBE, PINCE & Co.'s tender for the supply of the ornamental trees and shrubs required for the Belmont pleasure-grounds at Exeter has been accepted by the municipal authorities of the town.

—— SCOTCH MOORS AND MOUNTAINS.—Mr. BRYCE, M.P., has re-introduced his Bill for securing to the public the right of access to mountains and moorlands in Scotland. In its preamble it is remarked that large tracts of uncultivated mountain and moorland, formerly depastured by sheep and cattle, have of late years been stocked with deer, and attempts have been made to deprive Her Majesty's subjects of the rights which they have heretofore enjoyed of walking on these and other such lands. To remove doubts as to the rights of the owners it is proposed to enact that no owner or occupier of uncultivated mountain or moor-lands in Scotland shall be entitled to exclude any one from going on them for the purposes of recreation or scientific or artistic study, or to molest him in doing so. For a trespasser, however, to have a complete defence no special damage must result from his trespass. The measure is not to apply where a person goes on land in pursuit of game, or to take eggs, or accompanied by a dog; or where damage is done to the surface, or to trees or buildings, fences, &c.; or where sheep or cattle are disturbed, so as to cause damage; or where there is malicious intent. Moreover, lands are outside the Bill that are *bonâ fide* enjoyed as a park or pleasure ground in connection with and in proximity to a dwelling-house, as also are plantations of young trees.

—— ODONTOGLOSSUM.—Mr. BULL sends us a flower with seven perianth-segments, two lips side by side, and two columns also side by side. Clearly there has been a union side by side of two flowers with suppression of three segments.

—— PHYLLOXERA AT THE CAPE.—Some time since we had occasion to comment on the vexatious restrictions placed on the importations of living plants into the Cape, in order to prevent the introduction of the dreaded Phylloxera. All such remonstrances, however, whether addressed to European, African, or Australian Vine-growers, proved unavailing. In the case of countries beyond the seas it was argued that there were sounder reasons for the adoption of such restrictions than there were in the case of countries having a land connection. For our own part these arguments had little or no force, as we were convinced, from the history of the spread of the insect in Europe and its life history, that it would be absolutely impossible to prevent the immigration of the insect, and moreover that in the futile endeavour to prevent the inevitable very serious and wholly unnecessary injury is done to other industries. We now learn from *Nature*, that in spite of penalties of £500 or two years' imprisonment on the introducers of living plants into the Cape, "two or three vineyards are simply swarming with Phylloxera." And so for five years or more utterly unnecessary injury has been inflicted on an important branch of trade and commerce. The unanimous opinion of experts, and the invariable experience in European vineyards was allowed to go for naught. No one would object to any restrictive measure for which even only probable advantage might accrue; but the exercise of reasonable precaution is one thing, the adoption of arbitrary restrictions, not only against all probabilities but against direct evidence, is an evidence of official stupidity only to be accounted for by the exigencies of party politics, or the promptings of senseless panic. We earnestly hope that the climatal conditions of the Cape may not be suitable for the prolonged incursion of the insect. There are grounds for hope that in such a climate, after the first outburst, the pest may gradually disappear. Incidentally we may mention that an unusually long period—many months—has now elapsed since we have seen any evidence of the presence of the insect in our English Grape-houses. This leads to the inference that the stamping-out policy is effectual with us. Unfortunately such measures are not available in vineyards, where grafting on certain American Vine-stocks, prolonged submersion where possible, or the use of insecticides, such as sulpho-carbonates and carbon-bisulphide, have each and all been found serviceable.

—— FRUIT FROM THE CAPE.—Messrs. WEBBER & Co., of Covent Garden, last week received a small consignment of Pears, Louis Bonne and Beurré Superfin, in splendid condition, after a journey of 8000 miles. They anticipate in the future from the same source a regular supply of various sorts throughout the spring months.

—— THE ORCHID CONFERENCE.—The official report, containing the papers read at the Conference, with comments by Mr. RIDLEY and Mr. BURBIDGE on the plants exhibited, has just been issued as the first part of the new volume of the *Journal of the Royal Horticultural Society*. Although much of the matter has been forestalled, yet from its compactness and convenient size many will gladly possess this official record of an interesting conference. The publications of the Society have not been numerous of late years, but they certainly have been useful, as witness the report of the Apple Congress and now of the Orchid Conference. We believe, too, that the report on the effects of frost in the winters of 1879—1880 and 1880—1881 is in an advanced state of preparation under the editorship of the Rev. GEORGE HENSLOW. No such exhaustive report on the action of frost has, we believe, ever been elaborated, and the value of the information tabulated will, we venture to think, compensate for the length of time the work has been in hand. It is satisfactory to find in these times that the Society is strengthening its grip on the attachment of horticulturalists proper, and providing them and the public at large with practical proofs of its utility.

—— BEES AND THEIR CELLS.—A super-apian geometric faculty has often been attributed to bees on account of the mathematical accuracy with which their cells are constructed. It has lately been shown, however, by Dr. MÜLLENHOFF, before the Physiological Society of Berlin, that the regular figure of the bee-cell is, as BUFFON suggested, due to mutual pressure, equal in amount on all sides, of cell upon cell under certain conditions. Thus, says *Nature*, the geometrically regular figure of the bee-cells is conditioned by physical laws, and not by any knowledge inherent in the bees of geometrical laws in respect of the greatest economy of space and material. Without the action of the necessary external conditions the bees are not able to construct regular cells, as is shown by the queen-cells, which, constructed isolatedly, have the irregular form of a thimble.

—— ROYAL INSTITUTION OF GREAT BRITAIN.—Two lectures on the "Nature and Protective Use of Colour in Caterpillars" will be given by EDWARD B. POULTON, Esq., M.A., to be delivered on the following days, at 3 o'clock:—Lecture I. Saturday, March 13, 1886.—DARWIN's explanation of the use of bright colours in the animal kingdom—The colours of caterpillars an obvious exception to this interpretation—WALLACE's explanation of the colours of caterpillars as protective—The enemies of caterpillars—Protection by resembling surroundings, by acquiring a disagreeable taste or smell, by resembling the latter class, by assuming terrifying marks or attitudes—The few rare cases of active defence, and an explanation of its rarity—Other instances of similar protection in the animal kingdom. Lecture II. Saturday, March 20.—WEISMANN's work upon the origin of the markings of caterpillars—The origin of special features in common caterpillars—The essential nature of the colour of caterpillars—Its probable history—Spectroscopic proof of the existence of modified vegetable colours in many caterpillars—MELDOLA's anticipation of this discovery; his theory of the relations between the colour of caterpillars and that of their food-plants—Observations and experiments upon these relations—The complex effects of the food-plants upon caterpillars—Conclusions as to the nature of this influence.

—— AYLESBURY NATIVE GUANO.—This manure is obtained by what is called the A. B. C. process of treatment of town sewage, by which all the fertilising properties of the same are preserved in a portable and inodorous state. This easy and inexpensive method of dealing with a difficult sanitary subject seems to afford as useful a means of treating the sewage of large towns and villages as the dry-earth closet system of MOULE does for isolated dwellings. The native guano is of value for roots and grain crops, grass, Hops, Vines, Pines, fruit trees, vegetables and flowers. The manure bears out the opinion of Baron LIEBIG—"In the solid and liquid excrements of men and animals we restore to our fields the ashes of the plants which served to nourish those animals."

—— THE CHILIAN FLORA.—In an interesting note in the current number of the *Journal of Botany* Mr. BALL gives a brief account of a recent journey undertaken by Professor PHILIPPI in the desert of Atacama. This region is in most years absolutely rainless, but at intervals of several years the region receives occasional showers. The southern portion of the province is not quite so arid, having an annual rainfall of 2—4 inches!; nevertheless a few Cactuses and shrubby Composites occur. During the last winter season (July—August) an extraordinary amount of rain fell in Northern Chili. Professor PHILIPPI availed himself of the rare opportunity to visit the southern districts of Atacama. He found the Travesia plain, which ordinarily is "absolutely bare," on this occasion a flower garden. "The whole ground was covered with flowers of the most different classes, most of them annuals, some perennials, but low, and lying on the ground, and very fine shrubs. No trees were seen, and the only tall plants were a Cereus (probably C. Quisco), which here, as in

Central Chili, prefers the northern sunny slopes of the hills." In fourteen days 285 species of flowering plants were collected, and three Ferns. Seventy-four species are said to be new to science. The residents declared that no such vegetation had been seen for many years. Great interest attaches to the numerous annual plants found, inasmuch as their abundance suggests the explanation that the seeds of these plants may keep their vitality for many years, ready to spring into growth when the rain does fall. It is to be hoped that Professor PHILIPPI has collected seeds of these plants, and that he will distribute them in Europe. Very likely the plants, grown under other conditions, would become perennial.

—— RICHMOND HORTICULTURAL SOCIETY.—A complimentary dinner to Mr. J. H. FORD, the Honorary Secretary of the Richmond Horticultural Society, took place in the Masonic Hall, Richmond, on Thursday evening, February 25. Sir J. WHITTAKER ELLIS, Bart., M.P., presided, and there was a large attendance. Mr. FORD was presented with a gold watch and a purse of sovereigns. The inscription on the watch was as follows :—"Presented with a purse of sovereigns to Mr. J. HAWKINS FORD, in recognition of his valuable services as Honorary Secretary to the Richmond Horticultural Society, February 25, 1886." In returning thanks the Secretary announced that the next summer show of the Society would be held on July 7, and the Chrysanthemum show on November 11 and 12, 1886.

—— DISEASES OF PLANTS CAUSED BY THREAD WORMS.—M. PRILLIEUX has recently published a paper on this subject referring to the nematoid worms which (1) penetrate the interior of leaves and cause their decomposition ; (2) which produce galls on the flowers of grasses ; (3) which produce galls on roots ; and (4) those which attack Beetroots. The two first worms belong to the genus Tylenchus ; the two last are species of Heterodera.

—— PRESTON AND FULLWOOD HORTICULTURAL SOCIETY.—On Saturday evening, February 27, a meeting of the members of the committee of this Society was held at Preston, when final arrangements were made in connection with the forthcoming spring show, to be held on March 17 and 18. At the close of the meeting some discussion took place on the retarding or lengthening of the period of the blooming of the Chrysanthemum. This was in a large measure brought on by Mr. A. WATERS, gardener to the Misses FARRINGTON, Worden Hall, near Preston, placing on the table a bouquet of Chrysanthemums, made up of Japanese Boule d'Or and Sœur Melanie pompon, small Ivy leaves and Ferns being very nicely worked in among the blooms. Mr. WATERS stated that when his plants of Sœur Melanie had finished flowering last October ; he cut them back slightly, and started them into growth again. The plants were kept gently moving during the last three months, and he is now rewarded with a nice lot of bloom which he has found very useful during the past month. A vote of thanks was given to Mr. WATERS. It having come to the knowledge of the committee that the Royal Horticultural Society purpose holding a summer show at Liverpool, a resolution to the following effect was passed unanimously :—"That the announcement of the intention of the Royal Horticultural Society to hold a summer show at Liverpool during the last days of June and the first in July, has been received by the members with great satisfaction ; and they also trust the exhibition may in every respect prove a thorough success."

—— FIRE IN COVENT GARDEN.—At mid-day on Saturday, February 27, a fire broke out in the central avenue, which threatened at one time to reach serious dimensions. Luckily help was ready at hand, and the fire was extinguished after it had gutted the shop and cellar of Mr. GARCIA, and the cellars of Mr. RAINES, Mr. SLAYMAKER, and Mr. HOOPER ; blistered the front of neighbouring shops, and destroyed some small portion of the roof over the central portion of the market.

—— GARDENING APPOINTMENT.—Mr. GEORGE COOK, Foreman, Eridge Castle Gardens, has been appointed Gardener to Mrs. WILSON, Rauceby Hall, Sleaford, Lincolnshire.

EXTRAORDINARY TITHE.

THIS is one of those "burning questions" about which there is (as I have experienced in my conversations with many who are interested in what may be called the higher aspects of farming) a great deal of unnecessary heat and misconception, and in giving my views upon the subject I feel how necessary it is to take a calm and impartial view. It is true I am a parson, and that I live in a Hop-growing and fruit-growing county, so that I am personally interested in the subject ; but I have arrived at that period of life when one may be credited with a certain amount of judgment and practical wisdom, and when it is not likely the subject will interest me for many years longer ; it shall therefore be my earnest endeavour to nothing "extenuate or set down aught in malice." I do not take it up in a party aspect—in fact, I do not care one jot for its political aspect, and if I did the Editor would not suffer it to be discussed on such grounds, although it has been used, as many subjects have been, in that light, and I do not wish to impute motives to those who are bestirring them against it.

THE NAME.

This has had more to do with the feeling against them than some people are apt to imagine. "Extraordinary" to those who are unacquainted with Hop-growing districts sounds as if it were something unusual, and therefore unjust, and that when the Tithe Commutation Act was passed no provision had been made for them, and that consequently the parson had reaped an unexpected gain : this I hope presently to show is all a mistake. Hops have been always regarded as an extraordinary crop, they have always required special and extra cultivation, they were subject until about twenty years ago to a duty which had to be paid by the growers, and for these reasons the tithe on Hops was always an extraordinary one, that is, extra over and above the ordinary tithe.

THEIR HISTORY.

It will be necessary in treating on this part of the subject to go back now some fifty years ; then all tithes were levied in kind. The parson was entitled to the tenth of everything—the tenth shock of corn and the tenth pocket of Hops ; hence the tithe barn was a frequent adjunct of the vicarage, although in many cases the tithes were let to some occupier who farmed them, giving the parson money in lieu of the produce which he took. The Tithe Commutation Act of 1836 was intended to remedy a state of things which was very distasteful to most clergymen, and a money payment in lieu of tithes was accepted. The manner in which this was done was simply that the parson was required to give a statement of his income for the seven years previous to the passing of the Act, an average was struck, and the tithes were commuted at that account. This was, however, to be subject to variations according to the price of corn, and during the past thirty years there have been years when the parson has received £112 for every £100, while now he receives only £90, with every prospect of a further diminution of income, but the average for the fifty years has been £102 in this commutation. Hops were not included, and the question arose, how were they to be treated ? They had always been an extraordinary crop, and could not, therefore, be treated in an ordinary way. Even during the last twenty years I have known an acre of Hops sell for £150, and under the old system the parson would have been entitled to a tithe of that ; but if payment in kind was to be done away with, Hops must go with them, and how it was to be arranged was a question which was much discussed amongst Hop growers. Two courses were open : one was that in all Hop-growing parishes an increase on the ordinary tithe of about 1s. was to be paid ; but this was objected to by the farmers and the landowners. A. said, "I do not grow Hops, my neighbour B. does, and he makes lots of money by so doing ; why should my land help to pay his tithe ?" Moreover, the Hop-grower thought, "I may not always grow Hops, and why should I be called on to pay for what I ceased to grow ?" This, too, influenced the landlord, who, when he lets his farm, does so with the rates, tithes, &c., calculated. If he had a farm of 200 acres to let, the additional 1s. tithe would have compelled him to add £10 to the rent he demanded ; and so they decided—not the farmer, who had not a word to say in the matter—that is, the tenth bushel of Hops was not to be given, but a money payment in lieu of it should be paid ; and hence the extraordinary tithe on Hops was considered in those days an immense boon to the farmer, who paid his 8s., 10s., or 15s. an acre instead of what in some years would have been under the old system as many pounds ; and under this arrangement, if a farmer grubbed his Hops, he would no longer be required to pay his extraordinary tithes.

THE AGITATION AGAINST THE PAYMENT.

This is a matter which has sprung up within the last few years. Formerly such an idea never entered a Hop-grower's mind ; he knew, if he had been a grower under the old system, that he, at any rate, was not a loser by the new arrangement, while, if he became the tenant of a farm where Hops were grown, he knew that amidst the calculations he had to make was the payment of extraordinary tithes, but when he knew that the ordinary cost of tilling an acre of Hops was £25 or £30, the additional few shillings to be paid as tithe was a factor which did not much trouble him. As far as I can make out from the statements of those who are agitating the question, there are two principal objections brought forward.

1. It is an "impost." Unquestionably it is in one sense—that is, something laid on as a duty ; but speakers who use this term seem to think, as in the celebrated case in the House of Commons lately, that words have but one meaning, and in their minds the idea what impost sometimes bears—of something misleading or unfair, is the one which they seem to attach to the word. That in one sense it is an impost I cannot deny, but so are rates, so is rent, so is income-tax, and I see no difference between resisting the payment of one or the other. The incoming tenant considers what he has to pay, rates and taxes included, and decides whether he can undertake the tenancy or not.

2. It is a hindrance to the growth of Hops. There is nothing more persistently stated than this, but what are the facts of the case ? *A priori*, it would not appear likely that any one would be deterred by the extra payment of a few shillings an acre from entering on the cultivation of a crop which he expected would be a source of extra profit ; and in the course of a lengthened experience, and conversations with many cultivators, I have never met a single case in which a man has been deterred from growing Hops because of the extraordinary tithe ; but we have this fact in answer to such a statement, that during the last twenty years the acreage of land under Hops has doubled in this county. Hops are grown in the Isle of Thanet, for example, where twenty years ago not a Hop was grown ; while all through the county the evidence to the same effect is patent to every one. In my own parish the acreage has exactly doubled ; while, on the other hand, on farms where there is no extraordinary tithe (for there are such) not only has there been no increase, but fewer Hops are grown than formerly ; so that in this instance the absence of extraordinary tithe did not encourage the growth of Hops. But in both the real causes of the agitation are not far to seek, for they are those which are weighing down not only all farm produce but all manufactures also—they are foreign competition and over-production, and perhaps I may add adulteration.

Some years ago there used to be a great outcry against the duty to be paid on Hops : it was an impost, a burden on the British farmer and ought to be got rid of—in this neighbourhood as in others, meetings were called, the farmers were pretty well unanimous, there were only two malcontents and they were considered "old fogies." The idea was scouted which was suggested. Yes, you are getting rid of your own duty, but recollect you will let foreign Hops in. Foreign Hops, indeed !—just as if any nasty foreign stuff could compete with East Kents. And now what a change ! These very same persons are clamouring for a duty of 20s. on foreign Hops ; for while the East Kents still hold their own for the very fine sorts of Burton ale, the Bavarian and other Hops are largely used, and this of course brings down the prices of the home grown ones. It is the story of the Malt Tax over again ; loud and importunate were the demands for its repeal, and now they would be glad enough to get it put on again. But the chief cause of the outcry, I am sure, is, however agitators may disguise it, over-production. This is evidenced by the low prices that even good Hops bring to what they used to do, while the coarser and inferior sorts cannot possibly be remunerative ; and yet it

takes some time for the farmer who has been accustomed to get his £15 or £18 for the best Hops, to think that while they are as good now, he must be contented with less than half that price: yet in this year, which has by no means been a good one, he was exceptionally fortunate who could top the market with £8, while quantities were sold for 50s. The result of all this is, our local newspapers tell us, that some of the largest growers are grubbing their Hops, not on account of extraordinary tithe, but from unremunerative prices.

Nor is the question of adulteration to be kept out of sight. As the manufacture of shoddy has been one of the chief elements in lowering the price of wool, so there is no doubt that the use of chemicals in the manufacture of beer tends to keep the price of Hops down. The brewers indignantly deny this, but there is the strange fact, that in years when Hops are scarce the manufacture of beer goes on to the same extent as ever; something must be used if Hops are not. The whole matter of adulteration is one which is lowering our productions in the eyes of the world. We stop it in milk, coffee, &c., why cannot it be done in that which comes home, as beer does, to most labouring men in the kingdom?

And now with regard to the method in which the agitation is carried on. Distress sales are announced in certain places: the parson has been refused his tithes by some recalcitrant parishioner, and he determines on obtaining by legal means what he is clearly entitled to. An auction is to be held, and all the neighbourhood is excited; the auctioneer is hustled about, some indignant speeches are made, and the parson is insulted. The whole proceeding is unjustifiable and unmanly. The clergyman is one who desires to live in harmony and peace with his people; this stirs up angry feelings, and destroys—for awhile, at any rate—his just and beneficent influence amongst them; it is unmanly, because they know how very unwilling the clergy is as a body to be engaged in strife, and it is thought, "Oh! he won't make a disturbance, and so I shall escape paying." If a tax or rate be considered hard or unjust, by all means let people, if they like, use all legal means to get rid of it. Some people object to pay income-tax, others to have their children vaccinated, but if they resist the law they soon find out that they are mistaken, and so long as a matter is legal no loyal citizen ought to take the law into his own hands.

Extraordinary tithes may be done away with on some equitable terms, but I have been only taking up the subject as it now stands, and my contention is that there is no valid ground for the statements that have been made about them, and that, so far from having been an injury, they have been a boon to the grower. *A Kentish Vicar.*

THE BULB GARDEN.

CAPE BULBS.

I HAVE been much interested in the articles which have from time to time appeared about the management of Cape bulbs, having cultivated them for many years with indifferent success. I should like to know if they are a specialty with any one who hails from the far north, as I do, where we are sometimes I may say almost without a glimpse of sunshine for weeks together, and with a yearly rainfall of 60 inches. Mr. Ewbank, a thorough expert, and with an admirable climate, has difficulty with them, so what can we expect up here? I have tried them in all manner of ways under glass; but even Gladioli (I mean the Cape species) do not thrive, though I find G. galeatus bloooms pretty well. Several Moræas also have bloomed; but after a year or so, instead of producing fresh flowering bulbs, they break up into tiny bulblets and bloom no more. I had the same difficulty when living in Kent, and my friends in other parts make the same complaint. Apparently the difficulty is not confined to Cape bulbs, but to Calochorti, while the Algerian Narcissi and Narcissus viridis from Gibraltar seem equally intractable. I have indeed managed to grow and bloom N. elegans, N. serotinus, and N. pachybolbos; but N. viridis, kindly sent me by two or three friends, is perfectly obstinate, and will not move at all, though bulbs from Mr. Maw were in bloom when I received them. They keep perfectly sound, but will not start. My impression in regard to them is this—that the ground in which we attempt to grow them is not hot enough. A friend living in Algeria sent me bulbs of Narcissus monophyllus, and I asked, "What are the conditions under which it grows?" She wrote: "The ground becomes baked like a brick after the flowers have died down, and the bulbs have a perfect rest; then come heavy rains, and they start into growth and bloom in an incredibly short space of time." This points, I think, to hard potting, never disturbing the bulbs, and at the time when, in their native country, they begin growth, plunge them in brisk bottom-heat, and water abundantly. This might not answer for the Cape bulbs, though I believe the cause of our difficulty with them is the same, *i.e.*, our inability, by any treatment, perfectly to ripen them. I think, too, we are apt to give them too sandy a soil, which induces them to split up into small bulbs, not large enough to flower. Perhaps Mr. Ewbank would indicate the soil in which he finds them to succeed the best.

I wonder persons do not grow Tritonias more. My experience is, that Ixias won't open without sunshine—a rare commodity in these parts. Tritonias open well, and are equally beautiful. *A. Rawson, Windermere.*

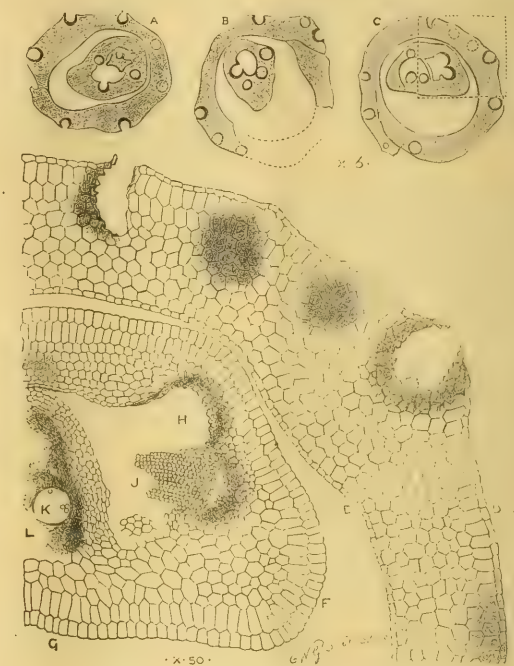


FIG. 58.—ÆCIDIUM BERBERIDIS. (SEE P. 309.)

FORESTRY.

MARCH: NURSERY WORK.

THE present month, more particularly when dry and fine, is usually the busiest one of the year in the nursery, for what with ground trenching and manuring, refilling of recent borders, transplanting of large specimen stock, and preparation of seed-beds and seed-sowing, the men employed in this particular branch of forest work will be busily employed, and perhaps require a little extra assistance so that the work may be got well in hand during the next few weeks.

MANURING AND TRENCHING.

Such breaks and borders as have, through repeated cropping, become impoverished and worked out, will be much improved by a deep digging or trenching of, say, two spits in depth, the subsoil at the same time being loosened by picking and left *in situ*, although it would have been advantageous had such work been performed at the beginning of winter; after which they may be heavily manured or enriched by the addition of lime, vegetable soil or loam as the case may require, bearing in mind, however, that farmyard manure should always be applied first to a green crop, and never directly to the plants themselves. For this latter reason it is always preferable to have a little more nursery ground than is really required, so that the breaks may not be all under forest trees at the same time, but undergo, as found necessary, a course of green crops, which will serve the double purpose of enriching and cleaning the ground as well as leaving it in prime condition for refilling with forest trees. Lime, it is also well to bear in mind, should not be applied directly to coniferous trees, at least the majority of them; although less injury will be experienced by a moderate application to such soils as are intended to be planted with hard woods.

Seaweed, where readily procured, may be applied in quantity, and will be found an excellent fertiliser and purifier of the soil; but we have always found it best to form a compost of the seaweed and nursery refuse, and allow it to lie in a fermenting state for at least twelve months before being applied.

TRANSPLANTING.

The ground having been well prepared as above described, plants of uniform size should be chosen for the various breaks, and in doing so try to plant hard woods on such soils as have been lately under Conifers, and *vice versâ*, for it is not to be supposed that, even in the largest and best managed nurseries, a regular rotation of green crops and forest trees can be carried out from year to year. In planting stretch a garden line along the surface of the ground and parallel with the edge of the border, and, say, 3 feet therefrom; but this, of course, depending

entirely on the size of the plants to be used, and the length of time they are intended to remain before being again transplanted, and which the practised eye of the nurseryman can alone decide. A notch of sufficient size to hold the roots without bending or cramping is taken out along one side of the line, the plants placed in position, and carefully covered with the finest soil. Where, however, the transplants are of large size, and with proportionately bushy roots, this method is not to be recommended, for it is almost impossible that, by such a method of management, justice to the wide-spreading roots can be equally administered. Under the circumstances a sloping notch should be taken out on both sides of, and close to, the line, and of sufficient depth and width to contain the roots of the plants, the ground being thus left in the shape of a low ridge. The line is then lifted, and the plants placed with their crowns on the ridge, and the roots evenly spread out into the shallow trench on each side, and afterwards covered with soil, care being taken that the plants are kept exactly on the crest of the ridge, so that the lines may present uniformity of appearance. By this means the roots are, as it were, trained from infancy in the position they should occupy in years to come, and not, as is too often the case—and to which alone may be attributed the reason why so many trees are blown over—all collected on one side of the stem. Although this is a more expensive method of transplanting than that commonly adopted, still the advantages derived from such a method of procedure amply repay the extra expenditure of time and trouble—strong plants, with an abundance of roots, not all on one side, but placed regularly around the stem, being the result. Of course it is not meant to be understood that all nursery stock should be thus treated, but with plants of over a couple of feet in height, and with well-furnished roots, the practice is certainly to be commended. We have also found this plan to answer well in the rearing of Coniferæ for single specimens to be used in the pinetum or policy grounds. Two-years seedlings of Scotch, Corsican, and Austrian Pines may now be planted in lines 12 inches apart and 6 inches from plant to plant, retaining as much of the root-soil as will conveniently adhere, bearing in mind that the less shaking Coniferæ seedlings receive when being transferred from the seed-bed the better. Larger sized plants will require extra room, but no hard-and-fast lines can be laid down as to the distances at which they should be placed, this being left to the good sense of the planter. As substitutes for transplanting two methods —half-raising and interlining—are not unfrequently adopted, but where time and ground can be spared it will be found profitable to dispense with both these temporary make-shifts. *A. D. Webster, Penrhyn Castle.*

CORN MILDEW AND BARBERRY BLIGHT.

Every reader of the *Gardeners' Chronicle* probably knows that in old times a belief was very prevalent amongst farmers and agricultural labourers that Barberry bushes in a hedge were capable of causing the red rust and black mildew of corn. The Barberry was not invariably selected as the cause of the mischief; sometimes it was the Whitethorn, at other times the Blackthorn, or even the Buckthorn. At first no good observers believed the rustics, but at length it was pointed out that Barberry bushes were commonly afflicted with an orange-coloured fungus resembling (to the unaided eye) the rust fungus of corn. Because these fungi appeared to be somewhat alike, it was surmised they might be the same with each other, and because it was allowed they might possibly be the same, it was decided they *were* the same, or, if different, only different forms of the same fungus. Primitive "experiments" were soon initiated by placing spores of the Barberry blight fungus on to the leaves of corn and spores of the corn mildew fungus on to Barberry leaves: the experimenters wished to prove that the two fungi were really the same with each other, and of course they (as they thought) succeeded. What they could not see, and what no one has ever yet seen, viz., an anatomical connection of one fungus with the other, they imagined. Very little attention was paid to these primitive and (as they were performed) ridiculous experiments until Professor De Bary, of Strasbourg, repeated them in his laboratory and gave his adhesion to the idea of the identity of the two fungi. After Professor De Bary had expressed his opinion very little more was said or done, and the majority of botanists on the Continent accepted and taught as truth Professor De Bary's views. Those views have never been entirely accepted in this country, although they have been loudly taught in the schools and extensively printed in handbooks.

I have strongly objected to the supposititious connection of the two fungi, for the following reason (one amongst many others). It is, that corn is so seldom free from red rust and Barberry bushes are so seldom free from the fungus of Barberry blight, that there is

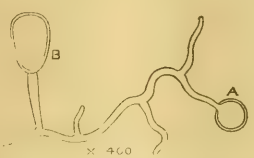


Fig. 59.—Æcidium-spore, producing B, a Uredo-spore: ideal plan.



Fig. 60.—Puccinia within the seed of Oats.

never any certainty that both corn and Barberry bush do not possess traces of the disease before the experiments are commenced. If apparently healthy leaves of corn are taken, and apparently healthy leaves of Barberry, and these leaves are microscopically examined, fungus mycelium will be commonly found inside the leaves. Neither is the mycelium confined to the leaves, for it invades the seeds of both plants, and these seeds are frequently planted with the mycelium in their tissues. A diseased progeny is the result. The disease, therefore, is (I say) hereditary in both plants, and so widespread that it is extremely difficult to get perfectly healthy examples of either corn or Barberry. Now, although I have many times recorded mycelium in the seeds, it has been by no means easy to get a record of the *perfect fungi* within the seeds, and so give a distinct proof that the fungi can really reach and perfect themselves within the membrane, or in or on the enclosed cotyledons of the seed.

In the *Gardeners' Chronicle* for August 22, 1885, I illustrated and described the perfect condition of corn mildew, Puccinia graminis, growing within the unbroken membranes of the seed of Oats (fig. 60), and now, thanks to an obliging correspondent, Mr. George Brebner, of Aberdeen, I am now able to give an illustration of the perfect condition of the fungus of Barberry blight, Æcidium berberidis, growing upon and within the cotyledons of the Barberry. Mr. Brebner forwarded me the living berries with Æcidia within the seeds, and a microscopic preparation from which the accompanying illustration (fig. 58) has been made.

Mr. Brebner writes as follows:—"The sections were made in August, 1885, the remarkable feature being that the Æcidium is growing centripetally within the seed. For those interested in the Æcidium-Puccinia controversy any remarks on the bearing of the find would be superfluous. I wish, however, to draw attention specially to the position of the cluster-cups, making it extremely probable that Berberis vulgaris is inoculated by its own Æcidium. Further, the position of these Æcidia spores strengthens the theory that they are resting-spores. The sections were the first ever made by me of a Barberry seed, and in consequence the following idea forces itself on my mind:—'If a tyro in the science of mycology finds the Æcidium inside the first seed he operates upon, surely this state of matters must be very common!' Mr. Worthington G. Smith and others have found much the same condition of things in other fungi—*e. g.*, the spores of Puccinia graminis within the seeds of corn (see *Gardeners' Chronicle*, August 22, 1885)."

The three sections at A, B, C (fig. 58), show transparent slices of the fruit of the Barberry. The little circles in the outer rind of flesh of each berry are Æcidium cups, some full of spores. The seeds within each berry also exhibit similar Æcidium cups. At the top right hand corner of C a dotted quadrangle will be noticed. This quadrangle is further enlarged to 50 diameters at the bottom of the illustration. The thickness of the flesh of the berry is shown between D and E, and in this flesh are four Æcidium cups—two empty, and two immersed and partly hidden in the flesh. Part of a seed is seen at F, G, and Æcidia are shown at H, empty, and J, full of spores; an immersed cup, almost empty, is shown at K, and mycelium, &c., at L.

When the seeds both of corn and Barberry are less extensively diseased than in the examples here illustrated mycelium only can be seen, but this is easily enough recognised by any one properly acquainted with Æcidium and Puccinia. The mycelium of Æcidium and of Puccinia appear to me to differ from each other.

All experiments are perfectly worthless unless it can be proved with the utmost certainty before the experiments are commenced that there is not a scrap of mycelium or a single spore of Æcidium or Puccinia on or in the plants to be experimented with.

Since the connection of Barberry blight and corn mildew has been supposititiously established several other examples of a like nature have been brought forward on worse evidence than in the case before us. Some instances are supposed to be supported by what is no evidence at all. The minor examples can very easily be disposed of. The Barberry and corn subject has, however, taken deeper root, but I think it has now been shown that the diseases of the two plants are probably distinct, and that both diseases almost invariably traverse the host plants from the roots to cotyledons within the seeds.

Many fungi bear more than one sort of fruit. It is known that certain fungi bear different kinds of fruit because the different fruits can be readily seen on the same supporting threads. Until this is seen in the fungus of Barberry blight and the fungus of corn mildew, any connection between the two must be considered unproven or improbable. For instance, if any botanist will cause an Æcidium-spore, as at fig. 59 A, to germinate on corn (these spores germinate with great readiness) and produce from its mycelial thread a Uredo-spore, as at B, the case will be proved, *i.e.*, if the said botanist can permanently preserve his specimen on a microscopic slide, and send it to the British Museum for all comers to examine.

A similar piece of work is very easy with other fungi. It is reasonable, always expected, and is always done if anything is to be proved. Why, then, has it never been done with the fungus of corn-mildew? Simply because it cannot be done, and all the writings and illustrations produced in favour of the at present purely suppositious connection of the two fungi are not worth the paper they are printed on.

The actual mounted microscopic slides of Puccinia graminis within the seed of Oats and Æcidium berberidis within the seed of the Barberry, together with the material from which the sections were made, have been given to the Department of Botany, British Museum, South Kensington, where they may be seen by any one. *Worthington G. Smith, Dunstable.*

Home Correspondence.

National Auricula Society.—I cannot allow the further remarks on this subject by Mr. W. Brockbank to pass unnoticed. His is evidently a case of "Advise me to marry Tam Glen." Surely he must have known, when his first letter was written, that it was too late to alter the schedule for this year, even if it had been desirable to do so. In the second place it was stated that I was in communication with the authorised representatives of the Northern Section, who declined to discuss it in the gardening papers, but they have, I think, found out that there is nothing to discuss. I never stated that anybody had "virtually" withdrawn his subscriptions. The only member known to me who has written to withdraw his subscription is Mr. W. Brockbank. I still adhere to every statement I made as being correct. The disputed part of the schedule is before the public at p. 210, which conclusively proves that the resolution referred to by Mr. Brockbank was founded in error. A very slight reduction in the value of the prizes, amounting in the whole to £4, was made in seven classes—two only of those seven being reserved for small growers. The remaining five being open to large and small growers alike. Mr. Brockbank stands condemned by his own resolution. When the schedule was revised, two things were kept before those who were responsible for its revision. The first and most important was to make a good show that could be appreciated by the general body of the subscribers, and next to do the best possible for the small growers. It is a curious fact that this idea of making the prizes large enough to cover the expenses of exhibitors to and from Manchester, and their hotel expenses in London, was never thought of during the last ten years of the existence of the Society until it has been brought forward by Mr. W. Brockbank. Another singular circumstance is this, that I am receiving letters from members of the Northern Section repudiating Mr. Brockbank's notions in the strongest language. Indeed, one prominent member writes to say that he could not feel easy in his mind until he had repudiated such unworthy motives as far as he was concerned. I am now done with Mr. Brockbank, and shall answer no more of his communications except through the properly constituted representatives of the Northern Section. *J. Douglas, Great Gearies, Ilford.*

"Gardeners' Chronicle" Prizes.—The announcement of these in last week's *Gardeners' Chronicle* is among the most pleasing signs of the times. I have nothing to add to the excellent reasons advanced in your leader for offering these prizes, and for the wise selection you have made of the subject-matter of your first three prizes of £10, £5, and £2 respectively. The more that is known of roots the more it will be seen that the whole plant and its produce is dependant upon their character and formation, and hence the vital importance of making sure of our foundation. We can also influence plants through their roots more readily and more powerfully than through any other organ or part of their structure. But will you permit me to suggest a reconsideration of the age limit you propose to impose? By limiting competitors to the seven years included between eighteen and twenty-five years you will probably reduce the number of competitors very seriously, and still more seriously reduce the value of the essays produced. Root structure and formation is probably seldom an attractive subject to young men, and it is often not until the cultivator learns how vitally important these matters are to his success in everyday practice that he humbles himself to sit at the feet of the wise, and learn of them how to grow plants and make them fruitful and multiply. Would there be any objection to extending the limit of age to forty-five, or, better still, leaving the first prize open to gardeners of any age, and limiting the others as you propose? *Radix.* [The object is to encourage *young* gardeners and induce them to observe and reflect, so as not to become slaves to mere routine. We cannot extend the age. Ed.]

Horticultural Education.—I am convinced that the competition for the prizes offered by the *Gardeners' Chronicle* for the best essays on "Roots and their Work" will materially tend to advance the cause of horticulural education, and to greatly benefit the competitors by inducing them to investigate the subject, and make themselves acquainted with those principles of horticulture a knowlege of which is essential to an intelligent comprehension of its practice. "Rule of thumb" is an enemy to all true science, and, therefore, to all true progress. It is not enough merely to learn the details of practice, and how such and such things are done; to work intelligently is impossible until the principles on which those details of practice are based are understood, and the reason why such and such things are done is known. The progress and prosperity of a profession depend upon the amount of scientific knowledge possessed by its members. But it is notorious that the young gardeners of England are as a class inferior in education, and possess less scientific knowledge than the young gardeners of Continental countries; and while this condition of things continues English gardeners cannot hope to compete with Continental gardeners. It seems to me that the only permanent remedy for the defective state of horticultural education in England is the amalgamation of the interests of agriculture and horticulture by the creation of a Government Department of combined agriculture and horticulture, presided over by an efficient Minister, aided by a staff of botanists, chemists, and specialists, and the establishment throughout the country of combined agricultural and horticultural colleges, providing a systematic scientific course of instruction in horticulture. In answer to the question, How is it that in many instances foreign industry is becoming superior to English industry? Sir Lyon Playfair says, because "our systems of education are still too narrow for the increasing struggle of life. . . . English Governments alone fail to grasp the fact that the competition of the world has become a competition in intellect." *Hortus.*

Roots of Vegetables.—The report from the New York Agricultural Station (pp. 203, 235), on this subject contains most interesting information, and it will strike many as one which hitherto has not received the attention it deserves. Having examined the roots of all those kinds of vegetables mentioned in this report, I am pleased to find that my gleanings will bear favourable comparison with those in question, although they differ in a few details. These are traceable to the difference of soil, and probably treatment and climatic influences. A thorough knowledge of the depth to which the roots of various kinds of vegetables descend, and also the depths at which the individual kinds form the largest number of feeding roots, is probably more essential for the production of first-class vegetables in continuity on the same plot of ground than in any other branch of gardening. When this knowledge is acquired its importance to the kitchen gardener is obvious. He at once recognises this, when once obtained, as a sound basis for future action. He will decide the nature of the crop for a given plot of ground before its tillage is performed, and so place what he adds in the shape of manure at the proper depth in the soil, and where by its presence it can be rapidly assimilated by the feeders, thus furnishing a marketable crop with the least possible delay. The difference of the annual rainfall, temperature of soil, and mulching all have powerful influence in determing the position of the roots in the soil, and especially so in the case of rapid growing subjects of annual duration. But some allusion here must be made to fertility as questioned on by the writer of the New York report. This existing more abundantly at a given depth in the soil than in other parts, seems conclusive that it would cause the concentration of the feeding roots, if it was in proximity to their natural feeding ground, although its presence would not arrest the downward course of the tap-root of a Pea or a Bean. The remarks in this report on the position the roots of Asparagus mainly occupy in the soil are very suggestive that considerable labour (by deep trenching) has been expended in this country to no purpose. Any one who has noticed the fine Asparagus which annually reaches our central markets from France will have at once become open to conviction that our system of cultivation and theirs is different. Those who have given this branch of kitchen gardening special attention, and have seen or read of the of the cultural methods adopted by our Continental neighbours, will have had no difficulty in arriving at a satisfactory conclusion as to the cause (in nine cases out of ten) of the great difference in the size of the heads produced in England and France. If they allowed the heads to become green as we do here, theirs would not be quite so thick at the point, as after the heads appear above the surface of the soil they lengthen at the expense of thickness. In this New York report the writer, after referring to the French system of culture, adds some useful remarks gained by examination, which may most profitably be considered by planters this spring. It will be seen by this report (as observed by many others) that the main cylindrical roots persist in taking a horizontal course, the fibrous feeders developing from them upwards and downwards in search of food. Undoubtedly it is principally from the annual formation of new cylindrical roots immediately above the old ones that the plants go on increasing in vigour, and unless these are provided with suitable nourishment extra fine heads of Asparagas cannot be expected. To get such fine heads as most people desire we must then discontinue the crowded bed system, plant in rows 3 to 4 feet apart, 2 to 3 feet from plant to plant, and pay more attention to annual top-dressings, expend less labour beneath the plants, make fresh plantations oftener, and leave off cutting early. *G. H. Richards.*

Testing Thermometers.—We sometimes have some very extreme temperatures recorded, and doubts are often expressed as to the correctness of the thermometers. The heavy fall of snow we are now having (March 1) will afford a ready means for each person to test their own instruments to a certain extent, as if the bulb of a thermometer is covered for a reasonable time with snow, when it is in a melting state (as when disappearing in showery weather, for instance), the instrument should, if correct, stand at 32° Fahrenheit. Of course, it is still possible there may be an error in the size of the tube either above or below that point, but I think errors in the index generally are by far the most common. *W. H. Divers, Ketton Hall.*

International Potato Exhibition.—Referring to my letter *re* "International Potato Exhibition," I note your remarks in "Answers to Correspondents," to the effect that I should write to the Secretary. I beg to state this has been done by several, and no replies can be got. I have before me a letter from a member of the late committee of the show, who said he would write to the secretary again, although he did not expect a reply, as he (the secretary) seemed to have settled down to the plan of not answering any letters upon the subject. My object in wishing you to insert my letter was to set myself right before the exhibitors. Some of them have been writing me for payment of the prizes I offered. I was the largest donor of prizes, and sent my cheque a few days after the exhibition was held, and I certainly was surprised and annoyed to be written to three months after by the winners to say they had not been paid. *C. Fidler.*

The Period of Blooming of the Carnation.—A few days since I was applied to, to assist in fixing a date for a projected exhibition in the Midland districts. This, if carried out, is to include cut blooms of Carnations and Picotees. I thought I could not do better than obtain the opinion of such a veteran and experienced grower as Mr. E. S. Dodwell, and his reply is so full of interest that I append it. He states:—"The period of blooming in the Carnation depends upon the latitude (the locality and its geological formation). Thus, wherever we have the sandstone, there, though comparatively north, the bloom is far earlier than on the coal measures or clay. Again, elevated situations are later very markedly than warm or sheltered valleys or sites of less height. Speaking roundly, the bloom for the neighbourhood of London and south thereof culminates on the average from July 20 to July 25, for the Oxford district with the

whole of the Midlands, ten days thereafter; for Lancashire and North Yorkshire, or the higher lands there, from August 10 to August 15; for Newcastle, again, August 25 to September." This information may prove of value to some promoters of shows; Mr. Dodwell's long experience adds weight to this forecast of the time of flowering the Carnation. *R. D.*

Eucharis Mite.—I saw a reference to the Eucharis mite in the *Gardeners' Chronicle* of last week. My plants became victims to this destructive little insect to a large extent, and, following the advice of stamping out given in different gardening papers, I burnt over 200 fine bulbs at once. This I have found out was a hasty move. The next thing I found all my Vallotas were in a bad state; Amaryllis, too, were no better. The whole thing looked rather serious, and required a little thought. I had all the soil cleared off the bulbs, as well as the remaining Eucharis, which were badly attacked. I then dusted them with quicklime very carefully. This proved to be effectual; the lime completely destroyed every mite, and now the Eucharis bulbs are planted they are doing well. Watering with strong lime-water will destroy the mite if the bulbs are not badly ttacked. *William Culverwell, Thorpe Perrow.*

A Large Camellia—When looking round Mr. Lyndon's garden with the gardener, Mr. Black, I took the trouble to measure a large plant of alba plena Camellia which has long had the reputation of being the largest plant in this part of the country. It would be interesting to hear if a larger plant exists in England. It measured 16 feet through at 3 feet from the ground, and 17 feet high—a dome-shaped pyramid, in vigorous health, in a tub about 6 feet square. *J. Pope, Birmingham.*

Hardy Cypripediums.—Amongst many notes about these I have seen no mention of the treatment of the roots after importation and before planting. I have found them succeed best by cutting the crowns out of the tangled mass of roots in which they generally arrive, leaving the roots attached to each crown not more than an inch in length. I have tried this both with C. spectabile and C. calceolus, but should like to have my opinion confirmed before confidently recommending the plan. *C. Wolley Dod, Edge Hall, Malpas.*

Fruit and Flowers in the Palm-house at Kew.—Anything of the above nature is of exceptional interest at this dull season, but the undermentioned are seldom seen at their best except in botanic gardens or large conservatories. Two tall plants of Brownea grandiceps flower more or less regularly every season, and it would be difficult to decide which is most ornamental—the huge truss or head of rosy-red flowers, or the singularly blotched and coloured young foliage that unfolds later on. The same remarks apply to Saraca indica, also flowering at present, but young growth frequently accompanies the inflorescence, and the leaves are rosy-pink when developing. The scarlet calyx performs the functions of protection and that of attracting for fertilisation purposes. Both these plants belong to the same tribe as the gorgeous Amherstia. Calliandra Tweediei is unquestionably of no ordinary merit both as to flowers and leafage. The long crimson stamens are exceedingly numerous, and assert their affinity with the Mimosa tribe. This species is also described under the name of Inga pulcherrima, from which genus the bipinnate leaves, with numerous small leaflets and eglandular petioles, separate it. Although the flowers are now faded, the characteristic long-stalked pendulous umbels of Dombeya Wallichii are conspicuous amongst the great cordate leaves. The latter alone are a feature in themselves, and render the plant a desirability on that account. The singular-looking flowers of Strelitzia regina present a curious combination of deep yellow and intense blue, the former colour regarded as of low development, while the latter is the highest. Amongst fruiting plants of interest two noble specimens of Heritiera macrophylla, almost continually in flower or fruit, are familiar associates of the Cycads in the south end of the house, where, curiously enough, most of the plants enumerated are located. Fruit from these trees were figured at p. 81, fig. 16, of the present volume of the *Gardeners' Chronicle*. Numerous Cycads are bearing cones, amongst which Encephalartos villosus and E. horridus are conspicuous, especially the former, whose large scarlet seeds are showing between the scales of the cone. The axillary cone offers a striking contrast to the terminal series of ovuliferous leaves in Cycas revoluta, while the development of perisperm and the high coloration of the unfertilised seeds is remarkable, if not unique in the vegetable kingdom. The fruits of Carica are very persistent, even after they are coloured, and more or less of them are to be seen every winter. Those fruiting at present or lately are a hybrid between C. cundinamarcensis and C. erythrocarpa and the small-fruited C. microcarpa. The Caricas are now placed in the Passifloraceæ, because although they are typically dicœcious, they sometimes produce hermaphrodite flowers. Several plants of Hedychium Gardnerianum have been a source of great attraction for some time back, on account of the scarlet valves of their dehiscing capsules and deeper scarlet seeds, furnished with a lacerated aril. The combination of seed and aril bears a striking resemblance to a spider with its legs rolled together feigning to be dead, and a row of seeds on the placenta resembles an animal of the lobster family with its somites and appendages. *J. F.*

Himantophyllum, Imantophyllum, Imatophyllum.—In nurserymen's catalogues and in the horticultural Press the name of the beautiful warm greenhouse or cool stove plants which head this note is variously written as above; most generally in the manner occupying the middle place, sometimes in the third way, and most rarely in the manner standing first on the list. And yet if the derivation of the name be carefully noted there can, I think, be no doubt that the first is the correct name, and that both the others are incorrect. The name is derived from two Greek words, ἱμας (himas), a strap; and φυλλον (phyllon), a leaf, from its strap-like foliage. The genitive case of the first derivative name is ἱμαντος (himantos), therefore the name can only be correctly written when it is spelt Himantophyllum. *W. E. Gumbleton.*

Violets.—I was greatly pleased to see in your last issue the name of an old friend writing on the above subject. It happens that I am particularly interested in Violet culture at the present time, having had a little success this winter. As I am requested to grow Violets largely, my friend Mr. Baillie's paper is very welcome, to me at least, as it may be to many besides. I will simply say, that if any one wishes to excel in Violet growing, follow out Mr. Baillie's method, because I know it to be the practice of one of the best Violet growers. When I used to visit Mr. Baillie, at Beaufront Castle, Northumberland, his Violet frames were a great treat to see; there were any quantity of great fat blooms, and all grown in the same way as he described in his paper. It is no new method he has put forward in that, but, on the contrary, one that he has adopted for years. I have never tried his method of culture, but pulled my plants to pieces when done blooming, and planted them out in rows in a well prepared border, keeping the runners picked off them, and planting them into frames in September. With such treatment they do very well, but they never approach my friend's plants for exuberance of bloom. I intend this spring to follow out his method, but will have to put off for a fortnight or so, my plants being rather weak. *John Heath.*

Narcissus Bulbs Making no Roots.—I send further specimens of diseased bulbs of Narcissus corbularia var. monophyllus. They make no root, or the root perishes before the foliage is mature. It affects many Narcissus, and the foundation is, I believe, laid the previous year. I enclose a specimen of a very vigorous variety of Narcissus major (Irish Spurius), affected in the same way. No new roots are formed, though the foliage grows for a time, and the flower comes, no new bulb is formed. The seat seems to be in the base, from which the roots should grow. I always find tiny white hair-like worms on the bulbs so affected, but feel sure they are the effect and not the cause. I at one time attributed it to wet subsoil, but it attacks the white varieties (double cernuus) and N. var. maximus, even on my driest raised bed. *C. W. D.* [The soft parts of the bulbs are full of nematodes. There is also a good deal of fungus mycelium in the soft parts (belonging to different fungi). I do not see any bacteria. The hair-like worms seen by "C. W. D." are, of course, not nematodes. I cannot suggest an origin for the disease. I do not believe that in this case the nematodes or fungi are the cause; possibly improper conditions of culture cause partial death and these things follow. Mycelium occurs also outside the bulbs. I have several times looked at "C. W. D.'s" bulbs before, and with the same result. *W. G. Smith.*]

Frost in Bucks.—The enclosed is a record of the low temperature registered here during the month of February. Such a long continuance of frost during that month is not within my recollection. It will be seen that there is but one day on which frost is not recorded. There is still a remnant of the snow fell on January 6 on the Chiltern hills, which to-day (March 1) has been replenished. *J. Shrimpton, Aston Clinton Gardens, Tring.* [The record showed on February 13 no frost was registered; on the 6th, 7th, 11th, and during the last week, there was more than 12°, and on the 10th 19°; about the middle, both before and after the 13th the frost was but slight. Ed.]

Reports of Societies.

SCOTTISH HORTICULTURAL ASSOCIATION.

The ninth annual general meeting was held in the Association's rooms, 5, St. Andrew Square, Edinburgh, on Tuesday, March 2. Mr. W. W. Welsh, of Messrs. Dicksons & Co., Edinburgh, one of the Vice-Presidents, occupied the chair. The Secretary read the annual report, which stated that the various objects of the Association continue to receive the careful attention of the Council, regretting that the want of funds has not yet enabled them to open a reading-room and library; they would earnestly impress on the members and friends of the Association throughout the three kingdoms the necessity of making every effort so as to enable the Council to carry out this desirable object.

During the session nineteen new members have been added to the roll, which has now a membership of 406. The meetings continue to be held within the rooms, 5, St. Andrew Square, on the first Tuesday of each month at half-past 7 P.M., and are fairly well attended by resident members. Twelve papers and communications were read at the meetings during the session. In the President's (Mr. Thomson, Tweed Vineyard) inaugural address a wide retrospective as well as prospective view of horticulture was given. A glance at the syllabus will show that the papers deserve consideration from three main points—practical, botanical, and historical. Under the first the Auricula had a fitting exponent in Mr. George McLure, while the "Lily and its allies" had an appreciative admirer in Mr. Alex. Hutton, F.L.S. The Ivy, as treated by Mr. John Methven, brought vividly before the members the various picturesque effects which can be produced by that practical emblem. Fruit culture received its share of attention: three papers were read by Mr. Temple, Mr. Fairgrieve, and Mr. W. Priest. The success attending the cultivation of hardy fruits by Mr. Fairgrieve, Dunkeld, deserves special recognition. "The formation of the root," and the "structure" and peculiarities of Nepenthes received that careful and special treatment which Mr. A. N. McAlpine, B.Sc., and Dr. McFarlane are so qualified to give. "Orchids Abroad and at Home" were treated in an original manner by the learned Curator of the Trinity College Botanic Garden, Dublin. "The History and Culture of the Potato," by Mr. Milne, was an interesting historical contribution on a subject of the highest importance relative to our food supplies. "The History of the Chrysanthemum," by Mr. Alexander Mackenzie, received exhaustive historical treatment.

The exhibits, which are a source of never-failing interest and instruction, have been of great merit, thirty collections, some of which, as in Mr. George Mackinnon's collection of Narcissi, contained seventy-two species and varieties. Thirty-three different varieties of Ivy were shown in connection with Mr. Methven's paper. Messrs. Dicksons & Co. contributed largely to the display of florist flowers and fruits. Cut herbaceous flowers for show came from time to time from Mr. Chapman and others. Pot plants were not so largely exhibited as during some previous sessions, but some very interesting plants were shown. A remarkable plant of Crinum angustum, for which Mr. McHattie, Newbattle Abbey Gardens, received a Cultural Certificate, was new to most of the members. The exhibits of fruit were partiularly interesting, such as Aberia Caffra, the Kei fruit of the Cape, by Mr. Lindsay, Curator of the Royal Botanic Garden; Monstera

deliciosa, by Mr. Dunn, Dalkieth Palace Gardens, &c. Of vegetables there were probably less than at any former session. Eight Certificates were granted to new, rare, and meritorious productions.

The Council regret to have to record the loss by death of the following members :—Mr. James Welsh, of Messrs. Dicksons & Co. ; Mr. Muir, Hopeton House ; Mr. Alex. McKeddie.

Mr. Alexander Mackenzie, the Treasurer, stated that the income of the Association for the year ending March 2, had been £34, and the expenditure £34 9s. 6d. Abstracts of the various papers and the name and address of each exhibitor as well as the name of the exhibit will be printed in the *Transactions* for 1885-86.

The office-bearers for next session were then elected as follows :—Honorary President, Dr. Paterson, Bridge of Allan ; President, Mr. Alexander Milne, of Messrs. Dicksons & Sons, Edinburgh ; two Vice-Presidents in place of two who retire by rotation, Mr. George Goodall, Buckhill Nursery, and Mr. George Mackinnon, Melville Castle. The following six gentlemen were elected to the Council :—Mr. David Thomson, of Messrs. Ireland & Thomson, Edinburgh ; Mr. James Cole, Craigleith Nurseries, Edinburgh ; Mr. John McHattie, Newbattle Abbey Gardens, Midlothian ; Mr. Robert Grossert, The Gardens, Oswald Road, Edinburgh ; Mr. Alexander Laing, The Gardens, Salisbury Green, Edinburgh ; Mr. M. Todd, of Messrs. Todd & Co., Edinburgh. Mr. Robertson Munro, Abercorn Nursery, Piershill, Edinburgh, was re-elected Secretary ; Mr. Alexander Mackenzie, Warriston Nurseries, Edinburgh, was re-elected Treasurer.

Law Notes.

COOMBS *versus* ROGERS.—We have received the following letter, which tells its own tale. We received the report in the ordinary course, but know nothing of either plaintiff or defendant, so that our impartiality is complete ; nevertheless, if any error has been committed we shall gladly do our best to rectify it. We may say that the defendant, without calling upon us for any explanation, or in any way correcting our reporter's statement, has taken legal proceedings, which is not a very courteous way of getting an error remedied :—

"In your last week's issue is an account of a prosecution, Coombs *v.* Rogers, for cutting some Gardenias, &c. I wish to inform you that your report is anything but a correct one, and if not contradicted, it is calculated to injure the reputation of Rogers. The plants were not coming into bloom as stated, and for Rogers' sake it is a pity the defence was not heard : the world would have a very different version of the affair. I had been to the premises and seen the plants, was a witness for the defence, and was in court all the time ; and I say your report is not an impartial one, as it should be. *Edward Sawyer, Hyde Nursery, Lower Edmonton.*"

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MARCH 3, 1886

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for the Day.	Departure of Mean from Average of 39 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100	WIND. Average Direction.	RAINFALL
Feb	In.	In.	°	°	°	°	°	°			In.
25	29.94	+0.13	35.5	27.5	8.0	31.7	— 7.8	27.0	81	E. : E.N.E.	0.00
26	30.06	+0.25	36.0	25.6	10.4	31.2	— 8.5	26.2	80	N.N.E.	0.00
27	30.09	+0.28	37.2	24.6	12.6	31.5	— 8.4	24.3	76	E.N.E. : N.N.E.	0.00
28	29.69	—0.12	31.7	28.0	3.7	29.8	— 10.3	25.5	86	N.E. : E.N.E.	0.02
Mar. 1	29.50	—0.33	33.2	28.5	4.7	30.5	— 9.8	28.6	93	E.	0.18
2	29.12	—0.72	39.0	32.0	7.0	35.2	— 5.2	29.0	77	W. : W.S.W.	0.00
3	29.41	—0.46	33.1	28.0	4.2	30.9	— 9.6	29.4	97	N. : N.W.	0.09
Mean	29.69	—0.14	35.2	27.9	7.3	31.5	— 8.5	27.1	84	N.E.	0.27

Feb. 25.—Dull cold day.
— 26.—Very fine bright day.
— 27.—Fine day, sunshine greater part of day.
— 28.—Slight fall of snow, dull day.
Mar. 1.—Snow falling from early morning till noon ; dull, cold day.
— 2.—Fine bright day.
— 3.—Fall of snow in early morning ; dull, cold day.

LONDON : *Atmospheric Pressure.*—During the week ending February 27, the reading of the barometer at the level of the sea increased from 30.19 inches at the beginning of the week to 30.41 inches by 1 P.M. on the 22d, decreased to 30.11 inches by 1 P.M. on the 25th, increased to 30.24 inches by 9 A.M. on the 26th, decreased to 30.22 inches by 1 P.M. on the same day, increased to 30.29 inches by 9 A.M. on the 27th, and was 30.25 inches by the end of the week.

The mean reading of the barometer for the week was 30.24 inches, being 0.20 inch higher than last week, and 0.25 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 38°.6, on February 22 ; on the 23d the highest was 34°.5. The mean of the seven high day temperatures was 36°.6.

The lowest temperature was 23°.4 on the 24th ; on the 21st the lowest was 28°.8. The mean of the seven low night temperatures was 26°.4.

The greatest range of temperature in one day was 12°.9, on the 24th ; the smallest, on the 23d, was 6°. The mean of the seven daily readings was 10°.2.

The mean temperatures were, on the 21st, 33°.5 ; on the 22d, 32°.9 ; on the 23d, 31°.3 ; on the 24th, 30°.4 ; on the 25th, 31°.7 ; on the 26th, 31°.2 ; and on the 27th, 31°.5 ; and these were all below their averages by 5°.5, 6°.2, 7°.9, 8°.9, 7°.8, 8°.5, and 8°.4 respectively.

The mean temperature of the week was 31°.8 ; being 2°.9 lower than last week, and 7°.6 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 67°, on the 24th. The mean of the seven readings was 62°.2.

The lowest reading of a minimum thermometer placed on grass was 20°.8, on the 24th. The mean of the seven readings was 23°.9.

Rain.—Rain fell on the 23d, to the amount of 0.02 inch.

ENGLAND : *Temperature.*—During the week ending February 27, the highest temperatures were 47° at Truro, 45° at Liverpool, 43°.7 at Plymouth ; the highest at Bradford was 37°.5, at Brighton 38°.5, at Blackheath 38°.6. The general mean was 40°.8.

The lowest temperatures were 20° at Cambridge, 22° at Hull, 22°.5 at Wolverhampton ; the lowest at Plymouth was 29°, at Truro and Newcastle 28° The general mean was 25°.3.

The greatest ranges were 22° at Cambridge, 19° at Truro, 18°.5 at Wolverhampton ; the least ranges were 8° at Newcastle, 10°.7 at Brighton, and 12°.1 at Bradford. The general mean was 15°.5.

The mean of the seven high day temperatures was highest at Truro, 43°.4, at Plymouth 41°, at Cambridge 38°.8 ; and was lowest at Newcastle, 35°, at Brighton 36°.2, at Wolverhampton, Hull, and Bradford 36°.3. The general mean was 37°.7.

The mean of the seven low night temperatures was highest at Truro, 32°.3, at Plymouth and Sunderland 30°.7 ; and was lowest at Cambridge, 25°.4, at Hull 25°, at Wolverhampton 26°.3. The general mean was 28°.7.

The mean daily range was greatest at Cambridge, 13°.4, at Truro 11°.1, at Hull 10°.4 ; and was least at Newcastle, 5°, at Brighton and Sunderland 7°. The general mean was 9°.

The mean temperature was highest at Truro, 37°.4, at Plymouth 35°.5, at Sunderland 33°.8 ; and was lowest at Hull, 30°.7, at Wolverhampton 30°.8, at Cambridge 31°.7. The general mean was 32°.8.

Rain.—The largest fall was 0.83 inch at Newcastle, 0.41 inch at Preston, 0.38 inch at Sunderland ; the smallest fall was 0.01 inch at Cambridge and Wolverhampton, 0.02 inch at Blackheath. No rain fell at Plymouth, Brighton, and Bristol. The general mean fall was 0.16 inch.

SCOTLAND : *Temperature.*—During the week ending February 27, the highest temperature was 42°.8, at Paisley ; at Edinburgh the highest was 38°.7. The general mean was 39°.9.

The lowest temperature in the week was 21°, at Perth ; at Paisley the lowest was 26°. The general mean was 24°.

The mean temperature was highest at Paisley, 34°.5 ; and lowest at Perth, 31°.1. The general mean was 32°.9.

Rain.—The largest fall was 0.70 inch, at Dundee and Aberdeen ; the smallest fall was 0.19 inch, at Greenock. The general mean fall was 0.49 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

THE LOUGHBOROUGH BOILER NO. 1.—Will any one kindly inform me, from his own experience, if this boiler is well made and durable, and if he can recommend it to heat a lean-to greenhouse 12 feet by 12 feet, height 13 feet, using 48 feet of 4-inch pipe ? Will the fire keep in for twelve hours without attention, if carefully made up by a person of moderate intelligence ? *Trinette.*

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

CATTLEYA WRIGLEII AND OTHERS : *W. S.* The differences between the four varieties you sent were easily recognised, and C. bicolor Measureseana was correctly named.

DRESSINGS FOR GARDEN LAWN : *James.* If the lawn is soft and spongy, dress with finely-sifted coal or coke ashes early in winter, rolling well afterwards. If it is mossy, use finely-sifted loam and wood-ashes, sowing in early autumn, or in March, the finer perennial grasses and white Clover at the same time. Should the lawn not be mossy the seeds may not be necessary. An unsightly method of dressing is to scatter farmyard dung over the lawn, and bush-harrow it during the winter.

FERN SPORT FROM ADIANTUM FORMOSUM : *B. B.* A very curious sport, and exceedingly pretty. We do not see any spore cases on the piece you have sent, but if it does produce them on these altered portions we should quite expect at least a part of the produce to be of a similar character. If it does not bear sori we should try layering a frond over a damp sandy surface.

GARDENERS' CHRONICLE PRIZES : *Enquirer.* Twenty-five will be taken to include any age short of twenty-six, but no candidate must be under eighteen years of age.

INSECTS : *E. J. J.* The insects forwarded as infesting your stores and propagating pits are a species of cockroach (Blatta), very like the species common in kitchens. Keep hedgehogs ; use black-beetle traps, scalding them out every morning ; lay the poisoned beetle-wafers where they abound, and throw boiling water over the places where they hide by day. *I. O. W.*

NAMES OF PLANTS : *C. M. O.* Clematis cirrosa, balearica × ; the Laurel and the Holly next week.—*J. A. S.* Certainly not Crinum longiflorum, Herb. (*Bot. Reg.*. t. 303) ; probably one of the vars. of C. capense, Herb. (C. longifolium, Thunb.), and if so, hardy. — *W. Swan.* Odontoglossum aureum. — *F. O.* Phaius grandifolius. —*C. P.* 1, Probably Metrosideros ; 2, Mottinedia Huegeliana ; 3, send again when in flower ; 4, Ficus nitida ; 6, Myrsine africana.

NEPENTHES FROM CUTTINGS : *H. H.* You may cut the plants down now, using one-year-old ripened shoots for cuttings, placing one cutting in a pot, and plunging into strong bottom-heat till rooted. Or you can take the side-shoots that appear at the bottom of the stem, as soon as a pitcher or two appears, and place them singly in pots of peat and sphagnum in equal parts. Place the pots on other small pots inverted in a large pan or saucer, and fill with water up to the bottom of the cutting-pots. Cover all with a *cloche* or hand-glass, and keep in a temperature of 80° Fahr. The cuttings will form no callus, but only wire-like roots from the stem.

ODONTOGLOSSUM LUTEO-PURPUREUM AND O. PESCATOREI : *G. P.* True to name, and very nice spikes ; the latter will probably grow stronger with age.

PLANTS THAT KEEP FLIES OUT OF ROOMS : *Californian.* Plectranthus fruticosus is said to do so, and so also is the common Elder, which used to be so commonly planted near cottages with that intent. On the Continent waggoners use the shoots of the latter stuck into the halter and other parts of the harness to keep off flies from horses and draught oxen ; and the former is much grown as a window-plant because of its supposed power to keep away flies, moths, mosquitos, &c.

*** All communications intended for publication should be addressed to the "*Editor*," and not to the Publisher, or to any member of the staff personally. The Editor would also be obliged by such communications being *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

INTELLIGENT READERS, PLEASE NOTE. — *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders

are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

EDWARD GILLETT, Southwick, Massachusetts, U.S.A. —North American Wild Flowers.

MAX DEEGEN, Köstritz, Germany — Catalogue of Dahlias, Roses, &c.

HOGG & WOOD, Coldstream, N.B.—Agricultural Seeds.

W. REID, Aberdeen, N.B.—Agricultural Seeds.

F. AND A. DICKSON & SONS, Chester—Select Farm Seeds.

T. KENNEDY & CO., Dumfries—Agricultural Seeds.

KENT & BRYDON, Darlington—New Farm Seeds.

W. TOOGOOD, 58, Above Bar, Southampton—Farm Seeds.

DICKSON & ROBINSON, 12, Old Millgate, Manchester—Farm Seeds.

COMMUNICATIONS RECEIVED.—H. F. D., a proof has been sent you.—Dr. Graves, Liege.—H. H. A., Natal.—W. B. G. —E. G. L.—A. van Geert.—R. D. B.—A. B.—Max Leichtlin, Baden Baden.—C. Joly, Paris.—W. S. M.—Professor Sorauer, Proskau.—G. S., next week.—M. F., best thanks.—A. J. Morris.—C. J. Catt.—J. P. L.—T. Wagstaffe.—J. J. Bell.—W. S., next week.—A. H., reply later.—G. Stanton.—G. S.—R. W. A.—J. H.—J. J. W.—J. O'B.—W. H. D. —W. S. M.—D. T. F.—Secretary of Warwick and Oxford Horticultural Societies.—W. N.—C. V. L.—C. N.—Caroline K.—W. S. Chester.—E. W.

Markets.

COVENT GARDEN, March 4.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

GRAPES are now coming very short, and well-kept samples will make good value. A good supply of late Apples reaching us; prices steady. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Aralia Sieboldi, doz.	9 0–18 0	Ficus elastica, each..	1 6– 7 0
Arbor vitæ (golden), per dozen ..	6 0–18 0	Ferns, in variety, per dozen ..	4 0–18 0
— (common) dozen	6 0–12 0	Foliage Plants, various, each ..	2 0–10 0
Arum Lilies, dozen..	9 0–12 0	Genistas, per dozen	10 0–15 0
Azaleas, per doz.	24 0–42 0	Hyacinths, per doz.	6 0– 9 0
Begonias, per dozen	6 0–12 0	Lilies in clumps, or pots, per dozen	18 0 30 0
Bouvardias, doz ..	12 0–18 0	Marguerite Daisy, per dozen ..	8 0–12 0
Cinerarias, per doz.	10 0–12 0	Myrtles, per dozen..	6 0–12 0
Cyclamen, 12 pots..	12 0–24 0	Palms in var., each	2 6–21 0
Cyperus, per dozen..	4 0–12 0	Pelargoniums, scarlet, per dozen ..	6 0– 9 0
Daffodils, per dozen	9 0–12 0	Primulas, single, 12 pots ..	4 0– 6 0
Dracæna terminalis, per dozen ..	30 0–60 0	Solanums, per dozen.	8 0–12 0
— viridis, per doz .	12 0–24 0	Spiræa, per dozen ..	12 0–15 0
Ericas, various, doz.	12 0–24 0	Tulips, 12 pots ..	6 0– 9 0
Euonymus, in var., per dozen ..	6 0–18 0		
Evergreens, in var., per dozen ..	6 0–24 0		

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Acacia (Mimosa), Fr., per bunch ..	1 0– 1 6	Lily-of-the-Valley, 12 sprays ..	0 9– 1 6
Anemone, French, 12 bunches ..	3 0– 6 0	Marguerites, 12 bun.	6 0–12 0
Arum Lilies, 12 blms.	4 0– 8 0	Mignonnette, 12 bun.	4 0– 9 0
Azaleas, 12 sprays..	0 6– 1 0	Pelargoniums, per 12 trusses ..	1 0– 1 6
Bouvardias, per bun.	0 6– 1 0	— scarlet, 12 trusses	0 9– 1 0
Camellias, 12 blms..	2 0– 4 0	Primulas, double, per bunch ..	1 0– 1 6
Carnations, 12 blms.	1 0– 3 0	— single, per bunch	0 4– 0 6
Chrysanth., 12 blms.	2 0– 4 0	Roses (indoor), doz.	3 0– 9 0
— 12 bunches ..	9 0–18 0	— Tea, per dozen..	2 0– 3 6
Cyclamens, doz. blms.	0 4– 0 6	— red, French, doz.	2 0– 4 0
Daffodils, per bunch	0 6– 2 0	Snowdrops, 12 bun.	1 6– 3 0
Epiphyllums, 12 blms.	0 6– 1 0	Tropæolum, 12 bun.	2 0– 3 0
Euchrises, per dozen	4 0– 6 0	Tuberoses, 12 blms..	2 0– 3 0
Gardenias, 12 blooms	12 0–24 0	Tulips, doz. blooms	0 9– 1 0
Hyacinths, Rom., 12 sprays ..	0 6– 1 0	Violets, 12 bunches	1 0– 1 6
Lapageria, red, 12 blooms ..	1 0– 2 0	— Czar, Fr., bunch	1 6– 2 6
Lilac, French, bunch	2 0– 7 0	— Parmæ, French, per bunch..	0 4– 0 6

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz..	4 0– ..	Mushrooms, punnet	1 0– 1 6
Asparagus, Eng., 100	0 0– 0 0	Mustard and Cress, do.	0 4– ..
— French, bundle	0 25 0	Onions, per bushel ..	4 0– ..
Beans, Kidney, lb..	2 0– ..	Parsley, dozen bunch	2 0– 3 0
Beet, red, per dozen	1 0– 2 0	Parsnips, per dozen	1 0– ..
Broccoli Sprts., bush.	9 0– ..	Potatos, per cwt. ..	4 0– 5 0
Capsicums, per doz.	0 6– ..	,, kidney, per cwt	4 0– 5 0
Carrots, per bunch..	0 6– ..	Salsafy, per bundle	0 9– 1 0
Cauliflowers, per doz.	2 0– 3 0	Savoys, per dozen ..	2 0– ..
Celeriac, per root ..	0 3– ..	Scorzonera, p. bundle	1 0– ..
Celery, per bundle..	1 6– 2 0	Seakale, punnet ..	2 6– ..
Coleworts, doz. bunch	4 0– 6 0	Shallots, per pound..	0 3– 0 9
Cucumbers, each ..	1 0– 1 6	Spinach, per bushel	4 0–6 0
Endive, per dozen ..	1 0– 2 0	Sprouts, per pound	0 6– ..
Herbs, per bunch ..	0 2– ..	Sprue Asparagus, per bundle ..	1 0– ..
Leeks, per bunch ..	0 0– ..	Tomatos, per lb. ..	1 0– 2 6
Lettuce, per dozen..	1 0– 1 6	Turnips, bunch ..	0 6– ..
Mint, green, bunch	1 6– ..		

POTATOS.—Magnum Bonums, 45s. to 75s.; Regents, 55s. to 75s. per ton. Trade very heavy.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	1 0– 4 0	Lemons, per case ..	8 0–10 0
— Canadian, barrl.	10 0–14 0	Pine-apples, Eng., lb.	1 0– ..
Grapes, per lb. ..	3 0– 8 0	— St. Michael, each	2 6– 8 0
Kent Cobs, 100 lb.	35 0– ..		

SEEDS.

LONDON: *March* 3.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., write that the wintry weather momentarily checks the demand for farm seeds. Orders for red Clover seed for export to America still come to hand, and the recent advance is well maintained. Alsike, Trefoil, and white Clover, continue to sell at the very low currencies previously noted. There has been more doing in Italian and perennial Rye-grass: values remain unchanged. Spring Tares have a fair sale at full rates. Rather higher figures are asked for Mustard and Rape seed. Blue Peas are in improved request. Haricot Beans steady. There is but little business doing in feeding Linseed.

CORN.

MARK LANE: *March* 1.—Suitable qualities of English Wheat are 6*d*. dearer on the week. Foreign Wheats were firmly held. Russian comprised the larger proportion, and met most attention, showing 6*d*. to 1*s*. advance. Other imports were 6*d*. dearer. English flour was held in some cases for 6*d*. advance, but the principal sales were at the extreme of late rates. Barley was not a quick sale, but grinding descriptions showed 3*d*. advance on the week. Oats were in fair request, and prices were 3*d*. to 6*d*. higher than on this day se'nnight. Peas were 6*d*. dearer, and Beans unchanged.

March 3.—Wheat ruled firm at Monday's advance. Grinding Barley was firm, Beans and Peas were fully as dear. Oats have risen 3*d*. since Monday.

Average prices of corn for the week ending Feb. 27: —Wheat, 29*s*. 3*d*.; Barley, 28*s*. 3*d*.; Oats, 19*s*. 2*d*. For the corresponding period last year:—Wheat, 32*s*.; Barley, 31*s*. 6*d*.; Oats, 20*s*. 3*d*.

FRUITS AND VEGETABLES.

COLUMBIA (East London): *March* 3.—Good supplies of all kinds of vegetable produce, trade brisk, prices fair. Quotations:—Apples, 3*s*. 6*d*. to 6*s*. per sieve; Cauliflowers, 2*s*. to 4*s*. per dozen; Beetroot, 6*d*. to 8*d*. do.; Savoys, 6*s*. to 12*s*. per tally; Spinach, 2*s*. 6*d*. to 3*s*. 6*d*. per sieve; Sprouting Broccoli, 3*s*. 6*d*. to 4*s*. 6*d*. do.; Brussels Sprouts, 4*s*. to 6*s*. do.; bunch Greens, 4*s*. to 5*s*. 6*d*. per dozen bunches; do. Carrots, 2*s*. to 2*s*. 6*d*. do.: do. Turnips, 2*s*. 6*d*. to 4*s*. do.; do. Parsley, 1*s*. 6*d*. to 2*s*. do.; Celery, 8*s*. to 12*s*. per dozen bundles; Onions, 4*s*. to 5*s*. per cwt.; Carrots, 18*s*. to 40*s*. per ton; white Turnips, 30*s*. to 60*s*. do.; Swede do., 22*s*. 6*d*. to 27*s*. 6*d*. do.

STRATFORD: *March* 2.—The market has been well supplied with all kinds of produce, and a fair trade was transacted at the undermentioned prices:—Savoys, 10*s*. to 12*s*. per tally; bunch Greens, 5*s*. per dozen bundles; Mangels, 18*s*. to 20*s*. per ton; Swedes, 20*s*. to 24*s*. do.; Turnips, 46*s*. to 55*s*. do.; Onions, 100*s*. to 110*s*. do.; Carrots, cattle feeding, 26*s*. to 32*s*. 6*d*. do.; do. household, 40*s*. do.; Apples, English, 2*s*. 6*d*. to 4*s*. per bushel; Celery, 8*s*. to 12*s*. per dozen bundles; Horseradish, 1*s*. per bunch; Parsnips, 7*d*. to 1*s*. per score.

POTATOS.

BOROUGH AND SPITALFIELDS: *March* 2.—Notwithstanding the rough weather supplies come to hand more freely than they could be disposed of, and prices were rather worse where there was any change at all. Regents, 60*s*. to 110*s*.; Magnum Bonums, 50*s*. to 85*s*.; and Champions, 50*s*. to 70*s*. per ton.

COLUMBIA (East London): *March* 3.—The demand was rather slack, except for good samples. Quotations:—Champions, 40*s*. to 60*s*.; Victorias, 55*s*. to 65*s*.; Regents, 55*s*. to 70*s*.; and Magnums, 50*s*. to 75*s*. per ton.

STRATFORD: *March* 2.—Magnums, 50*s*. to 70*s*.; Regents, 50*s*. to 60*s*.; and Champions, 47*s*. 6*d*. to 55*s*. per ton.

HAY.

WHITECHAPEL: *March* 2.—With very small supplies in consequence of the rough weather a fair inquiry prevailed, but there was no quotable change in prices. Quotations:—Clover, prime, 87*s*. to 102*s*. 6*d*.; inferior, 70*s*. to 86*s*.; hay, prime, 72*s*. to 87*s*.; inferior, 50*s*. to 65*s*.; and straw, 25*s*. to 35*s*. per load.

March 4.—There was a short supply on sale. The trade was fair at late rates.

CUMBERLAND (Regent's Park): *March* 2.—The unfavourable weather caused a very short supply, particularly in meadow hay. There were few buyers, and consequently a dull trade. Quotations:—Clover, best, 90*s*. to 100*s*.; second, 70*s*. to 90*s*.; hay, best, 70*s*. to 85*s*.; seconds, 65*s*. to 70*s*.; and straw, 28*s*. to 30*s*. per load.

Government Stock.—Consols closed on Monday at 101$\frac{7}{16}$ to 101$\frac{9}{16}$ for delivery, and 101$\frac{1}{2}$ to 101$\frac{5}{8}$ for the account. The closing prices of Tuesday and Wednesday were 101 to 101$\frac{1}{8}$ for delivery, and as on Monday for the account. Thursday's final figures were 101 to 101 101$\frac{1}{8}$ for delivery, and 101$\frac{1}{16}$ to 101$\frac{3}{16}$ for the account.

WELL WORTH GROWING.

NEW MELON, "Penrhyn Castle."—Certificated by the Botanical Society, Manchester, 1885. We have arranged with Mr. W. Speed, The Gardens, Penrhyn Castle, for the distribution of this new Melon, and we do not hesitate to say that it will become a favourite. We have every confidence it will become as popular for the table and exhibition purposes as our "Best of All," sent out by us a few years ago. The raiser describes it as follows:—"A grand early Melon, of strong constitution, and most prolific. The fruit is of a handsome oval shape, colour golden yellow, slightly netted, white-fleshed, and of great depth, which can be eaten to the rind, of a luscious and exquisite flavour. Ten days earlier than Cox's Golden Gem. Weight, 4 to 8 lb." *Per packet, 2s.*

NEW CUCUMBER, "CLUMBER SEEDLING."—We have been favoured with instructions from Mr. M. Gleeson, The Gardens, Clumber, Notts, to distribute this new Cucumber. This variety will meet the wishes of most growers, and be an acquisition to all who require a plentiful supply in winter and spring. Mr. Gleeson gives us the following description of its qualities:—"It is the result of a cross between Robinson's 'Telegraph' and Speed's 'Nonsuch,' embracing the good qualities of both these excellent kinds; but it is better adapted for winter use than either parent, being a stronger grower and much freer bearer. White spine, slightly ribbed, dark green in colour, and attains a length of 15 to 18 in. I can confidently recommend this Cucumber as one of the very best grown, especially for winter use." *Per packet, 2s.*

NEW TOMATO, "MOORE'S GEM."—The stock of this new Tomato has been placed in our hands, and we can with every confidence recommend it as an acquisition to the many varieties now in commerce. The size of fruit is equal to a medium-sized Apple, slightly oval shaped, colour rich ruby, and flavour exquisite. The raiser, Mr. H. Moore, Peel Park, Manchester, gives us the following history of its parentage, qualities, &c.:—"This Tomato was raised by me, and is the result of a cross between Conqueror and Vick's Criterion. The plant has a good constitution, derived from the first parent, the fruit partaking of both varieties, and the size of a dessert Apple, of a bright ruby colour, and flavour unequalled by any other variety. It is a heavy cropper, fruits in clusters, and very early." *Per packet, 1s. 6d.*

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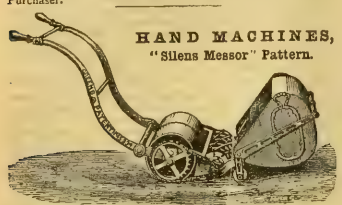
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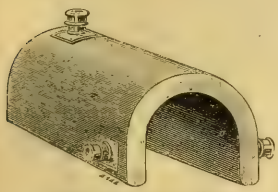
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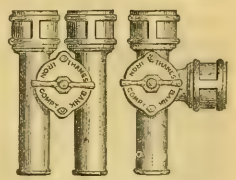


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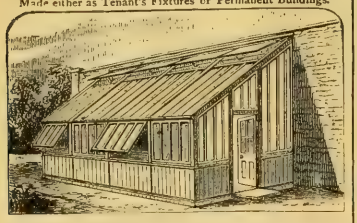
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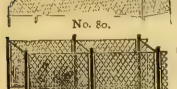


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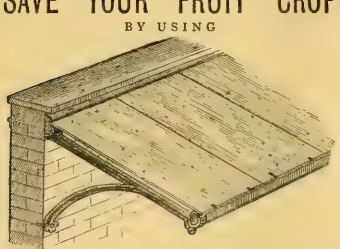
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285 and 362, EDGWARE ROAD, LONDON, W.

SAVE YOUR FRUIT CROP

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RICHARDSON'S WALL-TREE PROTECTOR.

The Cheapest Made, and Thoroughly Strong.

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PROTECT YOUR PLANTS
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REGISTERED TRADE MARK

From Damp, Frost, and Cold Winds.

A perfect Non-conductor of Heat, keeping wherever it is applied, an even Temperature.

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HORTICULTURAL SHEET GLASS

14×12	20×15
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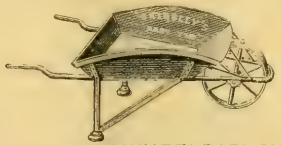
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Every Gardener should use the "Easy Tip."

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BRIERLEY & SON, BIRMINGHAM.

Fawkes' Slow Combustion HEATING APPARATUS.

Most efficient and cheapest in existence.

Requires no sunk stokehole; will last all night without attention; will burn house cinders; costs nothing for fuel; is a tenant's fixture; any one can fix it; a domestic servant can stoke it. Price of Boiler to heat:—

55 feet 4-inch Pipe .. £2 10s.
110 feet 4-inch Pipe .. £3 15s.
200 feet 4-inch Pipe .. £5 7s. 6d.

Complete Apparatus, with 2 rows of 4-inch Pipe, from £4 12s. 6d.

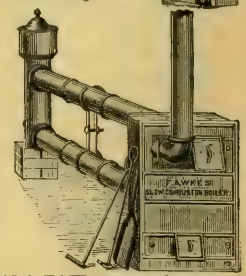
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Beware of incomplete inefficient apparatus, which will not last all night.



Specimen Testimonial.

"I have given your Slow Combustion Boiler a good trial during last winter, and it has done its work in a most satisfactory manner. Your Boilers want but little attention, and consume almost anything."—D. MUNRO, *Gardener, The Chestnuts, Egham Hill, Surrey.*

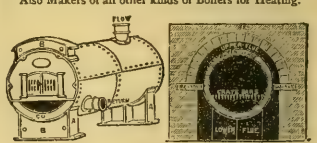


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The Original and only Genuine Trentham Riveted Boiler.

Recently Improved and Reduced in Price.

Also Makers of all other kinds of Boilers for Heating.



HOT-WATER PIPES AND FITTINGS

of every description for Heating Apparatus.

THE LARGEST STOCK IN THE KINGDOM.



HIGH and LOW PRESSURE and HOT-AIR HEATING APPARATUS ERECTED and GUARANTEED.

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Price Lists free.

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Agents Wanted to sell Wood's Boilers.

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"RICHARDSON'S" PATENT UNIVERSAL INDIARUBBER JOINT.

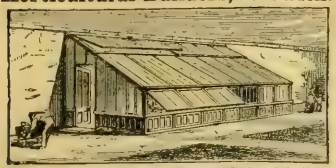
THE MOST INEXPERIENCED CAN FIX THEM.
SOUNDNESS OF JOINT A CERTAINTY.

Highest Testimonials and References.

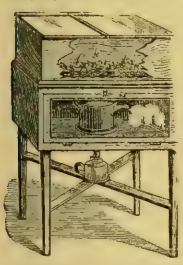
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(LIMITED),
MANSFIELD, NOTTS.
Makers of Garden Rollers, Vases, Fountains, Seats, &c.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

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Lean-to Greenhouses, made of Seasoned Redwood, in lights, and easily erected, glazed with 21-ounce glass, and painted three coats of good oil colour. Tenants' Fixtures. 12 feet by 8 feet, £17. For Brickwork, £15 10s.



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Is the best and cheapest for striking cuttings, raising seeds, or growing any plants requiring bottom-heat. Strongly made. Price, includes Lamp and (Registered) Central Heating Kettle, as engraving. Cost of working reduced to a minimum as all heat generated is utilised. At this season, no garden should be without one.

No. 1. 3 feet 6 inches high by 2 feet 6 inches long, by 1 foot 10 inches wide, £1 17s. 6d.

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Packing 5s.

The Cheapest CUCUMBER FRAMES in the Market.

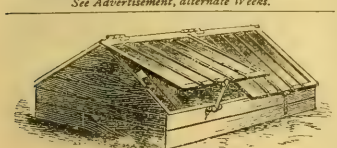


Cucumber Frames, with sliding lights, glazed with 21 ounce glass, and painted three coats, ready for use, 6 feet by 4 feet, £1 7s.; 12 feet by 4 feet, £2. Cases, 5s.

Carriage Paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin, and Belfast.

Illustrated Catalogues, post-free, two penny stamps.

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The above are without exception the most useful kind of Frame for Plant Growing, and every one with a garden should possess one. The sashes turn right over one on the other, and the boxes are put together with wedges, and can be taken apart in a few minutes. Sizes and prices, carriage paid to any station in England, ready glazed and painted:—

6 feet long, 4 feet wide, packing cases free	£2	15 0
12 feet long, 4 feet wide, ,, ,, ,,	4	15 0
6 feet long, 5 feet wide, ,, ,, ,,	3	15 0
12 feet long, 5 feet wide, ,, ,, ,,	6	10 0

The glass is nailed and puttied in.

R. HALLIDAY & CO.,
Hothouse Builders and Engineers,
ROYAL HORTICULTURAL WORKS, MIDDLETON, MANCHESTER.

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No. 9.—A very useful range of three-quarter-span houses, divided into three parts, the centre part projecting 2 ft. more than the ends. It can be varied in form to almost any extent. Designs and estimates for ranges of Houses, including Conservatory, Peach-houses, Vineries, &c., prepared and furnished free.

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Length.	Width.	Width of Centre Part.	Price.	
24 ft. ..	8 ft. ..	10 ft. ..	£43 10	
30 ft. ..	10 ft. ..	12 ft. ..	55 10	ESTIMATES
36 ft. ..	12 ft. ..	14 ft. ..	67 10	FOR
48 ft. ..	12 ft. ..	14 ft. ..	83 10	HEATING
60 ft. ..	12 ft. ..	14 ft. ..	100 0	APPARATUS
72 ft. ..	12 ft. ..	14 ft. ..	118 0	ON
84 ft. ..	12 ft. ..	14 ft. ..	135 0	APPLICATION.
96 ft. ..	12 ft. ..	14 ft. ..	151 0	

PROPORTIONATE PRICES FOR OTHER SIZES, AND ERECTED IN ANY PART OF THE COUNTRY.

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46A, King William Street, E.C. } LONDON BRIDGE.



PARHAM'S PATENT PLANT PRESERVERS, and CUCUMBER FRAMES.—*Glazed without Putty* on channelled wood rafters. Incomparably superior to Puttied Glass.

N.B.—A broken glass can be replaced in one minute; Angle-iron corner plates; lights turn over; patent ridge dispenses with internal obstruction. No charge for packing. Carriage paid.

Price, painted, with ends, and 21-ounce glass:—

6 feet by 4 feet .. £2 15s. od. | 12 feet by 4 feet .. £4 15s. od.
6 feet by 5 feet .. £3 15s. od. | 12 feet by 5 feet .. £6 15s. od.
6 feet by 6 feet .. £4 15s. od. | 12 feet by 6 feet .. £7 10s. od.

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GLASS.—Cut Sizes, from 12 by 9 upwards, in 100 and 200 feet boxes, in 15-ounce and 21-ounce.

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HORTICULTURAL BUILDERS AND HEATING ENGINEERS,
PAISLEY.
LONDON OFFICE: 48, Pall Mall, S.W.

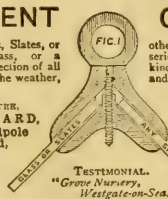
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GARDEN POTS.
BEST QUALITY.
Largest Stock.
1½ to 30 inches diam.
2 doz. or 100,000 sent.
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Royal Pottery,
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TO THE TRADE.
LARGE STOCK.
LONG TOMS, and others.
STATE QUANTITY.
SEND FOR *PRICE LIST.*

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For Glass, Slates, or a Hand-glass, or a for the protection of all &c., from the weather, pests.

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TESTIMONIAL.
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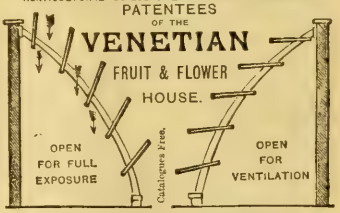
other Material, to form series of Hand-glasses, kinds of plants, flowers, and all kinds of garden

Price 6s. per dozen. Sample Clip, 9d. From the Inventor.

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PRICES REDUCED.
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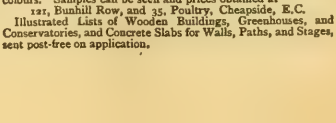
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10 " ...		0	6	0	21 " ...		0	11	6
11 " ...		0	6	6	22 " ...		0	12	0
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Warranted to Protect Bloom from Frost, Winds, Hail, and Fruit from Birds, Wasps, &c.

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Gardeners.—To the Trade, &c.

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B. S. WILLIAMS begs to intimate that he has at present in the Nursery and upon his Register some excellent Men, competent either to fill the situation of HEAD GARDENER, BAILIFF, FOREMAN, or JOURNEYMAN. Ladies and Gentlemen requiring any of the above will please send full particulars, when the best selections for the different capacities will be made.—Holloway, N.

Gardeners.

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Spring, 1886,
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SALES BY AUCTION.

Monday Next.—Special Sale.

CATTLEYA TRIANÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on MONDAY NEXT, March 15, at half-past 12 o'Clock precisely, an exceptionally fine Importation of the best varieties of CATTLEYA TRIANÆ. The Plants are compact, eyes at perfect rest, full of leaf, and contain many very distinct looking pieces, and altogether one of the most satisfactory Lots Mr. Sander has had the fortune to offer. 2500 ODONTOGLOSSUM ALEXANDRÆ, from hitherto unsearched mountains, in fine condition. These are of the best type, broad petalled and round; a fine plant of CYPRIPEDIUM GRANDÆ, in flower; good plants of CATTLEYA DOMINIANA, C DEVONIANA, and two plants of the Autumn-flowering CATTLEYA LABIATA.

On view morning of Sale, and Catalogues had.

Tuesday Next.

SEVERAL THOUSANDS OF ORCHIDS.

MESSRS. PROTHEROE AND MORRIS are instructed by the New Plant and Bulb Company to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, March 16, at half-past 12 o'Clock precisely, a portion of Mr. Edward Wallace's third and last COLLECTION of ORCHIDS made at Ocaña and Bogota, consisting of several thousand pieces in good condition of Odontoglossum Pescatorei, O. triumphans, O. blandum, O. Phalænopsis, Sobralia alba, Epidendrums, a grand lot of Odontoglossum coronarium, a large importation of FREESIA REFRACTA ALBA, enormous bulbs of the beautiful LILIUM NEILGHERRENSE, 1000 ODONTOGLOSSUM ALEXANDRÆ, in fine condition (mostly from Messrs. Shuttleworth, Carder & Co., of their well-known type), and ESTABLISHED ORCHIDS in variety, including Dendrobiums, Cattleyas, Angræcums, Oncidiums and many others.

On view morning of Sale, and Catalogues had.

Wednesday Next.

4000 splendid Bulbs of LILIUM AURATUM, also LILIUM RUBRUM, CRUENTUM, LEICHTLINI, KRAMERI, BROWNI, WITTEI, and other fine LILIES; together with numerous distinct varieties of beautiful IRIS, received from Japan, in unusually good condition; 2000 EUCHARIS CANDIDA, 1000 FREESIA REFRACTA ALBA, and enormous bulbs of LILIUM NEILGHERRENSE; CAMELLIAS, AZALEAS, PALMS, 800 Standard and Dwarf ROSES, and selected FRUIT TREES from English Nurseries; 300 CARNATIONS and PICOTEES, GLADIOLUS, PÆONIES, and an assortment of HARDY PLANTS and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, March 17, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

2000 CATTLEYA PERCIVALIANA.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Hugh Low & Co. to SELL by AUCTION, at their Central Auction Rooms, 67 and 68 Cheapside, E.C., on FRIDAY NEXT, March 19, at half past 12 o'Clock precisely, a large quantity of imported plants of CATTLEYA PERCIVALIANA, just received in the best possible condition; also plants of CATTLEYA MENDELII, has bloomed abundantly on very short rounded bulbs, 3 inches in length; it was found in the same district as Cattleya Percivaliana, and may be a distinct form or another variety of it. Also fine plants of CŒLOGYNE OCELLATA, DENDROBIUM BRYMERIANUM (true), D. CRUENTUM, D. FALCONERI, D. HETEROCARPUM, D. WARDIANUM from Upper Assam; EPIDENDRUM MACROCHILUM, LÆLIA SUPERBIENS, ODONTOGLOSSUM GRANDE, O. TRIUMPHANS, ONCIDIUM BICALLOSUM, PAPILIO MAJUS, VANDA CATHCARTII, V. CRISTATA variety, V. CŒRULEA, V. TERES, and other choice Orchids.

On view morning of Sale, and Catalogues had.

Tooting, S.W.

FINAL CLEARANCE SALE, WITHOUT RESERVE.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on WEDNESDAY, March 24, at 12 o'Clock precisely, the whole of the remaining stock, comprising a large variety of well-grown CONIFERS and EVERGREENS, all in fine condition for removal; a quantity of ORNAMENTAL DECIDUOUS TREES, several thousands of IVIES of sorts in pots; also the second and final portion of the celebrated COLLECTION of HERBACEOUS ALPINE, and AQUATIC PLANTS created by Mr. Robert Parker, 1900, formerly occupied this Nursery, including 3000 named Pæonies, 2000 Iris, Delphiniums, golden and green Euonymus, and other stock.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

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To Gentlemen, Florists, Builders, and others.

2000 oval-leaved PRIVET, 2 to 4 feet; 3000 common ditto, 2 to 4 feet; 4000 LAURELS of sorts, 500 Portugal LAURELS, 3000 CURRANTS, 500 English and Irish YEWS, 2 to 5 feet; 2000 LIMES, 500 POPLARS, a great quantity of CONIFERS in the borders, IVIES, EUONYMUS, GREENHOUSE PLANTS in variety; 500 Pot ROSES coming into bloom, and other Stock.

MESSRS. PROTHEROE AND MORRIS will SELL the ABOVE by AUCTION, on the Premises, the Bell Lane Nurseries, Hendon, N.W. (1 mile from Hendon or Finchley station), on THURSDAY, March 25, at 12 o'Clock precisely, by order of Mr. James Wright.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone.

Special Sale of Flowering Orchids.

MESSRS. PROTHEROE AND MORRIS beg to announce that their next SPECIAL SALE of the above will take place on TUESDAY, March 30, for which they will be glad to receive early notice of entries.

Wednesday Next.—(Sale No. 7117).

ROSES, FRUIT TREES, BORDER PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 17, at half-past 12 o'Clock precisely, several hundred first-class Standard and Dwarf ROSES, including all the leading varieties: FRUIT TREES, of sorts; STOVE and GREENHOUSE PLANTS, SHRUBS, and CONIFERS; BORDER PLANTS, in great variety; LILIUMS, GLADIOLI, &c

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7118.)

SPECIAL SALE of ORCHIDS in FLOWER.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 17 at half-past 12 o'Clock precisely, a grand collection of ORCHIDS in FLOWER and BUD, including a very strong plant of Dendrobium nobile nobilius, with growths 2 feet long, and thirty-six flowers; D. Dominì, two plants of the very rare Lælia Amanda or Rothschildiana; Cœlogyne cristata alba, with nine leading growths: C. cristata, "Chatsworth var." (many plants); C. Massangeana, Dendrobium Wardianum, fine types of Odontoglossum Alexandræ, and O. Pescatorei; Hybrid Odontoglots, and many other rare and fine things; also Twelve plants of Anthurium Palmeri (some in flower), &c.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next.

The Sixth Portion of the extensive COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House, Shortlands.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, March 17 and 18, at half-past 12 o'Clock precisely each day, the Sixth Portion of the above extensive Collection, including fine plants of CATTLEYA MENDELII, C. TRIANÆ, C. WAGNERI, C. MOSSIÆ, and C. GIGAS. Several hundred flowered plants of ODONTOGLOSSUM ALEXANDRÆ, O. PESCATOREI, LÆLIAS, ONCIDIUMS, DENDROBES, &c.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next

10,000 grand Bulbs of LILIUM AURATUM, just received from Japan, in the finest possible condition.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, March 17 and 18

On view mornings of Sale, and Catalogues had.

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MR. SYDNEY H. CRAWLEY has been favoured with instructions from Mr. Charles Cornwell to SELL by AUCTION, on MONDAY, March 22, at 11 for 12 o'Clock precisely, on account of the numbers of lots 000 Scotch SPRUCE and Silver FIRS, 3000 Portugal and common LAURELS, 1000 choice named RHODODENDRONS, 2 feet to 6 feet high; 250 AZALEAS, PONTICUM of sorts; 400 LIMES, 500 BIRCH, Balsam and Black Italian Lombardy and White POPLARS, 500 Standard LABURNUMS, 6 feet to 10 feet high; 200 Standard ACACIA, 500 Scarlet and common CHESTNUTS, 10 feet to 12 feet high; 500 well-grown SYCAMORES, 5000 PRIVET, 5000 ELM, 350 Green HOLLIES, 300 Double Scarlet, White and Pink, and Cockspur THORNS; 3000 Standard and Dwarf-trained and Pyramid FRUIT TREES, including Peaches, Nectarines, Apricot, Plum, Apple, and Pears; 1000 Standard and Dwarf ROSES of the choicest sorts, PICEA HURDMANNIANA, THUIAS of sorts; together with a large assortment of DECIDUOUS and FLOWERING SHRUBS.

The Auctioneer would respectfully call the attention of the Trade and others to this important Sale.

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May be viewed at any time (Sundays excepted). Catalogues can be obtained of Mr. CHARLES CORNWELL, The Nurseries, Hadley and Barnet; of Mr. JOHN TOONE, the "Three Elms," Barnet Common (opposite the Nurseries); and the other usual Inns in the neighbourhood; and of SYDNEY H. CRAWLEY, Auctioneer and Appraiser, The Old Market Place, Barnet, N.

Heathrow, Middlesex.

FOR SALE by AUCTION, by order of the Devisees, in trust under the will of the late Mr. Samuel Hunt, in one or more lots, about JUNE NEXT, unless an acceptable offer be previously made, HEATHROW FARM, containing about 133 acres, consisting of Farmhouse, two Homesteads, sixteen Cottages, and very valuable Freehold, tithe free; Land eminently suitable for Market Garden purposes, and having an extensive frontage with eligible building sites, about 14 miles from Hyde Park Corner, 2¾ miles from Ashford (S.W.R.) Station, and 3 miles from West Drayton (G.W.R.) Station.

For further information apply to Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; or to Mr. E. P. NEWMAN, Estate Agent, 42, High Street, Uxbridge, W.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the REVISED CATALOGUE of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

The Vineyard, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

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One of the best selections in Europe.

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FOR SALE, 40,000 well-rooted Plants of GENISTAS, at 6s. per 100, sent by post or otherwise for cash only; 3000 in 5-inch pots, set with bud, 21s. and 25s. per 100. Post-office Orders payable at Leyton Green

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SELECT SEED POTATOS.

IMPERATOR, as originally sent out—a magnificent cropper, of extra fine quality.

ROBSON'S CHALLENGE, a very superior round early extra fine quality—highly recommended.

TAYLOR'S FORTYFOLD, true—a favourite old variety.

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And all the leading kinds in cultivation. Prices on application

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50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.

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3,000 NAMED VARIETIES, the Choicest Sorts.

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The REPORT on the ORCHID CONFERENCE is now ready, and may be had by Fellows of the Society on application to the ASSISTANT SECRETARY at the Office, South Kensington, S.W.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
EXHIBITION of SPRING FLOWERS.
The FIRST EXHIBITION of the Season will take place on WEDNESDAY, March 24. Schedules of Prizes now ready.
The Dates of the SUMMER EXHIBITIONS are WEDNESDAYS, May 19, and June 9. Schedules of Prizes now ready.

CRYSTAL PALACE
SPRING FLOWER SHOW, MARCH 26 and 27. Shedules of this and other Flower and Fruit Shows during 1886, to be had on application to Mr. W. G. HEAD, Garden Superintendent, Crystal Palace.

BRISTOL SPRING FLOWER SHOW SOCIETY.—The SIXTEENTH GRAND SPRING EXHIBITION will be held at the Colston Hall, Bristol, on MARCH 17 and 18.
A. POLKINHORN, Secretary, Bishopston, Bristol.

LIVERPOOL HORTICULTURAL ASSOCIATION.
POSTPONEMENT OF SPRING SHOWS.—The Fourth Grand Spring Flower Show of Hyacinths, Tulips, Narcissus, Azaleas, Rhododendrons, Roses, and Forced Hardy Plants, will be held in St. George's Hall, on THURSDAY, March 18. Schedules on application to EDWARD BRIDGE, Sec.
3, Cedar Terrace, Huyton.

GLASGOW and WEST of SCOTLAND HORTICULTURAL SOCIETY.
The SPRING FLOWER SHOW will be held within St. Andrew's Halls, Gravshill Street, Glasgow, on WEDNESDAY, March 24. Prize Schedules and Tickets of Admission to be had from the Treasurer, Mr. CHAS. MACDONALD WILLIAMSON, 194, West George Street, Glasgow; any of the Directors, or at my Office here. Member's Tickets, 2s. 6d. each.
FRANC. GIBB DOUGALL, Secretary,
167, Canning Street, Glasgow.

BATH BULB SHOW, WEDNESDAY and THURSDAY, March 24 and 25.
18 HYACINTHS, Open, £3, 1st; £2, 2d; £1, 3d.
12 HYACINTHS, Amateurs, £1, 1st; £1, 2d.
6 ORCHIDS, Distinct, Open, £3, 1st; £1 10s., 2d.
And several other Classes, for PLANTS, CUT FLOWERS, FRUIT and VEGETABLES. 49 Classes in all. For Prize Schedules apply to BENJ. PEARSON, Sec,
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ROYAL AQUARIUM, Westminster.
HORTICULTURAL EXHIBITIONS.
Great EXHIBITION of HYACINTHS, &c., MARKET PLANTS, and CUT DAFFODILS, on MARCH 30 and 31. Great ARTISTIC ROSE SHOW, on JUNE 25 and 26. Great STRAWBERRY EXHIBITION and FÊTE, on JULY 2 and 3. Great DISPLAY of TABLE DECORATION; BOUQUETS, &c., on AUGUST 20 and 21. Liberal Prizes are offered. Schedules of Prizes on application to
Mr. RICHARD DEAN, Superintendent of the Exhibitions, Ranelagh Road, Ealing.

SHROPSHIRE HORTICULTURAL SOCIETY.
The SPRING SHOW, APRIL 1; SUMMER SHOW, AUGUST 18 and 19. Twenty plants, £25, £20, £15. Collection of Fruit, £10, £6, £3. For Grapes, £35. All Classes open to All England. Schedules from
Messrs. ADNITT AND NAUNTON, Hon. Secs.
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WILTS HORTICULTURAL SOCIETY, Salisbury.
SHOW on JULY 29, 1886. Division A., open.
12 STOVE and GREENHOUSE FLOWERING PLANTS, First Prize, £15.
12 VARIEGATED and FINE-FOLIAGE STOVE and GREENHOUSE PLANTS, First Prize, £13.
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The Nurseries, Salisbury. W. H. WILLIAMS, Hon. Sec.

CLAY CROSS HORTICULTURAL SOCIETY.
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NEW CUCUMBER, "CLUMBER SEEDLING."—We have been favoured with instructions from Mr. M. Gleeson, The Gardens, Clumber, Notts, to distribute this new Cucumber. This variety will meet the wishes of most growers, and be an acquisition to all who require a plentiful supply in winter and spring. Mr. Gleeson gives us the following description of its qualities:—"It is the result of a cross between Rollisson's 'Telegraph' and Speed's 'Nonsuch,' embracing the good qualities of both these excellent kinds; but it is better adapted for winter use than either parent, being a stronger grower and much freer bearer. White spine, slightly ribbed, dark green in colour, and attains a length of 15 to 18 in. I can confidently recommend this Cucumber as one of the very best grown, especially for winter use." *Per packet, 2s.*

NEW TOMATO, "MOORE'S GEM."—The stock of this new Tomato has been placed in our hands, and we can with every confidence recommend it as an acquisition to the many varieties now in commerce. The size of fruit is equal to a medium-sized Apple, slightly oval shaped, colour rich ruby, and flavour exquisite. The raiser, Mr. H. Moore, Peel Park, Manchester, gives us the following history of its parentage, qualities, &c.:—"This Tomato was raised by me, and is the result of a cross between Conqueror and Vick's Criterion. The plant has a good constitution, derived from the first parent, the fruit partaking of both varieties, and the size of a dessert Apple, of a bright ruby colour, and flavour unequalled by any other variety. It is a heavy cropper, fruits in clusters, and very early." *Per packet, 1s. 6d.*

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Last great Consignment of the Season just arrived in magnificent condition.

The Bulbs are equal to the finest English-grown Roots.

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20 Acres of grand Plants, in best varieties.

BUSHES, H.P., 8s. per dozen, 60s. per 100. } *Packing and Carriage FREE* for Cash with Order.
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FLOWERING SHRUBS, 8s. per dozen.
STOVE and GREENHOUSE PLANTS, in great variety, cheap.
HERBACEOUS and ALPINE PLANTS. One of the largest and best collections in the world. Good selections from 25s. per 100.
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Of Finest Quality.

Descriptive LISTS of above and BULBS free.

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BIDDLES & COMPANY,

THE PENNY PACKET SEED CO.,

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Supply 3000 varieties of Vegetable and Flower Seeds in

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SEEDS OF THE BEST POSSIBLE QUALITY.

To Noblemen, Gentlemen, Gardeners, &c.

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BEECH FOR HEDGES.

The best Plant for shelter, retaining its old foliage until the Spring.

Stout transplanted, 2½ to 3½ feet, 6s. per 100, 40s. per 1000; 3½ to 4½ feet, 7s. per 100, 50s. per 1000.

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Hender's Strains are the Best.

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Hender's Single, 500 Seeds, 2s.; 150 Seeds, 1s.
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PRIZE COB NUT OR FILBERT TREES.

Gentlemen desirous of obtaining the true Webb's Prize Cob Nut or Filbert Trees for present planting, should send their Orders to Mr. COOPER, F.R.H.S., Calcot Gardens, Reading, Berks, of whom alone the various sorts can be obtained.

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Choicest varieties of Polyanthuses, Primroses, Cowslips, Auriculas, Hepaticas, &c. Apply to

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An IMMENSE STOCK, in SPLENDID CONDITION.

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And many sterling novelties in Seed Potatos. Send for Retail Priced LIST, which contains all the best sorts in cultivation.
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OUR NEW ORCHID LIST, No. 79, to follow, with List of Mr. Edward Wallace's importations.
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OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c., on application.
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LILAC CHARLES X, and ALBA VIRGINALIS, nice plants, cultivated in pots, four to eight flower-buds, £5 to £8 per 100.
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HELLEBORUS NIGER, common variety, 4s. p. doz.
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One well-rooted Plant of each sent free by post for 3s. 6d. cash with order.

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HEPATICA TRILOBA, single blue, 2s. per dozen.
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One well-rooted Plant of each sent free by post for 2s. 6d., cash with order.
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LILIUM AURATUM; special importation. Splendid large, fine, heavy Bulbs, 8 to 10, and 10 to 12 inches, 35s. and 45s. per 100; 5s. and 6s. per dozen; extra size, 9s. per dozen. Guaranteed the cheapest for quality offered this season. March is the best month to plant. Also GLADIOLUS BRENCHLEYENSIS, 3s. 6d. per 100; and Double TUBEROSES, extra size, 6d. per 100.
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Descriptive LIST of Florist Flowers, 4*d*. (stams), or free with each order.

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PINKS, pure white, strong, hardy 2-yr.-old plants; will give a mass of bloom. Six for 1*s*., 12 for 1*s*. 6*d*.

CARNATIONS, PICOTEES, and CLOVES, sweetly scented, beautiful colours. From the very finest show flowers. Strong 1-yr.-old plants, to bloom well. Six for 2*s*., 12 for 3*s*.

POLYANTHUS, the cream of all the most noted growers of this spring-flowering plant. Most beautiful colours. Twelve for 1*s*., 30 for 2*s*.

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HOLLYHOCKS, Chater's strain, from finest double show flowers. Good plants, to bloom. Six for 1*s*. 6*d*., 12 for 2*s*. 6*d*.

WALLFLOWERS, Covent Garden Dark and Double German Dark, very fine stocky plants; soon bloom. Twelve for 1*s*., 30 for 2*s*.

FOXGLOVES, Gloxinia-flowered, Dean's grand new large spotted varieties, very fine. Twelve for 1*s*. 6*d*., 6 for 1*s*.

Also the following Free Blooming—HARDY PLANTS—should be in every Garden, all 1*s*. per dozen, free:—

THRIFT, pure White-flowered, fine edging and Spring Flower.

MALVA MOSCHATA ALBA, pure White; blooms all Summer.

MALVA MOSCHATA, Rose Honesty, Purple, Rose, and White.

PRIMULA CORTUSOIDES, beautiful Mauve; Spring Flower.

SWEET WILLIAMS, the finest dark and giant Auricula-eyed.

STRAWBERRY PLANTS, all selected crowns, transplanted, warranted to fruit well this year. Black Prince, Brown's Wonder, Alpha, Keens' Seedling, Exquisite, Early Crimson Pine, Duke of Edinburgh, and others, 100 for 2*s*.; Laxton's grand new Strawberry, King of the Earlies, 1*s*. per dozen; The Captain, 2*s*. per dozen.

NEW CELERY (Pink), Fisher's No. 1; warranted the earliest, largest, and best flavoured Celery grown. Seed packets, for present sowing, 1*s*. each free.

All free for cash with order from

S. SHEPPERSON, Prospect House, Belper.

Carnations and Picotees.

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WOOD AND INGRAM beg to offer fine Plants of the above, in great variety, thoroughly established, in 3-inch pots (a pair in each pot), 12*s*. per dozen pairs. Package (extra) 1*s*. the first, and 6*d*. every additional dozen pairs.

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To Local Boards, Square Committees, BUILDERS, and OTHERS.

W. FROMOW AND SONS have a large stock of ORNAMENTAL TREES and SHRUBS of all kinds, especially those that are suitable for London and other Large Towns, which can be seen at their Nurseries at Chiswick and Hounslow.

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Come and See.

It is very important that all lovers of Flowers should now see our PRIMULAS, CYCLAMENS, and CINERARIAS. It is believed they are the finest that ever existed; and the same with all our flowers and their seeds, which has been our sole specialty so long; and the eulogistic remarks made so often hardly renders it necessary to say that we should be most pleased to see our Patrons and give every information how we obtain and grow such superior kinds and send them all over the world.

Send for the best CATALOGUE on Flowers ever seen, post-free.

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THE HOME FOR FLOWERS SWANLEY KENT

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18*s*.; ½-cwt., 9*s*. 6*d*.; ¼-cwt., 5*s*.; ⅛-cwt., 3*s*.; tins containing 7 lb., 2*s*. 6*d*.; 2¾ lb., 1*s*.

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Can also be had from all Nurserymen and Seedsmen.

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THE MOST SUITABLE FOR

SHADING ORCHIDS, FERNS, Palms and Stove and GREENHOUSE PLANTS.

WILLIAMS' HOTHOUSE SHADING.

It is a strong, durable Cotton Netting, woven in squares so close as to exclude the direct rays of the sun, but admitting the greatest amount of light attainable through shading. It withstands the weather better than any other class of Shading, and may be beneficially used on account of the thickness of its texture, during cold weather, to keep the frost out. The leading Orchid and Plant Growers in the country have used this material for some years, and speak very highly of it, pronouncing it to be the very best material for Plants they have ever used.

Blinds made up and fixed complete.

Sold in pieces, 30 yards long by 1¾ yard wide. Price 45*s*. each. Samples submitted gratis.

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VICTORIA and PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

TO THE NURSERY AND SEED TRADE.

CORRY, SOPER, FOWLER & CO. (LIMITED),

18, Finsbury Street, London, E.C.,

Beg to inform the Trade that the extensive alterations lately completed to their Premises have enabled them to give greatly increased space to their Show Rooms, which are now furnished with every Novelty necessary for the Spring Trade. Buyers are particularly invited to pay an early visit, and every facility will be given for a general inspection.

CORRY, SOPER, FOWLER & CO. (Limited), Horticultural Sundries Merchants and Manufacturers, 18, FINSBURY STREET, LONDON, E.C. 2 minutes' walk from Moorgate St. and Liverpool St. Stations.

12-oz. Sample Packets, free by post, 12 Stamps.

FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 5*s*. 6*d*. per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s*. per ton per Truck. Sample Bag, 5*s*.; 5 Bags, 22*s*. 6*d*.; 10 Bags, 45*s*. Bags included Fresh SPHAGNUM, 10*s*. 6*d*. per Bag. SILVER SAND, Coarse or Fine, 5*s*. per Truck of 4 Tons. WALKER AND CO., Farnborough Station, Hants.

MONDAY NEXT—SPECIAL SALE.

CATTLEYA TRIANÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. SANDER to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on MONDAY NEXT, March 15, at half-past 12 o'Clock precisely, an exceptionally fine importation of the best varieties of CATTLEYA TRIANÆ. The plants are compact, eyes at perfect rest, full of leaf, and contain many distinct-looking pieces, and altogether one of the most satisfactory lots Mr. Sander has had the fortune to offer. 2500 ODONTOGLOSSUM ALEXANDRÆ from hitherto unsearched mountains, in fine condition—these are of the best type, broad-petalled and round; a fine plant of CYPRIPEDIUM GRANDE, in flower; good plants of CATTLEYA DOMINIANA, C. DEVONIANA, and two plants of the autumn-flowering CATTLEYA LABIATA.

On view morning of Sale, and Catalogues had.

TUESDAY NEXT.

SEVERAL THOUSANDS OF ORCHIDS.

MESSRS. PROTHEROE AND MORRIS are instructed by the NEW PLANT AND BULB COMPANY to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, March 16, at half-past 12 o'Clock precisely, a portion of

Mr. Edward Wallace's Third and Last Collection of Orchids,

made at Ocãna and Bogota, consisting of several thousand pieces, in good condition, of ODONTOGLOSSUM PESCATOREI, O. TRIUMPHANS, O. BLANDUM, O. PHALÆNOPSIS, SOBRALIA ALBA, EPIDENDRUMS, a grand lot of ODONTOGLOSSUM CORONARIUM, a large importation of FREESIA REFRACTA ALBA, enormous bulbs of the beautiful LILIUM NEILGHERRENSE, 1000 ODONTOGLOSSUM ALEXANDRÆ, in fine condition (mostly from Messrs. Shuttleworth, Carder & Co., of their well known type), and ESTABLISHED ORCHIDS in variety, including DENDROBIUMS, CATTLEYAS, ANGRÆCUMS, ONCIDIUMS, and many others.

On view morning of Sale, and Catalogues had.

FRIDAY NEXT.

2000 CATTLEYA PERCIVALIANA.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. HUGH LOW & CO. to SELL by AUCTION, at their Central Auction Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, March 19, at half-past 12 o'Clock precisely, a large quantity of Imported Plants of CATTLEYA PERCIVALIANA, just received in the best possible condition; also Plants of a CATTLEYA which has bloomed abundantly on very short, rounded bulbs, 3 inches in length. It was found in the same district as Cattleya Percivaliana, and may be a distinct form or another variety of it. Also fine plants of CŒLOGYNE OCELLATA, DENDROBIUM BRYMERIANUM (true), D. CAMBRIDGEANUM, D. FALCONERI, D. HETEROCARPUM, D. WARDIANUM, from Upper Assam; EPIDENDRUM MACROCHILUM, LÆLIA SUPERBIENS, ODONTOGLOSSUM GRANDE, O. TRIUMPHANS, ONCIDIUM BICALLOSUM, O. PAPILIO MAJUS, VANDA CATHCARTII, V. CRISTATA variety, V. CŒRULEA, V. TERES, and other choice ORCHIDS.

On view morning of Sale, and Catalogues had.

THE "GARDENERS' CHRONICLE"

PRIZES FOR YOUNG GARDENERS.

Form of Application.

From . . . .

Full Name and Address of Competitor here.

It is my intention to compete for the Prizes as announced in the "Gardeners' Chronicle" of February 27, 1886, p. 272.

My present employer is—

Full Name and Address of Employer here.

And whose Certificate of my Age, &c., is attached.

Signature of Competitor . . . .

Date, ...

I hereby certify that

is in my employ as Gardener, and to the best of my knowledge and belief his age is years.

Signature of Employer, ...

Date, ...

Intending Competitors must cut out and fill in the above Form, which should be forwarded to

The Editor,
GARDENERS' CHRONICLE,
41, WELLINGTON STREET, STRAND, W.C.,
ON or BEFORE MARCH 30 INST.

The Conditions under which the Prizes are offered are annexed.

G. C.
March 13, 1886.

WE NOW OFFER for COMPETITION by Young Gardeners (British subjects) Prizes, subject to the appended conditions, for the best Essay on

ROOTS AND THEIR WORK:

comprising a discussion of their varied forms, their structure, their uses to the plant, the manner in which they accomplish their work, and the bearing of these facts on the methods of cultivation and propagation of plants grown for various purposes.

CONDITIONS.

1. Candidates proposing to compete must make application on the Form annexed, and which must be cut out and forwarded to the Editor, on or before March 30 inst., after which date no application can be entertained.

2. The Prizes will consist of £10 to the most successful candidate, of £5 to the second, and of £2 to the third, in order of merit.

3. In estimating the merit of the papers, special importance will be given to the evidences of original observation and research, and relatively little value will be attached to mere compilations from books or papers. Reference must in all cases be made to the publication from which any quotation or statement of fact is taken.

4. The Essays must be legibly written on foolscap paper, and on one side of the paper only. They may be illustrated by original sketches at the option of the candidate.

5. The writer of the Essay should not attach his name or address to his paper, but should adopt a motto, or other device, by means of which it can be recognised. The real name and address of the candidate should be enclosed within a sealed envelope, bearing outside the same motto or device as is attached to the Essay.

6. The Essays should be sent in to the Editor, 41, Wellington Street, Covent Garden, W.C., on or before May 8 next.

7. The awards will be made by the Editor, assisted by practical gardeners connected with the staff of the paper, and the results will, if possible, be announced at the provincial meeting of the Royal Horticultural Society, at Liverpool, at the end of June.

8. The Editor reserves the right of withholding all or either of the prizes, if in his judgment the papers do not present sufficient merit.

9. The Editor does not undertake to publish, in the *Gardeners' Chronicle* or otherwise, any of the Essays that may be sent to him, but reserves the right to do so at his discretion.

10. Essays which do not obtain an award will be returned to the writers on application, and on the receipt of stamps to cover postage.

Some general remarks on the subject will be found on page 240, Feb. 20.

To H.M.G.M.



The Queen.

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DAILY DISPATCH TO ALL PARTS

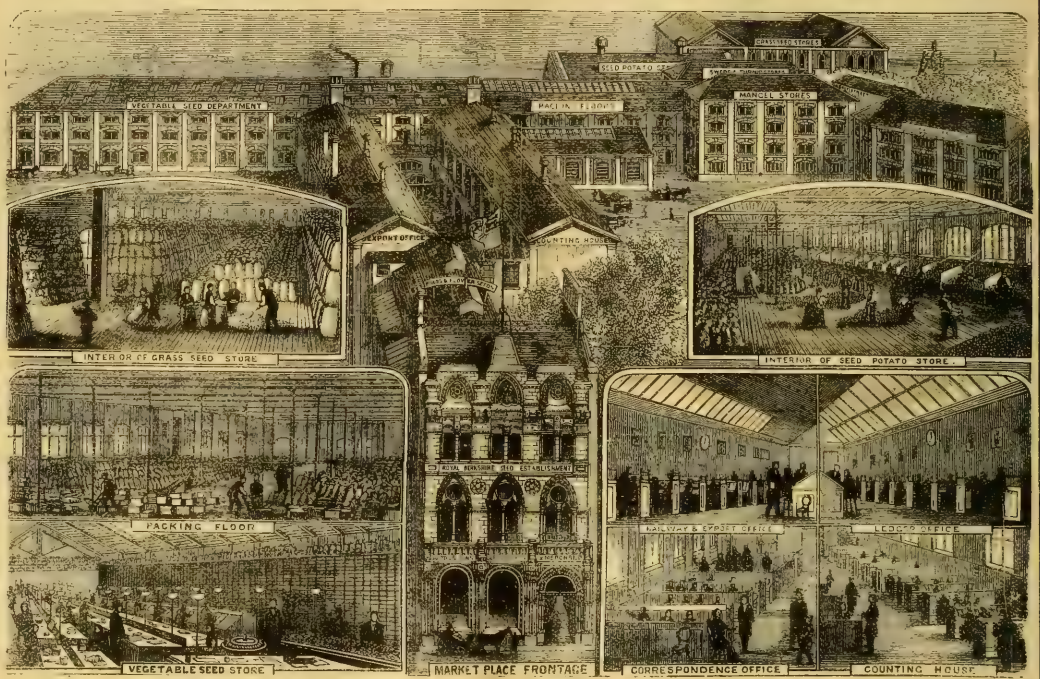
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Prince of Wales.

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ARE UNEQUALLED.



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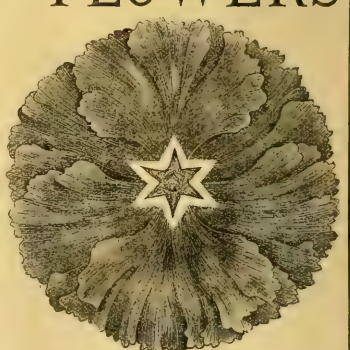
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"I have raised 118 plants from a packet of Cineraria seed supplied by your firm Some of the plants measure 2 feet 7 in. from tip to tip of the leaves. The colours are splendid."—Mr. W. WARD, *Gardener to the* Hon. A. G. Campbell, *Bracknell.*

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Per Packet, 5s., 2s. 6d., 1s. 6d., Post-free.

"The Primulas I raised from your seed have been magnificent, the flowers being beautifully fringed, and the colours of the most beautiful shades."—Mr. C. H. WEST, *Gardener to* H. Stubbs, Esq., *Nuneaton.*



FOR FULL INFORMATION SEE

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THE
Gardeners' Chronicle.
SATURDAY, MARCH 13, 1886.

CAPE BULBS.

AS my friend, the Rev. H. Ewbank, in his note on Cape bulbs in the *Gardeners' Chronicle* has specially alluded to the plot of ground which I am pleased to call "my garden," and which surrounds a dwelling known to my neighbours as "Bleak House," I am tempted to say a few words; but my experience in the culture of Cape bulbs is limited in time and extent, confined to a few forms, chiefly of the genus Gladiolus, and depressing.

The difficulties in my way are: too much rain in autumn and early winter; too little rain, too little warmth, and too much frost in spring; too little and too soon diminishing sunshine in summer; and too much wind all the year round. I say nothing of soil, because I have a great advantage over many of my brother gardeners in having no soil at all. I have to make soil for all my plants, and consequently it is my fault if each fails to get what it wants. I am moderately successful in the open with such bulbs as start late, flower in good time, and ripen their foliage before the hand of winter is upon them. Thus I am fairly content with the so-called Ghent Gladioli, with G. Sandersi (a magnificent seedling of which (? hybrid) given me by Mr. Max Leichtlin was a great joy to me last autumn), G. dracocephalus and G. purpureo-auratus—though the latter, being somewhat behind, is apt to get belated, as are also Lemoine's seedlings. But my difficulties are great with the forms which start early, and improvidently expose their tender foliage to the slings and arrows of my outrageous winters and still more terrible springs; though among these there are exceptions, such as G. tristis, which, starting quite early, carries its strange long quadrangular leaves for months before the flowers appear, seems wonderfully hardy, and smiles at blasts and snaps of cold which one would expect to shrivel it up.

In attempting to grow these early forms, "it goes without saying" that one should ward off, not only the late summer wet, in order that the bulbs may ripen, but also the autumnal and mid-winter rains, taking care, by-the-bye, that the floods thus diverted should fall on the gravel path, or on the lawn, and not deluge some other favourites. But even this plan is not unmixed good, for one thereby is apt (unless one can give one's whole time to the garden, and possesses a miraculous prescience of whether rain or snow is coming) to ward off snow instead of rain, and let a hard frost bite the protected ground, while unprotected plants are snug and safe under Nature's white shawl.

Besides, my troubles really only begin when "winter," technically so-called, is over. At a time when Mr. Ewbank, casting aside his covers, is rejoicing in mild showers and genial warmth, my bleak hill is harried and my temper ruffled with biting, cold, drying wind; and my plants suffer from the cruelest of all droughts, the spring drought, accompanied now with grey

*

leaden skies, now with fitful piercing sunshine, the latter being of the two, I think, the worst.

Hence I am driven to grow these Cape bulbs in frames, in order that I may not only keep from them in autumn and winter the rains which they do not need, but also that I may give them in spring the moisture which the harsh heavens refuse them. But what a baneful difference between a Shelford watering-pot and an Isle of Wight shower! Besides, these frames often defeat this very purpose of providing moisture, and become a potent instrument of annoyance and despair. Having warded off all the winter rains, I find the ground in the frames after a spell of drying weather in early spring getting far too dry. I debate whether I shall water or no. The day is fine, and comparatively mild, so I decide to water, and give the frame a good drenching; then I feel in the night that the wind has shifted, and find in the morning hard frost, biting right through the lights of my unprotected frame; or I decide not to water, and shut the frames at night for fear of treacherous frosts; then night after night come gentle balmy rains, with intervening drying days, and while in the open ground the bulbs are pushing under the benignant stimulus, the foliage in the frame is parched and weak, with that blanched look which tells of thirsty, unsatisfied roots.

On the whole, except as a protection against wind, and for the case of certain bulbs which, though hardy, will not flower though they do not cease to live when battered with winter's rains, especially, perhaps, for such of this class as do not flower until summer, cold frames seem to be, on the whole, a hindrance rather than a help. Moreover, the blooms of the early flowerers, such as Gladiolus gracilis, G. ringens, &c, and some Moræas, and others, even when they do appear in the frames, are never seen at their best for lack of adequate warmth; nor can one enjoy their beauty while one stands over them in the open, cold, muffled, but shivering.

So that, indeed, for most of the forms which flower early I have been led more and more distinctly to pot culture in the greenhouse; the plants are then under command; they can be watered without fear, they can enjoy the sunshine of a March or February day without feeling the sharp edge of the east wind's tooth, and if their chlorophyll corpuscles are not quite so closely packed as they would be were the plants in open sunlight, they manufacture enough to store up adequate root-stuff for the sequent year's bloom. Those that flower late enough can be exposed to the open air when the dangers of a treacherous spring are over; and all of them can be duly ripened in summer and kept dry as long as they need it. Lastly, one can stand and enjoy the flowers without catching cold. As a rule, most Iridaceous bulbs—and my experience is chiefly limited to these (though there are exceptions)—do well in pots if properly treated, and some do far better than in a frame or in the open. I have flowered Freesias in a frame, and last spring I had Freesia blooms in the open from bulbs which had been "out" all the winter, but they were poor things compared to the pot plants.

One plan there is still better than pots, viz., a house in which the bulbs can be planted out in beds of soil, with plenty of root-room, instead of in cramping pots—beds from which all frost can be kept out by adequate heating, in which one can walk on wild winter or still wilder spring days, and feast one's eyes and nose in wholesome comfort and safety on the lovely fragrant blooms, and in which, last but not least, by an appropriate mechanism, an untrained hand, such as that of "the man who helps in the garden," can turn back all the lights within a reasonable time, and so enable the floral treasures as well to snatch a breath of fresh air in the flitting gleams of some premature sunny day of early spring and to revel in the light and warmth and balmy rains of established summer.

I saw something of this kind in my friend Mr. Max Leichtlin's garden at Baden-Baden two or three years ago, and was thereby made aware of how beautiful a mass of well grown Lachenalias could be. I have hankered after such a house ever since, and some day, when I find out the "appropriate mechanism," and can afford the outlay, I shall build one. Then I fancy I shall be able really to grow Cape bulbs even on my "bleak hill." *M. Foster, Shelford, March* 1.

FLOWERS AND INSECTS.

(*Continued from p.* 298.)

The gardener recognises the necessity of external aid by imitating in a rude way what occurs in Nature. In cultivating hothouse Grapes he shakes the Vines, when the sun is warm and the air dry, to disturb the pollen and set it floating in the air, when some of it is certain to settle on the stigma. In some cases he even brushes the young bunches over with a camel's-hair pencil—actually carrying the pollen in the same manner as a hairy insect would do from anther to stigma. This is also done in forcing early Peaches, but outside the bee kindly performs the operation. These are cases where the pollen and ovules are borne in the same flower. The Cucumber, Melon, and Vegetable Marrow, on the contrary, bear them in distinct flowers on the same plant. The Cucumber and Melon are grown in hothouses, and to obtain fruits the gardener removes a pollen-bearing flower and applies it to the stigma of the ovule-bearing one. The Vegetable Marrow is grown in the open air, and here again bees are left to do the work—an act they accomplish without removing the flower, as they content themselves with carrying the pollen from one kind of flower to the other. The foregoing examples are sufficient to show the benefits conferred on man by the insect tribes.

Dr. Watts, with the usual poetic licence, tells us how—

> "The little busy bee
> Improves each shining hour,
> And gathers honey all the day
> From every opening flower."

But the bee knows better than this; she does not visit "every opening flower," she confines her attentions to a comparatively limited circle. As nothing exists without an adequate cause, we are led to inquire why the bee should exercise this favouritism. We find that a large number of flowers do not secrete any honey, and consequently offer no inducement to the bee to visit them. We also find that numerous flowers which do secrete honey hide it away beyond her reach—facts which, to judge by the habits of the insect, she is thoroughly aware of.

Flowers may be divided into two groups with regard to the means by which they are fertilised—wind-fertilised and insect-fertilised flowers; and each class has certain well-defined characteristics. Wind-fertilised flowers are generally inconspicuous—the grasses and sedges, the Fir tribe, the Hop, Oak, Hazel, Elm, and Nettle are typical examples—gay colours are almost invariably absent; they possess no scent; they secrete no honey. The anthers or pollen-bearing organs are pushed beyond the rest of the flower, the pollen is produced in great abundance, and the individual grains are dry and easily detached by the wind. The stigma, to catch the pollen floating in the breeze, is generally more or less branched or hairy, and, like the stamens, pushed beyond the flower. In many species of this class the pollen and ovules are borne on distinct plants, and if these are of a leafy nature the flowers are often borne in the early spring, before the leaves are developed. These characters are in harmony with the requirements of the case; and, by contrast, will help us to understand the economy of insect-fertilised flowers. These latter are commonly conspicuous by their colour, either individually so or by aggregation together in clusters—sometimes by both; or want of colour may be compensated for by the presence of a powerful odour. These are to attract the attention of insects; but they must also offer some more substantial inducements, in the shape of food—or, in other words, honey and pollen. Honey of course forms the most powerful attraction. Other general characters are, briefly, the pollen-bearing organs and stigma not being pushed out beyond the flower, but placed in such a position as to necessitate the insect brushing against them when it comes to suck the honey; and, lastly, the assumption of various remarkable and complex shapes and mechanical arrangements, in contradistinction to the simple form of wind-fertilised flowers.

The Flower Fertilisers.

Having briefly touched on the economy of flowers, and indicated some of the general adaptations by which they attain the end for which Nature intended them, we may glance through the various insect families to see which are of most importance as flower-fertilisers, and how they, too, are specially fitted for their work. The dragon-fly and straight-wing families rarely visit flowers, and the Hemiptera are so little in advance of them that all three families may be passed over without remark. The beetles are of more importance, and are of interest as affording the first direct tendency to a floral diet, and the first corresponding modifications. The Diptera, or two-winged flies, stand on a still higher grade in their adaptation to a floral diet. Their mouths are both adapted for sucking the honey and for eating the pollen. The jaws in many species are beautifully adapted for grinding the pollen before swallowing it. The majority of the family obtain their food from flowers, and while visiting them get dusted with the pollen, which they thus carry from flower to flower. The thrips are most minute, hardly a millimetre long, at most. They feed largely on honey and pollen, eating the latter a grain at a time; and, like all frequenters of flowers, are of considerable importance as fertilising agents. Now come the Hymenoptera. Taking the main divisions of the order, we find the wood-borers do not visit flowers; of the ants, several species; of the saw-flies, ichneumons, and allies, many species; of the wasps, the great majority; and of the bees, all the species without exception rely almost exclusively on a floral diet, both in the larval and adult stages. Of these divisions only the wasps and bees can obtain the honey from those flowers in which it is secreted a few millimetres deep within a tube. The simplest forms of these insects have a short proboscis and hairy bodies, the hairs serving to carry the pollen. We may trace them upwards, through successive stages, until the proboscis reaches a length of at least 15 millimetres, and until we find the pollen-collecting hairs specially developed on the hind legs of the insect, forming the so-called pollen-basket. The bees occupy the very first place as fertilisers of our native flowers. We have seen how the red Clover is dependent on them for fertilisation, and the same remark applies generally to that large class of irregularly-shaped flowers, of which the white Dead Nettle (Lamium) is a familiar example. The Lepidoptera, or butterflies and moths, take a position subordinate to the bees in their importance as flower-fertilisers; but in the degree of their adaptation to flowers they undoubtedly take the first place, as the only order which, throughout, is fitted for

obtaining honey. In the perfect state, the structure of the mouth compels them to obtain food by suction alone; and though they sometimes condescend to take a sip at a wayside pool, and at others are seen feeding on the juices of succulent fruits, yet the honey of various flowers forms their chief food. The mouth consists of a long, slender, suctorial tube, with its protective covering; and, when not in use, this tube is coiled up like a watch spring. The butterflies feed in the day-time, chiefly on brightly-coloured flowers, and the moths in the evening or at dusk, chiefly on white or pale flowers. In some of our native species the proboscis is very short, and we may trace them up to the hawk-moths, in which it is always very long; that of the rare Convolvulus hawk-moth measuring 80 millemetres, or 3⅛ inches. Flowers with long and very slender tubes are largely dependent on them for fertilisation, because few other insects can reach the honey they secrete.

The Relative Functions of Insects and Flowers.

The functions of both flowers and insects have now been discussed, and we pass on to consider a few of the complex relations which exist between them. First, we may mention explosive flowers, of which the common Barberry and Broom are typical examples. In the Barberry the bases of the stamens are highly irritable, and when an insect touches them they spring forward, and dust the insect with pollen. In the Broom the same thing occurs when a bee pushes its head into the flower. In both cases the pollen is brushed against the stigma of the next flower which the insect visits. In a large number of plants the pollen is shed before the stigma of the same flower is mature, and thus we see the use of the insect's visits. But there are others—a much smaller number—where the stigma is mature before the pollen; and here, too, insects are necessary. This is the condition in a few Passion-flowers. In the Aristolochia and common Arum the mouth is nearly closed, with a ring of hairs pointing downwards, which permits small flies to enter, but prevents their getting out for a time. They then regale themselves on the honey; the anthers soon mature; the hairs shrivel up; and the insect, well dusted with pollen, goes off to another flower. The Vanilla furnished us with an example of a very complex arrangement for effecting fertilisation; and other Orchids have equally remarkable arrangements to this end. In the Central American genus Catasetum, the pollen and ovules are borne in distinct flowers, so different in structure that they were long considered as distinct genera. The pollen-bearing flower is furnished with two sensitive bristles, so arranged that the insect cannot fail to touch them when visiting the flower. When touched the excitement is conveyed to the pollen chamber, the anther cap ruptures, and the pollen-masses are thrown on to the insect's head, to which they adhere by the viscid disc. On subsequently visiting the ovule-bearing flower the insect brings the pollen in contact with the stigma. One other example must suffice to close this part of the subject. A Madagascar Orchid, known as Angræcum sesquipedale, secretes its honey in a slender whip-like nectary, 11½ inches long, the honey being confined to the lower inch and a half of the cavity. The flower is white, and as it is incapable of self-fertilisation, Darwin suggested that it must be fertilised by a large moth, with a proboscis 10 to 11 inches long, for no others could reach the honey. As, however, no such insect was known at the time, certain persons were naturally incredulous as to the very existence of such an insect. But the discovery in Brazil of a hawk-moth, with a proboscis between 10 and 11 inches long, and therefore capable of sucking the honey from such a flower, has set the possibility of the existence of such an insect at rest; and as Madagascar is a comparatively unexplored country as yet, the discovery of the particular insect which fertilises this Orchid is awaited with some degree of interest.

Can we realise what our earth would be without flowers? Would not life be a very dull and unromantic existence without these gems which illumine the face of Nature with harmonious and ever-changing scenes of floral beauty? And yet there was a time when our globe supported a vegetation more luxuriant than at the present, though with only the slightest traces of flowers, and these of the most rudimentary kind. No flowers as we now know them! No butterflies! No bees! We go back to that remote period known to geologists as the Carboniferous Epoch, or Coal Age, to find the condition of things we are now considering. Coal as we all know is nothing more nor less than the fossil remains of ancient vegetation, which formerly grew on the surface, though now deeply imbedded in the bowels of the earth. Much is now known of the vegetation of the Coal Age. Flowerless plants constituted nearly the whole flora—Ferns, Club-mosses, and Horsetails, many of them of gigantic dimensions. A few early members of the Fir tribe and a primitive Aroid represent the flowering plants; and, looking back to a still earlier period, we trace them to the vanishing point. *R. A. Rolfe.*

(To be continued.)

New Garden Plants.

CATTLEYA TRIANÆ VANNERIANA, *n. var.*

A very fine Cattleya Trianæ, of good colour (light rose); lateral lobes of the lip light rose, disc and anterior two-shanked process orange, top of lip fine purple; each lateral sepal bears from the base to near the top a broad orange-coloured stripe, and this is the characteristic mark. It was kindly sent by and is inscribed to my excellent correspondent, Mr. W. Vanner, Camden Wood, Chislehurst, Kent. *H. G. Rchb. f.*

Calanthe sanguinaria, *n. hyb. Angl.*

This most surprising seedling was raised by Sir Trevor Lawrence, Bart., M.P., who kindly sent it to me. It has entire hexagonal bulbs, much resembling those of Calanthe vestita, with the remains of the leaf-stalks occupying the apex of the hexagon. The flower is not very large, the stalked ovary, the outside of the acuminate sepals, as well as the peduncle, are very hairy. Petals broader than the sepals, simply acute. Lip three-cleft, lateral laciniæ blunt, rhombic, mid-lacinia cuneate, dilatate, retuse, emarginate, bilobed. Spur shorter than the stalked ovary, fine purple. The outside of the flower is pale purple, the inside of deepest dazzling blood-red; sepals and lip lighter, with numerous deep blood-red dashes and markings. It is quite gorgeous, and when well developed will be an object of general admiration. *H. G. Rchb. f.*

PHŒNIX CANARIENSIS.

The origin of this magnificent Palm has long been uncertain. It is certainly the finest species of the genus cultivated in the South of Europe in the open air. Some persons believed it came from the continent of South Africa, but two botanists, Bolle and Dr. Christ of Bâle, in an excursion to the Canary Islands found it growing there in a wild state, in a part of the isles quite uncultivated. Webb and Berthelot, authors of the *Flora of the Canary Isles*, have not noticed any difference between it and the common Date Palm, from which, however, it varies very considerably in height and appearance. That which is most wonderful about it is that it is absolutely peculiar to the Canaries, and that it is found neither in the Azores nor in Madeira. The name of canariensis is therefore very fitly applied to this Palm. There is also a superb Pinus, P. canariensis, equally indigenous in these isles. These two trees perhaps prove the existence of an ancient continent, submerged beneath the sea—that of Atlantis. One can hardly imagine that a geographical area at the present day so limited can possess a special flora so distinctly characteristic, if it be not the last vestige, a sort of remnant, if it may be so called, of an older and much more extensive flora. Whatever the value of this speculation may be, Phœnix canariensis is certainly a very distinct species, much larger and more important than the Date Palm, and also hardier, as it ripens its fruit perfectly well in Provence, which the Date Palm does not do. These fruits are little berries with a tough skin (*bacca exsucca*), of the size of a hazel-nut, the seed (kernel) of which is scarcely larger than a coffee nib. Phœnix canariensis is at the present time very common in our gardens on the shores of Provence. *C. Naudin, Antibes.*

THE SEED TRADE.

Continental and Colonial Grown Peas.—It has been pointed out to me that the remark in my last paper (p 174), that "Germany and France supply large quantities of Peas to the English market," although true in part, is yet calculated to mislead unless modified. At present, at least, France and Germany only grow Peas for seed in small quantities. On the other hand, a great many are exported from England to the Continent, and to France in particular, for it is found that the weevil infests the growing crops there, and does them much damage. But France sends to this country our earliest supplies of green Peas for the table; they cultivate the best earliest kinds, and can get them into our English markets much quicker than home growers. Even could seed Peas be largely grown in France and Germany, it is doubtful if they would be able to compete with New Zealand and Canada, or with our home growers, both in regard to quality and price.

American Peas, as they are termed, come mainly from Canada. It is claimed for the samples grown in America that they are better than those of English growth; but the trials made at Chiswick during the past summer did not bear out this assumption. Owing to the dry character of the summer, which told upon the light soil at Chiswick, no particular points of departure could be noted: another season's trial would prove of interest. But the Canadian harvest season is both shorter and warmer than it is in England; the growers, therefore, obtain an earlier and better matured sample than English growers are able to realise in their less favoured climate.

The English wholesale seedsmen are now getting frequent supplies of seed Peas from Australia and New Zealand of a few sorts of leading wrinkled kinds likely to be in demand in this country. The sort principally grown in New Zealand is Yorkshire Hero, and the samples are found very satisfactory. Yorkshire Hero is also largely grown by the Canadian seed farmers; so are Fortyfold, Little Gem, and Champion of England. Some other sorts are grown in smaller quantities in both places.

Broad and Longpod Beans.

How and where Broad and Longpod Beans originated is probably involved in some obscurity. Old seedsmen, who might be thought to inherit the traditions of the trade, are reticent in regard to information, as if doubtful as to its absolute correctness. The Mazagan Bean—Early Mazagan, as it is incorrectly termed—is thought to have come from a Portuguese settlement on the coast of Africa; probably the Longpods and Windsors were original introductions, greatly improved by careful selection in this country. Like Peas they are largely grown for the wholesale seed houses by special contract. The two types in the largest demand are the Broad or Windsor Beans and the Longpods. The Mazagan and dwarf Fan kinds, excepting of the latter that delicious garden Bean known as Beck's Dwarf Green Gem, which is always scarce, are getting into less demand: the Seville and selected Early Longpods have quite taken the place of the Mazagan for early crops. The Longpod Beans are mainly grown in Kent, especially in the Isle of Thanet, and in Lincolnshire. There are few Longpods grown anywhere else, excepting perhaps a part of Cambridgeshire. The great bulk of the Windsor or Broad Beans is

grown in Suffolk; they require heavy land, and grow finely in that district. They are also produced in other parts, but in much smaller quantities. There are growers who grow Windsor Beans as a speculation, and, according to the nature of the sample, sell at high or low prices in the market. It is said there are not so many contracts held for the growth of Broad Beans as there used to be, the crop being at times a precarious one.

Broad and Longpod Beans are largely prepared for sale by sifting and machine cleaning, and a good deal of rubbish is got out of them in that way. What picking is required is generally done by the women who are constantly employed at the seed warehouses. Some excellent Longpod Beans are grown in Holland; the Dutch Longpod is regarded as a remarkably good variety. Johnson's Wonderful is a fine type of Longpod Bean; it was selected by Johnson, a market gardener of some forty years ago. Leviathan is also a very fine type. Aquadulce and the Seville Longpod have become great favourites in this country for exhibition purposes; they come to maturity quickly, and are therefore very useful for early crops.

The Harlington Windsor is regarded as the largest type of the Windsor Bean, and it is the sort mostly cultivated in the market gardens round London. There are also Green Windsor and Green Longpods; in their cases the seeds are of a green colour instead of being white. That they are sports there can scarcely be a doubt, but they are both later in bearing than their white types. Beck's Dwarf Green Gem was a sport from the dwarf Fan or Cluster.

The waste or pickings obtained from the Beans are sold in the same way as Pea pickings, for feeding purposes. The waste is a large item; between midsummer, 1884, and midsummer, 1885, Messrs. James Carter & Co. disposed of 224½ quarters, or 1796 bushels.

In the case of many country flower shows it has been found necessary to divide the Broad Beans into two classes for exhibition purposes—namely, Windsors and Longpods. Since the Seville Longpod has so largely come to the fore as an exhibition variety, with its long, handsome, well-filled pods, the Broad Windsor Beans have to take second place when they compete in the same class. A model Windsor Bean should have at least five seeds in the pod; but it would, perhaps, be difficult to get hold of a strain that would yield this number of Beans on the average. A fine stock of the Harlington Windsor is undoubtedly one of the best types for exhibition purposes.

Formerly there were Thick Windsor and Toker Broad Beans. They may be found now in old-fashioned seed lists. They at one time, no doubt, represented distinct types or selections, but they have almost, if not quite, entirely ceased to possess anything like distinctness of character.

In making inquiries as to the consumption of Longpod and Broad Beans in this country, I asked the representative of one of our largest wholesale seed houses what he thought was the average quantity sold for sowing, and he after careful calculation put it at the astounding quantity of 100,000 bushels. Large as this seems, it is probably quite within the mark. The leading varieties grown for market gardening purposes, taking the country through, are Mazagan for early crops; Mammoth Longpod, a fine stock of Johnson's Wonderful, the Green Windsor and Harlington Windsor. For exhibition purposes Carter's Leviathan and its aliases are much grown, and also the Seville and Mammoth Longpods; and of Broad Beans, Harlington Windsor and Improved Windsor, a fine selected stock with long well filled pods.

It is fitting that testimony be borne in mind to the constant endeavour of those in the London and other houses in the seed trade who grow Longpod and Windsor Beans to keep the stocks select, pure, and fine. Apart from the spur in this direction which is administered by the severe competition which exists now-a-days, there is about these houses an honourable tradition of the character of keeping up a high quality of stock. This is maintained, and can only be maintained, by the most persistent selection. It is a custom of these houses to grow in their carefully maintained trial-grounds most of the novelties in vegetables that are yearly announced; and if they more frequently than not find that they are old acquaintances under new names, they at least are sometimes enabled to lay hold of a good and pure stock of a known variety, which is a real gain.

The horse or field Bean is much grown in places for feeding purposes, and the sorts are adapted only for field culture, having smaller and more compact seeds than any of the garden varieties. The common Scotch is largely grown in Scotland, and it is said that there is perhaps no other grain over the shape and colour of which the climate, soil, and culture have so much influence. In the case of a warm dry summer the Scotch horse Bean produces a sample more plump and white in colour, particularly so if followed by a dry harvest, and more so when cultivated on a strong rich clay than on a light soil, and when drilled than when sown broadcast. The Bean more generally cultivated in fields in England and France is the common Tick or horse Bean. It differs from the Scotch in having shorter straw, being more prolific, seeds rather smaller, more cylindrical, and rounded at the ends. It is also better suited for light soils.

A great diversity of appearance has been noted in some samples of common field Beans. This is probably owing to a mixture of varieties, as they are not carefully "rogued" and selected, as in the case of the garden Beans. A field of Beans in full flower will show that such a mixture exists; a great diversity in the colour of the flowers may be noticed, though this does not always precede a different colour or form in the seed. *Pisum.*

GAURA LINDHEIMERI.

THE genus Gaura, containing about a score species, is confined to the warmer parts of North America, and the one represented in the accompanying illustration (fig. 61) is by far the finest. G. Lindheimeri is a native of Texas, and has been known in gardens for a long time. The first mention we have been able to find of it as a cultivated plant in Britain is a description by Lindley in the *Journal of the Horticultural Society*, vol. vii., p. 270 (1852); the seeds were received from Vilmorin in 1850. The best recent figure of this pretty Onagrad is that in Dr. Goodale's *Wild Flowers of America*: no illustration appears to have been published in any horticultural work since the early days of the *Revue Horticole* and Paxton's *Flower Garden*.



FIG. 61.—GAURA LINDHEIMERI.

In habit G. Lindheimeri is a tall, somewhat straggling herb of perennial duration, and for outdoor decoration should therefore have a place in the mixed flower border, or along the skirts of a shrubbery, &c. On the Continent we have seen it grown with good effect in masses. It thrives almost

in any soil, and is readily propagated from seeds, which, if sown in June or July, in the open air, develope plants which flower the following season. When the seeds are germinated in heat in March or April, and the seedlings hardened off in May, they will flower the same year. The figure here given was drawn from plants at Kew, which were flowering freely in a cold frame in October, and continued to produce a fine effect until after Christmas; these plants were struck from cuttings in July, and the result of Mr. Dewar's treatment proved the value of the species as a winter flowerer. The colour of the blossoms is a pure white when young, but the petals frequently become a distinct rose-red as they fade; the young buds are green at first, but turn to a warm reddish-brown just before expansion. Either as a hardy border perennial, or as a pot-plant for winter flowering, G. Lindheimeri is thoroughly worth growing.

PICEA ORIENTALIS.

The Oriental Spruce has much of the pyramidal habit of the common Spruce, but its foliage is smaller and more densely set, giving the tree the appearance as if covered with some coarse lace. The shoots are covered with reddish hairs. The buds ovoid-conic, pushing off the scales in the form of a little cap. The terminal bud usually expands later in the spring than the lateral ones do. The leaves are of a rich deep green, about a quarter of an inch in length; the cones are pendulous, cylindric, and pointed, 2—3 inches in length. The tree is a native of the Caucasus, but is quite hardy in this country, and, so far as we have seen, is less particular as to soil than the common Spruce, and less subject to the attacks of the gall insects which so disfigure the common Spruce; but this is only our individual experience. A transverse section of a leaf shows its more or less four-sided form, its layer of indurated cells beneath the epidermis and around the resin canal. The central cells of the leaf are curiously undulated, as happens in many Conifers, and the central fibro-vascular bundle is double and surrounded by a well marked ring of endoderm, the bundle sheath. (See fig. 62.)



Fig 62.—PICEA ORIENTALIS.

Orchid Notes and Gleanings.

HOOLE HALL, CHESTER: A. POTTS, Esq.

On the occasion of a visit made in the end of February to this horticulturally interesting place, I found a very fine lot of Cattleya Trianæ in bloom. What a splendid winter-flowering species, and so richly variable this is. Among a score and a half or more of plants, most of which were in flower, there were no two alike, yet all were beautiful. The most superb amongst them, however, was C. T. Backhousiana, the beauty of which a finely conditioned plant in flower well illustrated. Another very superior variety without any distinctive name, but marked "C. T., Popayan variety," was very noticeable. The sepals and petals are large, and of great substance, rich purple-rose, the lip unusually long, deeply fringed, and of a deep crimson-purple colour, with an orange spot suffused with crimson at the base.

Cattleya dolosa at this season of the year is invaluable, there being nothing to surpass its long staying qualities or pleasing, yet bright colouring. Here it has been in bloom for two months and the original blooms are quite fresh and look as if they would be good for another month at least. The moderate size and compact symmetry of the flowers render them very suitable for the purpose of coat and dress bouquets.

Among other noteworthy species in bloom at this time were Dendrobium Freemani, the flowers of which in colour and form remind one somewhat of D. nobile, but unfortunately it does not possess the thrifty habit and free flowering qualities of that species. But it is a gem when well done, as it is here. Odontoglossum Œrstedii is a very pretty but diminutive species with pure white flowers, which is always attractive to the genuine lover of Orchids on account of its distinctness. Of O. maculatum several plants were in flower, but there was one very superior to the ordinary type of the species as usually seen, the flowers being extra large, the bronze and yellow colouring being also very deep and sharply defined. Of O. Alexandræ the collection is numerous, but there were very few in bloom though there is a splendid promise at no distant date. Of the several in flower on this occasion there was one very pleasing form with medium-sized flowers resembling those of O. Pescatorei; the sepals and petals were delicate rose, and the lip pure white with a yellow spot at the base. *Visitor.*

Cattleya bicolor and Varieties.

I send you some flowers of Cattleya bicolor. They all differ from the old type of C. bicolor, and several of those we have bloomed have been named by Professor Reichenbach C. b. var. Wrigleyana. Taking the blooms as numbered, the one marked No. 1 we consider an excellent form—large flowers, with a splendid labellum of rich rosy-purple. No. 2 we take to be the same as has recently been shown as C. b. var. Measuresiana. The lip is of a rich rose, with a broad band of white. No. 3, also a good form, with a lip somewhat mottled. No. 4, a spike with four flowers, which are not quite so large as some of the others; the blooms, however, are distinct, the lip being much paler, and is speckled differently to any of the others. The various plants of Cattleya bicolor were imported by my employer, E. G. Wrigley, Esq., about eight months ago. They were then potted, a good deal of charcoal being used amongst the crocks; the plants were then made up with peat only, and stood in a Pine-stove, where a fair share of water was given, but no shade used at any

time; the whole of the late summer and autumn sunshine was given to the Orchids as to the other inmates. Roots pushed out freely, and old bulbs plumped up and new growths were formed, some of which now measure 18 inches to 2 feet in length; these have been flowering for the last three months, and are likely to bear blooms for some weeks yet. We have altogether about three dozen plants. *W. Swan, Howick House, Preston.*

LÆLIA FLAMMEA ×.

A garden hybrid raised at Messrs. Veitch's between Lælia cinnabarina and L. Pilcheriana ×, the latter being also a hybrid. It is an evergreen plant, with 4—7 flowers on a scape, each flower 4 inches across, with the sepals and petals of a brilliant cinnabar-orange; the lip, which is three-lobed, has the yellow side lobes folding over the column and spread out at the tip, the centre lobe denticulated, crispy, and of a rich crimson hue, the discal part being smooth, and marked with crimson veins. The plant flowers in March and April. It is grown in the Cattleya-house in a pot with rough fibrous peat, well drained, and receives during the growing season a moderate amount of moisture. It should be fully exposed to the light. In the resting state they should not be suffered to get shrivelled. *Orchid Album*, t. 217.

ANGRÆCUM SESQUIPEDALE.

I have just now a specimen of the above Orchid in flower. The plant is 15 inches in height, and is growing in a 10-inch pot. It has nine pairs of leaves and eight flowers, each of which are 6 inches across, and have tails 13½ inches long. My system of cultivation is to grow the plant in moss and crocks, occasionally giving a little manure-water. *W. Lainchbury, Westfield, Wellingborough.*

SPATHOGLOTTIS AUGUSTORUM.

This Spathoglottis is a very pretty novelty. The plant has very large shining ovate pseudobulbs; they are of a colour varying from red-brown to green-brown. The leaves are oblong, wedge-shaped, acute, folded, very wide considering the genus. The rigid flower-stalk is crowned by a loose head of flowers. The bracts are pale green, very wide, very firm, not half as long as the ovaries. The petals and sepals are pale lilac, deeper at the base. The lip has three divisions of a lilac colour, and white at the base; the lateral divisions are oblong square, blunt, the central division is long-stalked, oblong, bilobed at the summit. The callus is stalked, almost four-sided at the summit, yellow, with purple spots and white hairs. It is an altogether charming species.

This Spathoglottis was discovered in the Sunda Isles by two travellers of the Compagnie Continentale d'Horticulture, who were exploring Papua—MM. Auguste Linden and Auguste de Ronne. It is with a real pleasure that we dedicate the plant to the two collectors, at the same time expressing the ardent hope that they will make numerous discoveries as remarkable as those which we have already made known. According to the account given by the aforementioned collectors, the flowers attain to the size of a dollar, and form tufts of from 25 to 30 centimetres in diameter. The appearance of the old flower-stalks on strong plants proves that this description is not at all exaggerated. We extract from a letter of M. Auguste Linden the following passage concerning the discovery of this admirable plant:—

"Having arrived at an altitude of about 1200—1300 feet, I found myself on the borders of a strong stream descending from the mountains, and throwing itself from a great height into a deep place enclosed by rocks. My attention was at first attracted by some examples of a magnificent Tree Fern growing in the crevices of the rocks, and whose crowns were raised above the precipice. While I was admiring this picturesque sight my eyes rested on large patches of white flowers growing at the bottom of the gulf. The distance did not allow me to tell of what family these plants were, but their beauty was such that I resolved to examine them nearer. The descent was not without danger; the face of the rock was carpeted with very fine moss, so that there was no foothold. I tied a rope round my body, and my fellow-traveller, assisted by the porters, carefully lowered me to the bottom, where I soon found myself in the midst of many samples of a terrestrial Orchid of extreme beauty, and of a genus totally unknown to me. I quickly gathered the few plants that were near by, and made a package of them with which I joyously reached the top. I searched in this neighbourhood for more plants but in vain. This species seemed exclusively to occupy these sombre and perpetually wet retreats."

CULTURE.

In the Orchid-houses of the Compagnie Continentale d'Horticulture, where this plant was recently introduced, it flourishes planted in a pan in a compost formed of rough peat, loam, and crocks on a good drainage, and all the surface covered with living sphagnum. Found growing in the crevices of rocks near cascades, its very fibres fix themselves readily on hard bodies. A high temperature is indispensable, and frequent plunging and copious syringing during the growing period, which will maintain it in that moisture of soil and air which it needs, taking care to prevent the lodgment of water in the heart of the young growths. In fact its culture is that of the Houlletias, which are found in analogous positions. As in the case of these latter liquid manure of guano, 2 grammes per litre, or dilute cow-dung, is particularly suitable for the development of leaves and bulbs. During the resting period it should be kept almost dry. *Lindenia*, p. 55, 1886.

ONCIDIUM JONESIANUM.

A native, it is said, of Paraguay, with long quill-like leaves and loose racemes of flowers, each 2—3½ inches in diameter. The sepals and lateral petals are white with purple spots, the lip with two small side lobes of a yellow colour spotted with red, and a roundish white lip, some of which turn upwards and others downwards as the plant grows on a block. It is figured in the Februrary number of the *Orchidophile*.

NEW ODONTOGLOSSUM.

A superbly marked new form of O. crispum is now in flower at Messrs. Hugh Low & Co.'s nursery, Clapton. Its flowers, which are of good form and substance are in their markings unlike any which have appeared before, although they approach the famed O. c. Cooksoni in some degree. The sepals and petals are plain-edged, and well expanded. The sepals are white, with on each two or three heavy blotches of brownish-crimson, which extend nearly the whole width of the sepals; the petals are also white, each having about five smaller blotches of the same tint as those of the sepals, and a blotch or two is also on the lip. The plant, which is flowering out of a new batch, is only strong enough to show by its present beauty, what a wonderful thing it will be when it gets a year or two's good growth on it. There are many good Odontoglossums in flower at Clapton, and many good hybrids have appeared there, but nothing like the one in question. The Phalænopsis-house is also now well furnished with bloom, quantities of Cattleya amethystoglossa, and other Cattleyas in bud or bloom, Angræcum citratum, and many other good things in flower, and nearly a houseful of stout plants of Vanda cœrulea coming on in fine condition.

The Apiary.

HYDROMEL: THE DRINK OF THE GODS.

WE read much about mead and other honey beverages, which our ancestors were wont to drink in the "good old times." It is well known that Queen Elizabeth used mead very freely, and her famous recipe for the same has descended to us. For a long time past Mons. J. B. Leriche, Laureate of the French Temperance Society, has given his attention to the analysis of the drinks of France. He has sent me two pamphlets of his in French, and several letters, the substance of which is here reproduced. He says that all French spirits and wines are more or less adulterated, and that there is not even such a thing as pure cognac. It even seems that those who make pure wines and spirits drink it themselves, and rarely if ever does the pure article get to the public. This gentleman then goes on, and says that France is a land of flowers and sunshine, and that the Creator has made a tiny insect which will work unceasingly at these flowers, and bring into their homes unlimited quantities of an article (honey) destined in the near future to be made into the most wholesome liquids yet introduced. Health and appetite will doubtless follow their general use. M. Leriche then explains how a most wholesome and powerful spirit can be produced from honey, and also an ordinary drink called hydromel, and the making of the latter we now proceed to explain almost in his own words, except that we put English weights and measures into our article instead of French:—

"Pour into a copper or tin vessel (not iron) as many quarts of water as you want hydromel. When the water is hot put about 19 oz. of honey in for every quart of water. Stir the mixture well with a stick, and be sure not to allow it to burn or thicken. When the water begins to boil begin skimming, and keep the fire under control. I use a lamp, as that can be regulated to a nicety. Let it boil till the quantity is reduced by about a third, which will be in about two hours. If it boils too long it will be too thick. When the liquid has cooled down run it into a cask, which must not be bunged up. Place the cask in a dry place, and leave it alone till fermentation has ceased; then bottle it off, and you will have an intoxicating drink certainly, but one of the best ever vouchsafed to cheer the heart of man. If the liquid is kept it may be taken at first for Madeira, then, later on, it is like old cognac, and finally it becomes a pure alcohol." M. Leriche has studied the subject for years, and he says that it is the most wholesome beverage in existence, for much as we may like tea and coffee a change from these is sometimes necessary; and as for cocoa, M. Leriche and the author of this article think it so much slops. *Walter Chitty.*

DRIVING BEES AND BAR-FRAME HIVES.—I sometimes see some useful information on this subject in your valuable paper by "Agnes," and I still find from what I read that there are some who continue to stick to the old straw hives, and the cruel system of killing the bees after their season of toil. I used to do the same until two years ago, not knowing a better way to do it; but at that time a person came into this neighbourhood (Stroud, Gloucestershire) who brought one stock of bees with him which he had "driven" for another person two seasons before to prevent their being killed in the usual way. He told me that he only had one piece of comb to which he put them, but he fed them during the cold weather, and the weather continuing open it enabled them to make enough to keep them through the winter of 1882. The next season they became a strong stock, and in the autumn of that year he brought them to Stroud, and in the summer of 1884 he took thirty 1 lb. boxes of beautiful honey, nearly 20 lb. being from the bar comb. The stock sent off two swarms late in the season, which he kept, both doing well, and they answered his expectations last year. He has now six strong stocks, all in bar-frame hives. Well, when I saw his beautiful supers well filled with honey with his then only one hive—at which time I had seven stocks, and had taken no honey to speak of for several years—it set me thinking, and I resolved to try the bar-frame hive. I made the acquaintance of this person, and we soon became warm friends. He being an advocate of driving his bees, advised me to get a bar-frame hive, which I did; he drove two of my stocks, a weak and a strong one, and I gave him the weak stock, which he united with his second swarm. We tied the best combs on the bars, placed a board at the entrance, put a newspaper on it, then shook the bees down on that. To see them travel up into the hive was a pretty sight indeed. Last summer I got twenty-five boxes of honey from them, and quite 18 lb. from the bars; they also sent off a very large swarm on June 18, which I put into a bar-frame, and obtained quite 20 lb. of honey from those. I also had a weak swarm from a small straw hive on May 26. From that I had eighteen 1 lb. boxes and four splendid combs; in all over 30 lb. from them. My reason, then, for sending this communication is to advise others to give up the cruel practice of killing the bees, and thereby to make them a source of profit. I have now five frame hives, and hope to fit all my hives with them this season. *T. W.*

The Flower Garden.

BEDDING PLANTS.

DO not allow bedding plants to remain in forcing houses after the leaves are fully developed on the permanent inmates of such, or they will soon become drawn. Towards the end of March they may be safely trusted in a cold pit, but covering materials must be kept handy, as there are usually some sharp frosts in the early morning. Pot on Dahlias from 60's into 48's and 32's, according to the strength of the plants. Pot on Cannas, Ricinuses, and other

fast-growing sub-tropicals; and prick off into pans and pots others which do not grow so quickly. Watering is best done in the early morning at the present season; but great caution will still be necessary, so as to have the foliage dry before the sun attains to full power, otherwise much damage will result.

The Change in Style.

I daresay that most gardeners will hail with some measure of satisfaction the present tendency to return to the old-fashioned style of gardening. I must confess that the old flower-borders of over thirty years ago are vividly before my mind now—rows of Sweet Peas with beds of summer-blooming Tulips; borders of Mignonette and edgings of Musk, Daisies, Gentians, Cowslips, Polyanthuses, and many other gems—that we had previous to the massing of scarlet, blue, and yellow. The Hollyhock was also a most effective plant, and there is now some hope that this stately flower will soon be restored to most gardens, as there seems to be an abatement of the disease which ravaged collections of this flower. It is questionable whether the present style of carpet and other summer bedding is worth the trouble. In carpet bedding most of the plants used are so tender that it is not safe in many places to trust them in the beds till the beginning of July. The chances are that they are reduced to a blackened mass by the end of September—a period of three months. Again, with regard to bedding-out plants they cannot be safely transferred to their summer quarters till the beginning of June. It is under favourable circumstances they are in flower before the middle of July, the long nights with heavy deposits of dew and rain destroys all their beauty by the beginning of October. They fill the beds till November, and the men have to be kept constantly picking off decayed flower-heads and rotting leaves.

The Better Method of Filling Beds and Borders.

With herbaceous borders and beds what a different tale. From the number and variety of the plants employed you can have flowers for at least ten months in the year if the season is a mild one. February begins with the Snowdrop, followed by the Aconite, Crocus, Hepatica, Narcissus, Primrose, Auricula, and numberless other gems. In September there are Colchicums, Asters, Anemone japonica, Schizostylis, Harpaliums, Chrysanthemums, Tritomas, and hosts of other subjects; while December is not barren, for with a few handlights a good supply of Christmas Roses can always be secured. A garden is not worthy of the name which is without a good collection of herbaceous plants. Now is the time to commence with them. Whenever the plants begin to grow they should receive a good dressing of well rotted manure, and the beds and borders should be forked over. Where plants are outgrowing their allotted bounds they should be reduced. The plants are also greatly benefited by being lifted once in two or three years, the beds being then trenched, and, if possible, some fresh soil added. There are no plants which exhaust the soil so thoroughly as many of the herbaceous family, and it is only by liberal treatment they can be grown in perfection. If allowed to degenerate through poverty of soil they become mere weeds. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

PROPAGATING-HOUSE.

Every attention should now be paid in this department to all important propagating and seed-sowing, and cuttings of the following things should be put in at once, viz., Ixoras, Hexacentris mysorensis, Euphorbia jacquiniæflora, Gardenias, Francisceas, Eranthemums, Hoya bella, Justicias, Aphelandras, Rondeletias, Azaleas, Tabernæmontana coronaria, Toxicophlæa spectabilis, Bouvardias, Boronias, Abutilons, Thyrsacanthus rutilans, Clerodendron of various species, Habrothamnus, Fuchsias, Allamandas, Plumbago capensis, P. rosea, and P. coccinea, and Primulas of double-flowered forms. Any large Azaleas that are intended to be grafted with other varieties should now be cut down, and placed in heat in readiness for the operation. Camellias and Cactus, Epiphyllum truncatum varieties, may also be grafted at this time of the year. Any varieties of Caladiums that it may be desired to increase should be laid out on cocoa-nut fibre to start, when it will be seen where the corms can most advantageously be divided. New or choice varieties of Gloxinias should be started, so that good leaves may be obtained for propagating; the same applies to Begonias. A good compost for Caladiums, Gloxinias, and Begonias, consists of fibrous loam and leaf-mould, picked over, not sifted, with a liberal addition of sand and sheep-dung. A general sowing of seeds should now take place, not omitting the undermentioned:—Stocks, Asters, Sweet Peas, Mignonette, Torenias, Mimosa pudica, Nasturtiums, Perillas, Pyrethrums, Celosias, Salpiglossis, Wallflowers, Acacia in various varieties, Ageratums, Campanulas, Dahlias, Gloxinias, Begonias, Petunias, Pansies, Phloxes, Zinnias, Verbenas, Cannas, Carnations, Delphiniums, Daturas, Godetias, Grevilleas, Tagetes, and Xeranthemums. *A. Evans, Lythe Hill, Haslemere.*

The Orchid Houses.

THE EAST INDIAN HOUSE.

Plants of Angræcum sesquipedale will need immediate attention (if not already done). This Orchid to be successfully grown must be overhauled every year, for if it be grown year after year with merely a top-dressing of moss occasionally, the result will be miserable flowers, of inferior size and colour. Now that the flowers are faded every particle of potting material should be taken away, being very careful not to injure or displace any of the roots, which should be washed before new material is worked among the roots again, and finishing off with a layer of living sphagnum. Aërides and Saccolabiums will be much benefited by similar attentions, if it be done just before they start into growth. The pretty Oncidium sarcodes thrives admirably in this house when growing in pots on the north or shady side. This is a lovely Orchid for decorative purposes, its long spikes hanging with a grace peculiar to it. Angræcum Leonis certainly enjoys a high temperature, with plenty of moisture and shade. Under this treatment it makes good leaves and sends out its flower-spikes plentifully. When this winterly weather is past the temperature of this house should stand at 70° at night, with a rise to 80° or 85° in the daytime.

Dendrobiums and Lælias.

Dendrobium primulinum and D. devonianum are now in their full beauty. If these are in small baskets, and the roots clinging to the wood, and seem to require more space, as soon as the bloom has faded they should be dropped into larger baskets, the old peat and sphagnum being taken away and replaced by new. Care must be taken not to injure any of the roots during the rebasketing. It will now be the proper time for specimens of Lælia autumnalis to be put on larger blocks, and fresh packing of moss to be given, if that be not yet done. I prefer to have them on Teak blocks hung near the glass on the south side of the house. I would caution young practitioners against the most trifling quantity of water being allowed to lodge in the young growths of Lælia elegans and L. purpurata, as this frequently leads to the loss of these growths. *A. Bradshaw, Waddesdon Gardens.*

Hardy Fruit Garden.

PLANTING.

A couple of weeks or so yet remain to bring up arrears, although the best results the first season, do not follow such late planting—that is, alluding to trees of a fruitful size. Maidens frequently thrive equally well moved about this time as when transplanted in autumn or during the first month of winter. Should the ground rapidly alter from its present saturated state, many will avail themselves of the last opportunity of the season to do what they were unable to do at an earlier date, and will not hesitate for fear of failure to remove trees, from which with careful attention a medium crop of fruit may reasonably be expected. At any rate, if the planting is urgently required, there is no necessity to lose another season. This being an unusually backward one, the trees have almost been at a standstill for the past few weeks, and under such conditions the present month offers a much more favourable opportunity to execute late planting than if it had been preceded by a spell of mild growing weather, resulting in the growth of the tree being prematurely excited. On no account, and more especially at this time of the year, must the roots of the trees be unduly exposed to the air, but their transfer should be accomplished as rapidly as possible from one position to another. With this object in view, when trees are sent by rail they should always have damp material about their roots. It can scarcely be expected that the soil, after so much snow, will be in the best condition for working amongst the roots, but any bad results likely to occur in this respect can easily be obviated by using a few shovelfuls of soil that has been under shelter. Such material may be thoroughly worked amongst the roots, and pressed firmly, without working into a sticky mass, such as would be produced when manipulating wet soil. After removing trees so late, it naturally follows that they will require a little extra attention in the way of watering at the root, should the remaining spring and the early summer months prove dry ones. Syringing overhead during sunny, drying weather, would also be of the greatest service to them, by preventing the wood from shrivelling to an irrecoverable degree.

Nailing.

It will be necessary now to push on with the nailing of Peach and Nectarine trees, and when doing this work it is advisable to use narrow shreds, and as few of them as possible, providing the trees are secured to the wall. Wide shreds form a convenient refuge for insects, and when they are secure under such shelter insecticides applied for their destruction are powerless to oust them. *G. H. Richards, Somerley.*

The Kitchen Garden.

PLANTING OUT PEAS.

Those sown in pots, or on turves in February will now be quite fit for planting outside in rows. For protection and shelter a shallow trench should be thrown out, and the soil formed into a low ridge on the most exposed side. Those from pots should then be carefully turned out, and planted with a trowel 6 inches apart. If the natural soil is at all stiff, it will well repay a little extra trouble if some drier compost, such as old potting soil or the like, be used in planting. Sticks should be placed to them at once, and as an additional protection, for a time, intermingle small branches of Spruce or Laurel.

Sowing the Main Crop of Celery.

Towards the end of March for the northern part of the kingdom, and a fortnight later for the south, is a good time to sow—that is, if the details, as described below, are carried out. To begin with, there must be no check throughout. The seeds should be sown on a slight hotbed in light fresh soil, and kept close and shaded until they germinate. Overcrowding should be avoided by removing weakly and too thickly placed plants, and care taken in subsequent management to rear the young plants as sturdy and vigorous as possible. When large enough, preparation should be made in cold frames, or on a space that can be covered by temporary lights, to receive the young plants; a layer of thoroughly rotten dung, from 3 to 4 inches in thickness, should be spread on a hard bottom, and on that, 2 inches of fine soil, into which the plants should be pricked out from 4 to 6 inches apart, afterwards keeping them close and shaded until they commence growing. Subsequently, air and water should be given freely, and as the young plants make progress the lights should be removed entirely, replacing them at discretion during unfavourable weather. In the earlier stages, Celery plants are frequently attacked with green aphis, which if not checked will soon cripple and spoil them. The best and most effective remedy is weak tobacco-water applied in the afternoon with a syringe. A heap of good rotten manure should now be selected, and prepared in readiness for planting-out time, a mixture of horse and cow dung being most suitable. Salt and soot at the rate of one bushel of each to the ton, may with advantage be added, and the whole frequently turned over and thoroughly incorporated before required for use. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Mar. 15	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
TUESDAY,	Mar. 16	Royal Botanic Society, Manchester, Show (two days) Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
WEDNESDAY,	Mar. 17	Bristol Show (two days). Sale of 4000 Japanese Lilies, Iris, Plants, Roots, &c., at Protheroe & Morris' Rooms. Sale of Orchids in Flower, at Stevens' Rooms. Sale of the Sixth Part of the Collection of Orchids formed by the late E. K. Harrison, Esq. (two days), at Stevens' Rooms. Sale of Importations of Orchids from Mr. F. Sander (two days), at Stevens' Rooms. Sale of 10,000 Lilium auratum, from Japan (two days), at Stevens' Rooms. Sale of Roses, Fruit Trees, Shrubs, Border Plants, and Bulbs, at Stevens' Rooms.
THURSDAY,	Mar. 18	Meeting of the Linnean Society.
FRIDAY,	Mar. 19	Spring Show of the Liverpool Horticultural Association (two days). Sale of Imported Orchids at Protheroe & Morris' Rooms.
SATURDAY,	Mar. 20	Sale of Roses, Fruit Trees, Shrubs, Border Plants, and Bulbs, at Stevens' Rooms.

WE are pleased to find that our remarks on the EDUCATION OF GARDENERS have met with the approval of some of our foremost practitioners. Their letters on the subject and on the prizes we offer were not intended for publication, but the following communication from one who acknowledges the benefit he received from the examinations formerly held, will be read with interest, particularly as it contains a practical suggestion which, if it could be carried out, would go far to supply the deficiency of which we have so often commented :—

"It is to be hoped that many young gardeners will be induced to participate in your laudable attempt to promote their welfare. I anticipate a keen competition; but beneficial as these essays must prove as auxiliaries, they do not reach far enough to meet the necessities of the times. I have for some time been on the point of making a suggestion through your medium, which would, if entertained, be of the utmost importance to all young gardeners, to those filling the position of head gardeners, and indeed all those who cultivate a piece of ground would more or less come under its influence. This suggestion is to try and induce the Science and Art Department of the Committee of Council on Education to add horticulture to its list of subjects for examination. I can conceive no better system than that employed by this Department to disseminate throughout the United Kingdom a knowledge of the various subjects it encourages. A large Government grant is annually voted to carry on and extend the scheme of education, and I venture to say, as one of the Department teachers, with a full knowledge of its rules and modes of working, that it seems impossible for any method of teaching to be better administered. Its usefulness may from time to time be increased by adding other subjects to its programme, and I know of none more deserving of attention at the present time than horticulture.

"When the Society of Arts took up the subject some years ago in conjunction with the Royal Horticultural Society, horticulture was divided into two distinct sections, viz. :—Horticulture and Fruit and Vegetable Culture; and certainly no better division could have been made for so extensive and comprehensive a subject.

"We will suppose these subjects added to the Department's schedule: the questions will arise—How can they be taught? and who will teach them? These questions I will attempt to answer. The Science and Art Department has three stages in its examinations of science subjects—the elementary, advanced, and honours; to each of these stages there are two grades, first and second, and those candidates who can obtain a first or second grade certificate in the advanced stage are qualified to form classes and to teach. These classes must be formed according to the regulations given in the Directory issued by the Department. A Government grant is given on the result of the examinations of the pupils at the rate of £2 for a first and £1 for a second grade certificate in the elementary or advanced stages. The number of lessons given must not be less than twenty-eight during the session, which lasts from about October to the examinations in May; each lesson being of at least one hour's duration, and each pupil must have attended twenty lessons before he can be presented for examination. It is the impression with some that these classes can only be formed in towns. They can be as easily formed in country villages. I carried on one for some years in a private garden.

"Now comes the question, Who is to teach these classes? Head gardeners could do a great deal to promote this subject. There are many who could get advanced stage certificates with little or no effort; any who might not have the leisure could induce their foremen to take it up. Few employers would, I think, object to this. The young gardeners would naturally avail themselves of so good an opportunity, and what better occupation could they have than to study their profession in a way calculated to raise the standard of their ability? All could gain certificates in the elementary stage, and some in the advanced, who would be able, when opportunities occurred, to become teachers themselves.

"Now I come to a point which will show the desirability of dividing horticulture into two distinct subjects. Floriculture must necessarily belong chiefly to gardeners, as it embraces the names of plants, the knowledge of which would be tedious and difficult to those who are not gardeners by profession, and of little practical utility to them in its entirety. Fruit and vegetable culture, although equally important to gardeners, is the subject to be specially encouraged among the artizan and the labouring classes, and I am quite sure, after a course or two of lessons, it would not be difficult for many of them to get a certificate in the elementary stage of the subject. The possession of this amount of knowledge should help them immensely. They would become acquainted with the best kinds of vegetables to grow, the best fruit trees to plant, of cropping, and altogether a much better system of cultivation must follow, and those who could not be induced to join, would be sure to copy from the more intelligent who had profited by the teaching, and whose superior cultivation would soon be apparent. Gardeners again, could, by forming classes, advance this important matter very materially, and schoolmasters could, without much trouble, obtain the certificate to teach the fathers of their children, and even the children themselves as they do in France and Belgium, where it forms a part of their education, and be rewarded with a Government grant in proportion to their success.

"In going through a rural district, or the allotments near our towns, it is painful to see the many bad examples of cultivation, and the proposed extension of the allotment system must aggravate this evil. Unless it goes hand-in-hand with some system of teaching, I fear it will end in disappointment and dissatisfaction. To give the ground without the knowledge to cultivate it will be to put the cart before the horse, but with this knowledge of the cultivation will become a pleasure and a profit to the labouring classes, and to the artizans who may be working in shops all day it will prove a healthy and remunerative recreation."

—— THE CULVERS, WALLINGTON, SURREY.—The pretty garden scene, depicted in fig. 63, shows one of the many ways in which water can be made to serve as an embellishment to the garden. The grounds surrounding the dwelling at The Culvers are themselves cut off in a great measure from the adjoining park and woodland by what is really a moat supplied by the little stream—the Wandle; but which is so treated by being widened out here, and contracted there, that the usual ditch-like appearance of this once common mode of defence against attack from without and escape from within is here quite effectively altered. Bridges of a light character cross the water at various points, and the diversity of the landscape has been added to by groups of evergreen trees and shrubs planted at salient points, thus introducing the visitor to fresh surprises at short intervals. The garden would seem to have been artificially raised, as it is supported on some of its sides by retaining walls or banks. This alteration was necessary, to bring it up to the level of the water at the inlet, and to keep the moat always full, or nearly so, all round in a better way than a falling stream could be made to do. This raising of the level caused the sinking of certain parts of the soil, hence we found some of the sides and bottom portion of the canal composed of cement, detracting thereby a little from the general effect, which was otherwise very pleasing.

—— THE PRESERVATION OF BRITISH PLANTS.—Mr. SHIRLEY HIBBERD has uttered a timely note of warning and words of expostulation at the meeting of the Horticultural Club as to the possible extinction of the Primrose, helped, as it undoubtedly is, by the action of branches of the Primrose League throughout the country. A Sussex nursery firm is at the present time advertising the roots of the common Primrose by the thousand! This is a kind of floral vandalism.

—— THE COLD IN FLORIDA.—We have already mentioned the very unusual degree of cold experienced in Florida. We now learn that it is expected that the Orange trees will lose their leaves, and that the young trees will be wholly destroyed. It is calculated that 500,000 boxes of Oranges, worth 1,000,000 dol., have been destroyed by the frost.

—— ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.—At the last monthly meeting of this Institution the Earl of NORTHBROOK was unanimously elected Chairman of the Executive Council, in succession to Lord CARRINGTON. It was resolved that at the annual election on June 16 thirty-six fresh pensioners should be added to the present list of annuitants, viz., eight males, twelve females, and eight married couples; twenty octogenarians will also be admitted.

——THE "BOTANICAL MAGAZINE."—The plants figured in the current number are Aloe heteracantha, t. 6863, a species of unknown origin, with short simple stems bearing a tuft of lanceolate leaves, frequently, but not always provided with small marginal prickles and white spotted. The numerous red cylindrical flowers are in terminal panicles.

Colensoa physaloides, t. 6864, is a New Zealand Lobeliad, with stout branches, long-stalked elliptic-acute dentate leaves, and erect racemes of flowers like those of a Lobelia, but greenish. The plant flowered in a cold frame at Kew last autumn.

Jasminum angulare, t. 6865 —A pretty white-flowered Jasmine, with trifoliolate leaves of a deep shining green colour. The numerous flowers are in terminal panicles, and each has a very long slender tube.

Solanum trilobatum, t. 6866.—A spiny scrambling shrub, with long-stalked oblong sinuate leaves, and panicles of purple, Potato-like flowers, followed by scarlet berries each the size of a small cherry. The plant is common in western peninsular India, Ceylon, Malaya, and the warmer parts of China.

Echinocactus Joadii, t. 6867.—A beautiful little subglobose species with about twenty ribs, which are crenately lobed spines, straight, in groups of 15—25, unequal, sunk in the crenatures, with a tuft of pale hairs at the base. Flower funnel-shaped, yellow, 1½—2 inches long. The native country of this species, which was derived from the collection of the late Mr. JOAD, is unknown.

—— "LINDENIA."—The plants figured in the last number of this publication are Cattleya Trianæ alba, C. Trianæ var. Annæ, Paphinia Randi, and Vanda Boxallii.

—— "BULLETIN DE L'ASSOCIATION POUR LA PROTECTION DES PLANTES."—The fourth part of the *Bulletin* contains the annual report of the Society, which has evidently already accomplished good work in checking the heedless destruction of the alpine flora. The number also contains an interesting article on the raising of alpine plants from seed, another on the work and progress of the Jardin d'Acclimatation, on an excursion to the Val d'Anniviers, and other matters. We heartily wish success to the enterprise.

—— "BOLETIMA DA SOCIEDADE BROTERIANA."—The third and fourth fascicles of the *Bulletin* of the Brotero Society have been issued. They contain a list of the plants collected in West Tropical Africa by Mr. FRANK NEWTON, a sketch of the vegetation of the Serra do Gomez, by Professor HENRIQUES, and other articles, all in Portuguese.

—— "ILLUSTRATIONS OF BRITISH FUNGI."—The thirty-ninth part of this very useful atlas of the Hymenomycetes has just been issued. In all 620 plates have been issued. The letterpress accompanying these plates is to be found in Dr. COOKE'S *Grevillea*.

—— "NUOVA GIORNALE BOTANICO ITALIANO."—The contents of the January number comprise a

memoir on the glands of Bunias Erucago, an enumeration of the fungi of the province of Modena, an account of a botanical excursion to Friuli, by Professor Caruel; an account of a new disease in Wheat (*frumento*), and a paper by Signor Cavara on some malformations in Lonicera (petalody of the stamens, &c.).

—— The Late Professor Morren. — The funeral of the late Professor took place at Liège on the 3d inst. Funeral orations were delivered in the hall of the University by the Rector, M. Wasseige; by M. Habets, the Dean of the Faculty of Science; by M. Crèpin, on behalf of the Royal Academy of Belgium. M. Oscar Lamarche, the President of the Royal Society of Horticulture, recalled how Morren had regenerated the Society, and for twenty-five years contributed to its success by establishing weekly meetings, delivering popular addresses and a Fern collection made by the Bishop of Singapore and Sarawak. Among these are several new to science. In his review of the collection, Mr. Baker gave a succinct *resumé* of what is known of the geographical distribution of Ferns, and pointed out the regions most likely in the future to furnish further new material for study.

—— Saponaria officinalis β hybrida.— The Director of the Montpellier Botanic Garden is desirous of obtaining a living specimen of this curious monstrosity of the common Saponaria, with alternate leaves, and a gamopetalous corolla. It was found originally by Gerard in Northamptonshire, and was afterwards found in sandy hills north of Liverpool. It was much cultivated in gardens in the seventeenth century. Gerard speaks of the plant as hollow-leaved Felwoort, or English Gentian, Gentiana conava, and says:—"I found this strange kind of Gentian in a America should be regarded as a single botanical province, in which the same generic types are represented by species of which a large proportion are endemic, and confined to comparatively small areas. Along with these we find, in various parts of the same region, a few forms so distinct as to be ranked as separate genera, mostly represented by one or very few species, and nearly allied to types of wide distribution. He assumes that, in a broad sense, the most natural divisions of the vegetation of the earth are wide areas of low country, over which, with more or less modification, a limited number of types have extended, with islands of high lands which are the original homes of special types that form the characteristic features of different regions.

—— Green Stuff.—A walk through the market gardens shows the green crops to be in somewhat sorry condition, owing to the prolonged frost and

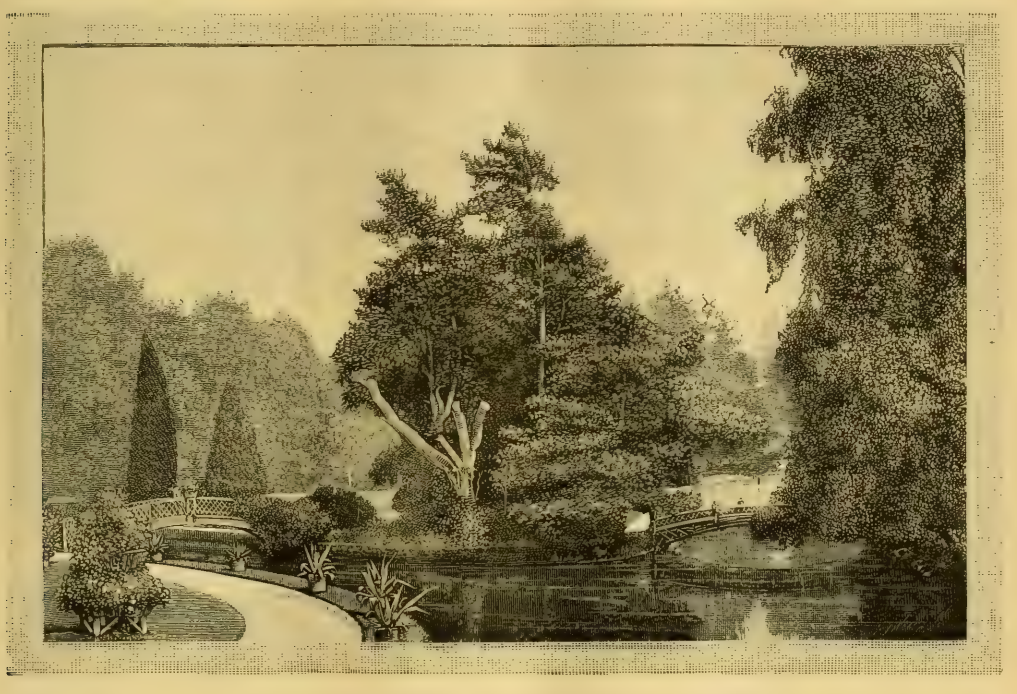


Fig. 63.—view in the garden, the culvers, wallington. (see p. 336.)

horticultural lectures. M. de Bosschère called attention to the services that Morren rendered to horticulture and to the Congress over which he presided at Antwerp last year. M. Kerkoffs, one of the students, made himself the exponent of the estem felt for the late Professor by his pupils, who were preparing to celebrate in a few days the twenty-fifth anniversary of his entrance into the Professorship. Morren, it appears, gave his last lecture on the morning of the 25th ult., and afterwards took part in an examination of the students in the science faculty. In the evening a severe attack of pain ensued, and he expired after great suffering on the 28th ult. The Liège papers bear testimony to the respect and admiration in which the late Professor was held in the University and in the city.

—— Bornean Ferns.—It is satisfactory to find that some of our colonial and missionary clergy find opportunity to advance botanical science. This we infer from a paper by Mr. J. G. Baker, at the Linnean Society, on March 4, wherein he described small grove of a wood called the Spinie, neere unto a small village in Northamptonshire, called Lichbarrow."

—— Popular Names.—Here is one that is sure to please, and which we copy from the *Illustration Horticole*:—Zöschenerotoberknorpelkirsche. Nurserymen cannot afford to catalogue such a plant at a low price.

—— Botany of Western South America.— Under this title Mr. John Ball gave a communication to the Linnean Society (February 18), founded on his recent travels and collections of plants made in that country. He introduced the subject with reflections on the climatal relations of the South American western seaboard, which have such a remarkable influence on the development of vegetable life. Having visited various parts of Columbia, Peru, Chili, Patagonia, &c., and studied the floras thereof, he summarised their peculiarities. He has come to the conclusion that the vast region including the warm and moist parts of South and Central cold weather. The late gatherings of Brussels Sprouts have largely failed, the sprouts rotting on the stems; in some cases sheep have been folded among them. Sprouting Broccoli is not nearly so plentiful as usual; the plants make little or no growth. Winter Spinach is at a standstill, and spring Cabbages seem in some cases to get smaller than larger. Leeks are small owing to the dry summer, and the smaller plants appear to make no appreciable increase in size. The consumer in the suburbs of London is already being called upon to pay an unusually high price for green stuff, and, as is usual in cases of scarcity, receives but a meagre supply in return. Market garden operations are almost at a standstill, and Rhubarb will be, to all appearance, much later than usual. The weather is altogether against a market trade, and until a decided change in the temperature comes but little in the way of improvement can be looked for; but the market seller looks upon this state of things with equanimity. He says that "the sharp frosts have done good from a market point of view, the cold winter having done its work fairly well, and the effect

upon the various crops will undoubtedly be beneficial. Mild open winters do no good to the trade." But it is a singular fact that whether the weather be frosty and killing, or mild and growing, whether there is a plethora of garden stuff or a scarcity, the consumer reaps little or no appreciable advantage. Does the producer?—or does the greater part of the spoil go to the middleman? The producer seems to be deriving some advantage this season, for Broccoli from Cornwall and the Channel Islands, and also from Cherbourg, have brought good prices. The retarding weather may very probably favour the suburban producer of Rhubarb, for it is said the forced crops are coming in at their usual time, while that grown in the open air will be much later, and so both will have a chance of remunerative sale.

—— THE OXFORD ROSE SOCIETY will hold its thirty-fifth annual exhibition on Thursday, July 8, in the gardens of New College, Oxford. The schedule of prizes includes eleven classes "open to all England," and ten others limited to "amateur members of the Society." The prize-money ranges from £7 for forty-eight triplets to 5s. for one bloom. Exhibitors coming by rail will be met at the station, and their boxes taken to and fro free of charge.

—— FORCED DOUBLE DAFFODILS. — Large numbers of these are wild flowers forced so as to have the blooms in January and February. In October, or as soon as convenient, the bulbs are put thickly in pots or shallow wooden boxes, in good soil, and placed out-of-doors and covered with cocoa-nut fibre, or some other such material, until they show signs of growth, and then they are quickly brought on into flower. After the flowers are cut away, the boxes or pots are placed in the open air and covered with 6 inches or so of ashes, and there they mature themselves, and become available for further service. The Scilly Islands have recently been furnishing our cut flower dealers with fine bunches of Polyanthus Narcissus, the golden-flowered Soleil d'Or being especially conspicuous.

—— SOCIÉTÉ NATIONALE D'HORTICULTURE DE FRANCE.—We are informed that this Society will open its show on May 11, instead of the 4th, as previously announced, and the exhibition will remain open till the 16th, instead of closing on May 9th. In consequence of the above alterations, every date concerning exhibitors, &c., has been postponed seven days.

—— GRASS SEEDS, &C.—Messrs. CARTER & CO. send us a neat little case of samples of agricultural seeds of guaranteed quality. The samples are contained in little tin boxes with a glass top. Such samples are so useful, not only for immediate practical use but for educational purposes, that we trust Messrs. CARTER will extend their scheme, and issue in like cheap and commodious form complete sets of agricultural seeds. Such collections would be valuable in village school-rooms.

—— WARWICK HORTICULTURAL SOCIETY.—The annual exhibition of this Society will take place this year on Bank Holiday, August 2, in the grounds of Warwick Castle. Hitherto the exhibitions have been held about the month of July in the Corn Exchange, or in later years in the spacious Drill Hall. The Society will now for the first time try the experiment of taking to the open air under canvas; and Warwick Castle and its grounds should attract a large number of visitors.

—— INFLUENCE OF LIGHT ON THE DEVELOPMENT OF ASSIMILATING TISSUE.—We learn from the *Bulletin de la Société Botanique de France*, that Mr. S. GROSGLIK, who has been conducting experiments on this subject, selected the primary horizontal leaves of Eucalyptus globulus, as on their upper surface when fully developed they have palisade cells, and on their lower surface loose spongy tissue, while the adult leaves directed vertically have palisade cells on both sides. Three principal phases are discernible in the development of these leaves:—1. The very young leaf has between its two surfaces, besides the bundles in course of formation, only one homogenous tissue, formed of cells equal in diameter in each direction, and which the author calls primitive mesophyl. 2. The leaves still remaining vertical develope at the expense of the mesophyl, and in contact with the epidermis on each side a layer of palisade cells. According to Mr. GROSGLIK these leaves have then the definite structure of the adult leaves. 3. The leaf becoming horizontal the upper surface receives more light than the lower, and the structure appears unsymmetrical. The palisade tissue of the inferior surface is gradually transformed into spongy tissue, and thus the definite structure is arrived at. The author cites some experiences confirming his ideas on the influence of light:—1. He maintained in the horizontal position a leaf taken at the first stage of development. Under these conditions it only developes palisade cells on one face, and not on both, as it does normally. 2. On operating on a leaf arrived at the second stage, and in which, as has just been seen, palisade parenchyma is developed on the two faces, and on keeping this leaf vertical and equally exposed to light on both sides, Mr. GROSGLIK demonstrated that the development is stopped, and the spongy tissue does not appear on the lower surface. The conclusion arrived at is, that there exists in the leaves a tissue which is not yet differentiated, the primitive mesophyl, and that it is at the expense of this tissue that is developed either palisade tissue or spongy tissue, according to the conditions of illumination. Light favours the formation of palisade tissue, shade that of the spongy tissue.

—— SPORT IN CAMELLIA.—We have received from Messrs. LUCOMBE, PINCE & CO., a flower of PRESSLY'S Eclipse Camellia, one-half of which has the petals of a self rose colour, while the petals on the other half are white with a few rose-coloured stripes.

—— GRAND NATIONAL DAHLIA SHOW, 1866.—The arrangements in connection with the Grand National Show of Dahlias, to be held on September 3 and 4 at the Crystal Palace, have now been completed. The prize schedule has been printed and circulated amongst the former subscribers and exhibitors; the same well known and trusty florists have been selected to award the prizes, and the same executive committee has been appointed as a substantial aid to the Honorary Secretary. In regard to its finances the show cannot be thoroughly successful unless liberally supported by the growers and admirers of the Dahlia, who will therefore, we trust, keep the officials busily occupied in sending out receipts for their donations. Those, also, who believe in the beneficial influence of flower shows may well lend a helping hand. Contributions should be sent to the Honorary Secretary and Treasurer, Mr. THOMAS MOORE, Botanic Garden, Chelsea, London, S.W., who will gladly acknowledge them. We may add to the foregoing that the second of the Dahlia competitions for the possession of the Turner Memorial Prize Cup will take place at the Crystal Palace on the occasion of this show, and will greatly increase the interest with which it can be watched by those who are admirers of this noble autumn flower. An inspection of the balance-sheet of the Grand National Society does not show the Society as suffering from a plethora of funds, the inference to be drawn being that the Dahlia as a florist's flower has not such enthusiastic admirers as was once the case. That is rather to be deplored, as it is a noble flower needing the possession of much gardening skill to bring it up to exhibition mark, and the plant, if ordinarily well grown, is not easily matched as a decorative plant in the early autumn months. The signs observed on all sides of the revival of a more sensible method of flower gardening in the open air will doubtless bring the Dahlia into its foremost place again; but we hope to see no more attempts to make the Dahlia components of the "ribbon border."

—— A FOREIGN WORM.—Mr. JEFFREY BELL, of the Natural History Museum, writes:—"The Land Planarian (Bipalium kewense), noticed by Dr. GUNTHER in the *Gardeners' Chronicle* (vol. xix, p. 415), having reappeared at Fernhurst, Haslemere, I think it well to redirect the attention of those who are interested in hothouse plants to it, as it would be very interesting to know how far it has spread in England, and what its relative abundance is. It would be particularly interesting to find it in a locality which has not for ten years received plants either from Kew (as Mr. SAHIN has lately done), or from Welbeck, whence Dr. GUNTHER'S specimens came. I have heard of a specimen being found in a greenhouse at Clapham Park, but have no further knowledge on the subject. The worm is soft-bodied, elongated, from 6 to 9 inches long, has five dark longitudinal bands on the back and sides of its body; it is pale below, and when moving freely its head is hammer-shaped, or cheese-cutter-like. It may be short and stout, or long and narrow, or intermediate in form. It is a lover of moist, dark places. I shall be particularly glad to obtain more information or specimens from gardeners who may have observed it."

—— LINNEAN SOCIETY OF LONDON.—A meeting will be held on Thursday, March 18, at 8 P.M., when the following papers will be read:—1. "New Species of Balanophora and Thonningia," by Mr. W. FAWCETT; 2, "Madreporia of the Mergui Archipelago," by Professor P. M. DUNCAN; and 3, "Botany of the Naga Hills," by Mr. C. B. CLARKE.

—— EUPOMATIA BENNETTII. — To those unacquainted with the homologies of floral structure, the order of arrangement of parts would seem reversed in this genus. This arises from the fact of the inner stamens being petaloid and resembling a corolla. The flowers are borne singly at the ends of the branches, and may be compared to a double flowered Ranunculus, being at the same time both attractive and delicately fragrant. The real calyx and corolla are green and form a calyptra-like covering to the unopened flower-bud. After expansion, however, the numerous stamens constitute the predominant feature. The outer ones are normal and fertile while the next series are petaloid, nearly white, and fringed at the margin with stellate tufts of hairs and surrounding a more numerous series that completely fill up the centre of the flower, hiding the pistil completely till they fall away. These latter are pale yellow with a red spot towards the base, and covered with singular looking round-headed papillæ. There is a figure of this species in the *Botanical Magazine*, t. 4848, under the name of E. laurina, and a flowering plant may be seen in the Begonia-house at Kew.

—— ROYAL HORTICULTURAL SOCIETY OF ABERDEEN.—The schedule of prizes for the summer and autumn shows in connection with this Society has just been issued. The awards this year will include a large number of valuable special prizes. Among the donors to the fund are Her Majesty the QUEEN, the Earl of ABERDEEN, the Aberdeen Town Council, Lord Provost MATTHEWS, Sir WILLIAM CUNLIFFE BROOKS, Bart., Sir FRANCIS GRANT, Bart., and Dr. CAMPBELL, M.P. As usual, the summer exhibition will be held on the same day as the Royal Northern Agricultural Society's show, and the autumn one on Friday and Saturday, September 10 and 11.

—— TOBACCO CULTURE IN BRITAIN.—In reply to a question by Sir E. BIRKBECK in the House of Commons, whether the question of allowing the agriculturists of the United Kingdom under proper restrictions to grow Tobacco for sale had been considered, the Chancellor of the EXCHEQUER thought that he need hardly say that if anything could be done to the advantage of the agriculturists of the soil of England he would be extremely happy to follow such a course. This question, however, of the growth of Tobacco in this country was by no means a new one, and had been often considered. The hon. member would probably remember that before 1830 Tobacco had been grown in Ireland. The question had then been considered by a committee, which had found that the area devoted to the growth of Tobacco, though free, was only 500 acres. The committee had reported that the growth of Tobacco could not be continued in Ireland without being extended to England, and in both cases it would be necessary to impose an excise duty. The question had been frequently considered since that time; but as the excise duty necessary to impose would be £300 per acre, which would be prohibitory, it could not be worked. If, however, the hon. member thought that any later information would throw a light upon the matter he would be happy if the hon. member or any other practical agriculturist would commuicate with him on the subject. *Times*.

—— THE LIVERPOOL PROVINCIAL SHOW.—We understand that Messrs. SUTTON & SONS, Reading, have offered the following valuable prizes for competition at the forthcoming great provincial show of the Royal Horticultural Society at Liverpool, June 29 to

July 5:—For a collection of vegetables, twelve distinct kinds—1st prize, £5 5s.; 2d, £4 4s.; 3d, £3 3s.; 4th, £2 2s.; 5th, £1 1s.; 6th, 10s. 6d. For the best brace of Melons, either Sutton's Imperial Greenflesh, Sutton's Invincible Scarlet-flesh, or Sutton's Hero of Lockinge, each entry to consist of one variety—1st prize, 42s.; 2d, 21s.; 3d, 10s. 6d. The foregoing prizes are open to noblemen's and gentlemen's gardeners only.

—— Phylloxera in France.—The *Times* correspondent says:—"The *Journal Officiel* publishes the annual report by the Director of the Agricultural Department on the proceedings of the Phylloxera Commission. It has been decided that none of the processes made known during the year 1885 entitle the inventors to the prize offered by the Government, and accordingly the old remedies continue to be recommended. These are—(1) submersion, (2) sulphuret of carbon, and (3) sulpho-carbonate of potassium. The surface under Vine cultivation attacked, and still resisting, amounted to 642,000 hectares in 1885, against 664,000 in 1884. This apparent diminution is, however, due to the complete abandonment of numerous plantations. Before the appearance of the disease there were in France 2,503,000 hectares planted with Vines. Vines now cover 1,990,586 hectares, which fact shows that the Vine growers have to a great extent remedied the evil by planting during the last fifteen years, so that the deficit only amounts to 500,000 hectares, but at the same time the amount of loss remains enormous. In 1885 submersion was applied to 24,339 hectares, sulphuret of carbon to 40,585, and sulpho-carbonate to 5227. American Vines which have been planted now replace those destroyed over a surface of 72,262 hectares. Thus the surface which has resisted the attacks of the insect amounts in all to little more than 145,000 hectares, that is, about 22 per cent. of the whole surface suffering from the disease. These efforts, which have been continued uninterruptedly for eight years, should, in the opinion of the reporter, inspire full confidence in the future."

—— Gardening Appointments.—Mr. W. Padbury, late Foreman at Langley Park, Beckenham, has been appointed as Gardener to C. E. Goodhart, Esq., at that place.

Florists' Flowers.

THE GLADIOLUS.

The time for planting this autumn flowering subject has come, but not the weather. In light dry soils, opportunity may have been afforded to get the bulbs out, but there has been no chance for us, even to get out such things. It is quite time that the earliest flowering bulbs were put out; and if the ground still continues wet, frozen or covered with snow, the bulbs must be potted singly in small pots, and the whole of them placed in a frame, or some light place where frost cannot injure them.

When the ground is rather wet, and it has been determined to plant out the bulbs, the method of procedure is this:—Draw the drills with a hoe, as is usually done for early Peas. Take the bulbs in one basket, and some dry sand in another; as the bulbs are planted place a little of the sand under each, and some more over the crown: when this is done fill the drill up with some dry sandy loam. This gives the bulbs a good start, and they are seldom injured by frost in the spring; but any choice varieties may be protected with a pot inverted over the crown of each at night, that is, if they have pushed through the ground and are likely to be injured. The bulblets from seeds sown in the spring of last year, will be as large as Peas—a few of them may be as large as Cob-nuts. These may be planted in rows 4 or 5 inches apart. Draw the drill shallow for these small bulbs, and treat them in other respects the same as the large bulbs; small as they are they will produce strong flowering spikes by the end of the season. It will soon be time to sow the seeds. The first week in April is a good time to do this. Sow the seeds thinly in good soil, using 6 or 7-inch pots. Plunge the pots in a hotbed, and the seeds being of good quality, the young plants will appear above-ground in two weeks. Each pot will contain and bring to maturity about thirty or forty plants. They need not be pricked out, but will remain in the pots in which the seeds were sown until the end of the season.

The Pentstemon and Antirrhinum.

This is almost a hardy plant, but the past season has been very disastrous to this and kindred occupants of our flower gardens, such as the Antirrhinums. The last named is best treated as an annual. A packet of seeds sown early in the year on a hotbed, and the plants pricked out in boxes afterwards, will produce a fine display the same season. Hundreds of plants will be obtained from one packet. The Pentstemon may be raised in the same way from seeds, and treated in a similar manner; but it is much more readily preserved through the winter in the form of cuttings put in about the same time as the bedding Calceolarias, that is, in October. There are always plenty of cuttings to be obtained at that time; they may be planted in pots or in fine soil out-of-doors, so that they can be covered with a hand-glass. The young plants may now be planted out 3 or 4 inches apart, either in boxes or in some way where they can be covered with glass until they are established. They may be planted in beds or borders amongst herbaceous plants early in May.

The Phlox.

It is not a good plan to allow the old plants to remain too long on the same ground. After the third year they rapidly degenerate, and the rough and ready way of cutting the old clumps into quarters to replant them is a clumsy system of propagating that cannot be tolerated in good gardens. Take off the cuttings as soon as they are an inch or two long, plant each cutting singly in a small pot, and treat as recommended for Dahlias. If these plants are potted, and grown on in 5 and 6-inch pots, they will make beautiful sweet-scented objects for the decoration of greenhouse and conservatory, to be planted out-of-doors when they have done flowering.

The Ranunculus.

So few people grow these charming flowers now that it would not be fair to occupy more than a few lines to say that it is quite time they were planted out. The tubers are very small, and must not be planted too deep in the ground. The crowns of the tubers should be covered with about 1 inch of fine sandy soil, and may be 4 inches apart in the rows and 6 inches between each row. If the garden soil is heavy it may be greatly improved by the addition of a little sandy peat. *J. Douglas, Great Gearies.*

Auriculas.

Of these there are two grand classes—the edged and alpines, with an intermediate class called selfs, with one distinct colour. All three are now commencing growth after a rather prolonged *siesta*, and require attention. As a rule the edged varieties have been grown under cover—if possible in a specially constructed Auricula-house. Cold does them no harm, if kept dry. Many who love the Auricula, and cannot succeed with the edged varieties, devote their attention principally to alpines, and these are so sweetly scented that they are amply repaid. This might be the best course for beginners. All the care they require is to plant them out in a bed of rich loam, raised at least 4 inches. One of the best growers I know repots about this time after the winter's rest; but the more orthodox method seems to be to repot in the end of summer, so as to have the pot full of roots before the growth has ceased in October. At this time thoroughly top-dress with a rich compost. I have found, among the grey-edged, Confidence (Campbell) and Robert Trail (Lightbody) easiest to manage and keep, but for show purposes George Lightbody and Lancashire Hero should be always grown. Of green-edged, General Neal (Trail) and Atlas (Lightbody), of those I have tried, are the only ones that remain. I understand the Rev. Mr. Horner has got some very desirable varieties, his own raising, not yet in commerce. Lastly, as to the white edges, I like Acme (Read) very much; it is still scarce, and the price proportionate. I have possessed White Rival for some years, and, though often neglected, has done admirably; so of True Briton (Hepworth): but exhibitors should also have Mr. Douglas' Conservative.

Pyrethrums.

These are double and single. The latter are freely produced from seed, and those requiring cut flowers in abundance, and who may be on the look-out for a good novelty, should sow a pinch of seed every year. They may chance on a double; but good selections of doubles are now so cheap that a collection should be had at all hazards. I think the gardening Press much to blame for not keeping the special merits of these constantly before their clients. A bunch of double Pyrethrums, dressed once or twice and the water changed, will keep fresh for a month in summer: no other outdoor flower then will do that. The second or third year they produce the greatest abundance of bloom. Last year I had one thousand blooms on clumps from Haage & Schmidt (shaded from carmine to rose), and Delicatum (pure white); but others are not so free flowering or so double. I like Mont Blanc best of the whites, but the number of blooms is limited. A sprinkling of soot to help to keep slugs away from this kind when young foliage appears is desirable. Nurserymen should, as far as possible, avoid sending out small bits that take years before they form clumps of any size. Now is the time to divide large clumps, and replant, if not done last autumn. Bear in mind, like Asters, a good dose of liquid manure during the summer will add to the size and number of the blooms. Collections can be made from various catalogues, but it is often best to leave that to the nurserymen.

Gladioli.

These, notwithstanding disappointments, will always have a fascination for the florist. I have known growers to give them up for years, and then recommence. Except Orchids, no other flowers are so rich and brilliantly marked, and, on the whole, when intelligently treated, they seldom fail. As fine blooms, though later, can be produced at Gourock in Scotland, as in the warmer and more salubrious Langport in Somerset; and as I noticed in your columns at the time, I never saw finer spikes with Mr. Saunders, in Cork, than I saw last autumn with Messrs. Dickson, Newtownards, in the North of Ireland. None need therefore say their climate or locality does not suit even the best hybrids of G. gandavensis. Much hardier and not at all liable to mishap, however, is G. brenchleynsis, but without the brilliant tinting, feathering, and flaking of the petals, not to mention size of blooms, peculiar to the former. I have just been examining my pretty extensive collection of all the newest and best hybrids within my reach, and find many of them emitting small rootlets. This is the signal to commence preparing for planting out the earliest, and these I shall have in the ground before the end of the month. I shall carefully harvest the "spawn" or young bulbils attached to the corms, and these maintain the succession. Some give none, and such varieties must ever remain expensive; it will, therefore, be seen that the price of corms depends on this rather than on size or quality. They are gross feeders; not only must the soil be rich and manure buried below, but I frequently give doses of liquid manure during very hot weather. If possible, plant in a warm southern aspect, and surround the corms with river sand. Larger blooms and finer corms next year, will be produced by picking off the seed-pods. *W. J. Murphy, Clonmel.*

Notices of Books.

The Tourist's Guide to the Flora of the Alps. By Professor K. W. V. Dalla-Torre. Translated and edited by A. W. Bennett. (Swan, Sonnenschein & Co.)

This is a very dainty little book, made for the knapsack, and not too big for the breast-pocket. It is neatly bound in limp covers, pocket-book fashion; it is well printed on thin paper, and is altogether tempting. The worst feature is that it is not complete—a selection has been made, and we all know how frequently it happens that the very plant we are in search of is omitted. Indeed the work seems in the first instance to have been originally intended for the Austrian Alps only, and then, as an after-thought, the Swiss plants have been added; but even then we miss some of the species of the central Alps, of the Italian slope, and of the Maritime and Dauphiny

Alps. It is true that many of these are included by the Editor in an appendix, but as names only, without descriptions. The book is so useful that probably a second edition will be called for, when the omissions we have alluded to can be remedied. In such a book space is a great object, and this might be gained by the omission of the characters of the classes and orders which any one using this book is likely to be familiar with.

Handbook of Mosses. By James E. Bagnall, A.L.S. (Swan, Sonnenschein & Co.)

This is an admirable little book, calculated to give the beginner just the information and aid he requires at the outset. The methods of study, the mode of growth, the structure, the habitat, the classification, the geographical distribution of Mosses, are all treated of clearly and briefly. The only point we miss is an index and a glossary of technical terms; but so complete is otherwise this unpretending volume (its cost is only 1*s*.), that a chapter is devoted to cultivation of these little gems. The Fern-case is not recommended, as the plants soon become drawn; a preferable plan is to dig up the plants with plenty of soil, and transfer them bodily to the rockwork, keeping them in place till established by pegs. It is a rare thing to meet with an elementary book so accurately and carefully drawn up as this one.

Elements de Botanique. Par Ph. Van Tieghem. (Paris: Savy.)

This may be looked on as an abridgment of the author's *Traité de Botanique*, which has taken its place at once among botanical classics as being as comprehensive as German treatises of like character, but much more clearly written and methodically arranged. The present little volume has, for its size, all the good qualities of the larger volume, and may be most confidently recommended as an admirable introduction to botany. A second companion volume will deal with the natural orders.

The Miniature Fruit Garden.

Mr. T. Francis Rivers has issued a new edition of his father's useful little book so well known under the above title. A new edition? Yes, and that the nineteenth. What will the poor compilers of scientific books, what the laborious toilers in the field of literature, or the scribblers of novels and tales, say to that? A trade catalogue, some one may say; but it is not anything of the kind, but a convenient handbook for the fruit cultivator and one whose success is perfectly legitimate and well earned. We do not see much difference in the present edition from its predecessors, and the only thing that strikes us as requiring revision in the twentieth edition is the account of the insects and diseases, which in the nineteenth is hardly up to the mark.

All About Blackberries.

Messrs. V. Collyer and A. W. Crews, of Leicester, who have taken a large part in the introduction of American Blackberries, following in the wake of the late Thomas Rivers, have now issued a little tract with the above heading. The title is ambitious, and perhaps we have no right to expect it to be taken literally. In any case the cultural directions are to the point, and we can endorse the recommendation to plant them more freely. The authors tell us that in America the Blackberries are grown on white drifting sand, which suggests a valuable method of utilising such wastes here. They also allege that the varieties of Blackberry "come forth in their full strength of new blood, last so many years (the sturdier the newcomer the longer the period), and then gradually, as it were, die of old age and infirmities." This is a statement which probably requires some qualification. The decadence is probably due to neglect and carelessness; the varieties are selected seedlings, and to keep up a high standard it will be necessary to obviate, as far as possible, cross-fertilisation with other and, perhaps, inferior sorts.

The Wilson Junior is the variety most recommended for earliness, productiveness and evenness of ripening. As to its productiveness the authors tell us that this variety yielded last season 160 bushels of fruit to the acre—truly a large crop. Glenfield as a variety is asserted to be a seedling between a Blackberry and a red Raspberry—partaking of the shape, habit, and flavour of the Raspberry, with just a perceptible and unusually pleasant taste of the Blackberry, along with the glossy black colour and hardy nature of the last-named. Certainly the fruits are very handsome, and Mr. Coleman says that "While Plums were fetching only 2*d*. per pound, the despised Blackberry was fetching 4*d*., and even 6*d*. a pound."

Allowing some discount for *couleur de rose*, it is, nevertheless, certain that many waste corners, slippery railway banks, and other such places, might be profitably planted with Blackberries. Although they are so hardy that they will endure almost any rough treatment, yet they repay any care bestowed on them by the increased richness of their fruit.

THE BULB GARDEN.

NARCISSUS TRIANDRUS AND ITS VARIETIES.

THE more we know of the wild forms of any species of Narcissus the more widely variable do we find its



FIG. 64.—NARCISSUS TRIANDRUS PULCHELLUS: SEGMENTS YELLOW, CUP WHITE.

orms; of N. bulbocodium, for example, we have now in cultivation fully a dozen distinct wild varieties, and now we find that N. triandrus is no exception to the rule. Of our sketches fig. 64 is from a bulb collected in May, 1885, at Mobiles, near Oporto, by Octavius Carder, Esq., of Norwich, who sent it to the gardens here as N. calathinus, but it is really N. triandrus pulchellus. N. triandrus pulchellus has a white cup and yellow perianth segments, being in this way unique amongst Narcissi, in which as a rule the corona is always deeper in tint than the perianth. Wild bulbs are frequently one-leaved and one-flowered, as here shown, but when grown in gardens where the soil is dry and otherwise suitable each bulb bears 4—5 leaves and a much stouter scape of from 4—9 flowers. This plant used to grow very strong and vigorously at Parker's of Tooting ten or twelve years ago, and was at that time the only variety of this species generally met with in gardens. Fig. 65 was also collected near Oporto, and was sent to me by the Rev. C. W. Wolley Dod. It is a fine bold form with white or very pale sulphur flowers. The perianth segments and cup are very nearly equal, and so this form comes very near to the true N. calathinus of Redouté. Figs. 66 and 67 are also white-winged forms near N. triandrus albus, and came as freshly collected bulbs from Mr. Ware and Mr. Barr respectively last year. All these forms of N. triandrus are most delicate and beautiful, and if grown in pots are fit companions for the pretty little Freesias now so popular, although they do not require so much heat to grow them well. *F. W. B.*

RUSH-LEAVED DAFFODILS.

In a vain search for any obvious characters by which species of Narcissus may be distinguished I have been examining leaves and find the differences within the so-called species most perplexing. For instance, take N. Bulbocodium; a variety of this called citrina comes to me from Biarritz every year with almost setaceous leaves, but after a year or two of cultivation the leaves expand to fully one-fifth of an inch in width, and become as flat as those of any Pseudo-Narcissus. Other varieties retain their narrow habit, though all, including the smallest, N. monophyllus, are always concave on one side. N. triandrus, again, comes to me from Oporto with leaves nearly flat on the upper surface, a quarter of an inch wide, covered with glaucous bloom like a Pseudo-Narcissus, but always having on the under surface a double ridge with a concave channel between the ridges. The form called pulchellus, again, has never shown any tendency to flatten out its leaves, but the concave furrow on the back is hardly visible. The so-called juncifolius has nearly flat leaves, far flatter than those of the common garden Jonquil, but the only true Rush-leaf I have ever seen in Narcissus is the leaf of N. viridiflorus. Many of my bulbs of this, after remaining quite dormant for two years, have during the past winter sent up a single strong and healthy leaf, two or three having produced flower-scapes besides. These leaves are perfectly round and give no indication of having two sides. In fact they resemble scapes so exactly that were it not for the fact that those bulbs which have flowered have also produced leaves like the others, I should have suspected them of being barren flower-scapes. In two of the leaves I can detect with a lens two ill-defined ridges, but the leaf is convex on both sides of the ridges. The leaves of N. elegans and N. serotinus, narrow as they are, all show a concave side reaching to the very tip. *C. Wolley Dod.*

HOME CORRESPONDENCE.

Begonia semperflorens rosea.—This is without exception the finest winter flowering Begonia we possess. It is a vigorous grower and a free bloomer, and is brilliant in colour—is, in fact, perfection in its way. I met with a batch of it the other day in one of the houses at Hoole Hall, Chester, in combination with flowering plants of Eranthemum pulchellum, Tillandsia Lindeni, and well flowered small plants of Sparmannia africana—a combination most striking and charming. The effect was most rich and pleasing, as may easily be imagined from the rare contrast of colour and form presented by the four plants named. The almost vermilion tint of the unopened flowers of the Begonia, the bright rose of those fully open, the matchless blue of the Tillandsia, and the pleasing and somewhat similar tint of the Eranthemum, mingling with the white and orange panicles of the Sparmannia, formed a picture which, for brilliancy and harmony of colour and diversity of form could hardly be equalled by any other equal number of constituents. The only plant among those named, about which there is any acknowledged difficulty in growing or keeping up stock, is the Tillandsia, which, however, Mr. Taylor the gardener has no trouble with, as is evinced by the large stock of healthy plants he always has on hand. *Visitor.*

Talipot Palm Labels.—Since writing to you in September last on the above subject I have been carrying on the following experiments with a view of obviating the difficulty of writing on the label with a style or sharp pointed instrument, and of testing its capabilities generally. Experiment 1. Labels were easily written on with black Japan varnish and ver-

milion with a quill pen and paint brush, they were then allowed to dry for a few hours, and when well dried exposed to the open air in a garden. After they had been thus exposed to the weather, and even to the heavy snowfall lately experienced, no damage ensued, and the writing remained intact: in fact the labels looked better. No curling up followed in any one. Experiment 2. A number of labels hung over the kitchen stove were unaffected by the heat. Experiment 3. A sponge dipped in turpentine or methylated spirit and rubbed over the labels effaced the writing perfectly, thus rendering labels fit for use over and over again. Experiment 4. Dilute acids or alkalies applied to remove any writing did no injury, the surface being protected by a silicious cuticle. Any soiled label may be cleaned by washing with soap and water. Experiment 5. Labels written on with sulphuric acid by means of a quill pen and held near the fire until dry, and then quickly plunged in water produced a permanent and indestructible writing, the acid acting in the tissue. Conclusion. From the foregoing experiments I think it is clearly established that the Talipot Palm label possesses qualities which render it more useful than those ordinarily used for plants, &c. I may add that in this climate the label stands exposure better than in the tropics, and is likely to be more enduring. *W. C. Andaatjee, F.L.S.* [The labels are cheap, durable, and easily written on. Dipped in varnish after writing on them would make them almost imperishable. Ed.]

Selection of Seeds.—This, if effectually done, has a great influence on the succeeding crop. One cannot be too particular as to the source whence his seeds are obtained in order to have a first-rate lot of vegetables. If the seed is saved indiscriminately year after year the variety will soon very much deteriorate; on the contrary, if the best are selected every year to bear seed, a great improvement will often take place. A forcible illustration of this occurred here last season. A friend kindly gave me some Onion seed which he had saved from extra-sized bulbs that were very carefully selected. This was sown by the side of some more obtained in the usual way, and all were treated exactly alike, but all through the very dry summer it was easy to see where the division was in the bed. The seed from selected bulbs grew strongest from the first, and kept much in advance all through, and at the end of the season this had by far the largest bulbs. *W. H. Divers, Ketton.*

Himalayan Primrose Seed.—As we are rather interested in this question of Himalayan seed and seed sowing we were very glad to see the letter from your able and valued correspondent, C. W. Dod, in your last issue on this subject. All who have had much to do with Himalayan Primula seed, and, indeed, seed generally from those localities, are doubtless well acquainted with the difficulty of raising them in any quantity; some germinate freely when imported, others take some time, while a large percentage never germinate at all, even if kept in the pots for the two or more years. A great deal, we believe, depends on the length of time the seeds have been kept in India after being collected, and also a very great deal depends on the intelligence of the collector in attending to his seeds after having gathered them. If the collecting is left to natives (and we believe such is generally the case), who have but a hazy idea of the importance of keeping seeds perfectly dry when once they are collected, and also of not collecting them until they are fully ripe, all our attention and complex contrivances is so much labour in vain. One curious fact, which we have found by repeated trial, and which does not seem to coincide with your correspondent's experience, is that some Himalayan seeds are all the better for keeping, as the following will show. Seeds from India are generally received in the autumn, when a sowing is always made directly they arrive, the remainder being kept until spring, to be sown at the general time. A few of those sown in the autumn may germinate, but we find that those kept until spring germinate more freely, give a larger percentage of plants, and are generally earlier than those sown in autumn. The question of a heated *versus* a cold frame for the successful raising of those seeds is one that badly wants attention, in proof of which I have put seed-pots in four different places: six standing with their bottoms in water, in a heated frame, of these three germinated; six in a heated frame, plunged in fibre—three germinated, and the seeds of two decayed; six in a cold frame—one germinated, while the others are covered with a white fungus, and are in a fair way to decay; six were placed in the open air, exposed to the late frosts, are all in a fair way to germinate—the seeds are fresh, and at present bursting. In the case of New Zealand seeds, very eminent authorities hold the opinion that they must be frozen before they will germinate freely, and I am inclined to believe that something of this sort is required by the generality of Himalayan seeds. At any rate, we find that the more roughly they are treated the better will be the success—those sown in the open ground giving a much larger return than those sown in pits. *D.*

Eucharis amazonica Planted Out.—I wish to say a few more words on this subject, in reply to Mr. Macdonald's remarks at p. 278. He gives as his reason for objecting, and condemning this system, that he for many years grew them in pots in the stove all the year round, and only bloomed

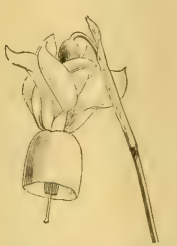


Fig. 65.—Narcissus triandrus near Calathinus.



Fig. 66.—Narcissus triandrus from Mr. Ware.



Fig. 67.—Narcissus triandrus from Mr. P. Barr.

them once a year. I do not absolutely depend on those planted out for bloom all the year round, as I have a good quantity in pots that are grown in a smaller plant stove, and that bloom twice or more in a year. The Eucharis borders here are made just under the plant tables, where nothing else could possibly be grown. The total length of bordering is 76 feet, and if this quantity of bulbs were in pots I could not find room for them; as it is, they do not take up any space to the detriment of other stove subjects, they completely hide the hot-water pipes, and form a bank of foliage from the plant table to the floor, and when in bloom have a fine effect. The withholding of water has not the effect on them of loss of foliage, as Mr. Macdonald suggests; in fact, grown in this way, I find they require very little. I can gather 200 or more blooms at a time from these, and there is not a bad coloured leaf amongst them; and from the time of their coming into bloom they generally last about a month to cut from, and seldom fail to bloom three times in the year; and I ask any one who has any unsightly places in their stoves that they wish to hide to give this system of planting out a fair trial. I am sure it will amply repay for the little trouble in making the border and planting them; and I again, after some years' experience of growing Eucharis in this way, strongly advocate this system to any one who has to supply a large demand for cut flowers. *Edward Ward, Hewell Gardens, Bromsgrove.*

The International Potato Show.—As one who has assisted Mr. McKinlay from the commencement in carrying this out, permit me to state that it is only five months since the exhibition was held, and up to the very last Mr. McKinlay was canvassing his friends for subscriptions to enable the schedule of prizes to be fully provided for. He took upon himself the sole financial responsibility, as he has done for years past. By this time all the prizes will be paid, although something like ten amounts promised as subscriptions remain as yet unpaid. I think the promptness in paying the prize-money under such difficult circumstances contrasts favourably with at least one of the large societies of London. No further exhibition will take place under the same management, Mr. McKinlay having to devote himself much closer to business in the future, owing to the illness of one of the members of his firm. But if others will undertake such an exhibition, at South Kensington or elsewhere, he will assist to the utmost of his ability those who have charge of it, and prevail upon some of his friends to offer prizes. Mr. McKinlay, in retiring from the post of active manager of the the annual Potato show, deserves the hearty thanks of all who take an interest in the "noble tuber," for he has done very much in the way of assisting its improvement, and in making it widely popular. *R. Dean, Ealing, W.*

Tomatos.—Your able correspondent, Mr. H. W. Ward, at p. 279 justly calls attention to the cultivation of Tomatos. Although no attempt is made here to supply Tomatos all the year round, every endeavour is used to meet the demand from the beginning of April to the end of November. Our system of growing Tomatos is much in accord with Mr. Ward's experience, only that we grow the earliest batch from cuttings struck in October, four cuttings being dibbled into a 48-sized pot and placed in a close warm house, where they readily strike root in about three weeks. They are afterwards placed on the greenhouse shelf, and receive no further attention beyond the necessary watering in the ordinary way until the middle of December, when they are taken from the cutting-pots, separated, and planted in boxes placed on the back shelf of the early vinery, started in the beginning of December, where they grow and fruit admirably, every attention being afterwards paid to the necessary tying, stopping, and thinning of the shoots and fruits. *J. P. Leadbetter, The Gardens, Granby Croft.*

Libonia floribunda.—This plant is an elegant, and, for winter, useful bloomer. A native of Brazil. Its scarlet-tipped yellow flowers make it a plant equally suitable for the conservatory or for room decoration, the blooms being also good for cutting, and lasting a long time in water. The plant will also flower in a young state in pots of 5 and 6 inches. When the wood is well ripened it will produce a complete sheet of bloom, and is an easy plant to manage placed out-of-doors early in summer. I have here in the conservatory plants that commenced flowering before Christmas, and which are still covered with bloom; they are in 9-inch pots, and are 3 feet high and 2½ feet in diameter. It is a general favourite with us, and is admired by all who see it. These plants were placed out under a west wall at the end of last May, and taken in on October 1, being then placed in cold pits and the greenhouse till the end of November, and then removed to a house at 60° till they come into bloom. Libonias are readily propagated by cuttings inserted in light sandy mould, the pots well drained, and the mould made quite firm. In spring half-ripened wood strikes best placed in heat. The young plants should be potted in good light loam, peat, and sand, using small pots. They must be kept close till they have made some growth, and filled the pots

with roots, then be placed out-out-doors to ripen the wood. Libonia penrhosiensis is a garden hybrid, an equally elegant plant, with much brighter flowers, requiring the same treatment as the first-named. *Wm. Smyth, Basing Park.*

Leucophytum Brownii.—This pretty grey-leaved plant, that is often seen in the marvellously perverted gardening efforts—carpet beds pegged down close to the surface of the soil—can be put, I think, to uses rather prettier than to form a batch of colour, and have the true habit of the plant so distorted. When the plant has good soil to grow in, and is permitted to develope naturally it can be readily used to clothe arches round beds or groups of beds, to cover the margins of vases and rustic baskets intended to hold flowering plants. In such positions as these the plant, although of sombre grey, is not without prettiness, and by reason of its hue it will be found to harmonise with and tone down the more decided colours. The writer saw it used with good effect in one garden, where a gardener of good taste had trained the plants round an ornamental arcade of wirework that surrounded a group of flower beds. The wire was painted of a grey colour, and under each little arch (the arches were 5 feet high) there hung an elegant vase of the same colour. It is needless to say the effect was both striking and novel. *Y.*

Pitcairnia corallina.—Amongst Bromeliads we very frequently have to lament the ephemeral duration of the flowers, while in other cases highly coloured bracts or leaves constitute the chief features of attraction, and generally last a long time in presentable condition. The species under notice is both highly curious and ornamental, on account of the singular habit of its inflorescence and the large highly coloured flowers. The peduncle, as soon as it emerges from the leaf-sheaths bends or curves abruptly down on the surface of the soil, and then curves outward sickle-fashion. The flowers are all directed to the upper side of this, and are deep crimson, margined with white, while the peduncles and bracts are also crimson. Two fine specimens are flowering in the stove at Kew, where they have been gradually expanding for weeks back. In the *Botanical Magazine*, t. 6600, is a figure of this handsome species, including flowers and foliage. The latter is 2 to 3 feet long, and several inches broad, resembling that of a Curculigo—a character for which the plant may be utilised in mixing with other stove foliage plants. *J. F.*

Double Arums.—This year a much larger percentage of double flowers of Calla æthiopica have shown than formerly. We have in the season several indifferent forms; some are perfect, blooms growing opposite to each other, others again are in the hose-in-hose form. I attribute the cause to more thorough ripening of the crowns. During the past season I had them placed in an open position in a trench, they being well attended to in regard to watering and mulching, having noticed on several occasions that Callas which were neglected in the summer-time could not be induced to grow freely and flower strongly when wanted. Few plants better repay the care and attention given them, for it is one of the showiest in foliage and flower that we have; and when a good stock is worked up there is no difficulty in having a supply of flowers nearly all the year, but the demand is the greatest at Christmas and Easter. I have several times tried to perpetuate the double flowers, but have not succeeded, although I have constantly selected the plants that bore them, but without results. Large pots will be found the best to grow them in, but for house decorating 6 to 8-inch pots will be the most effective. *A. Evans, Lythe Hill.*

The Benefits Derived from Using Gishurstine.—It is now thirteen weeks since snow set in in the north-east of England, and ever since there has scarcely been a day without it; but it reached, I think, its pitiless climax yesterday, when the train I was in got embedded in a snowdrift about five miles from Saltburn for several hours; the engine sent to relieve us got stuck fast within 200 yards of us, and was useless, and eventually we had three engines, with a body of men to dig us out. I managed to get comfortable quarters for the night, and do not feel much worse to-day from the excitement and exposure. I attribute my salvation to my boots, which I Gishurstined personally before leaving Stockton in the morning, and thus kept my feet dry through it all. Those in London can scarcely imagine the state of the country here; the shops do not open their shutters, but simply put the doors open, and business is entirely checked. *Harvey Brook.*

The Weather in Yorkshire and Derbyshire.—The month of March, up to this date (9th) will long be remembered in this part of Derbyshire for its extreme coldness. The following temperatures were registered in the kitchen garden here during the past few days:—

March 4, 7 A.M., 27° of frost.
,, 5, 7 A.M., 26° ,,
,, 6, 7 A.M., 18° ,,
,, 7, 7 A.M., 34° ,,
,, 8, 7 A.M., 26° ,,
,, 9, 7 A.M., 12° ,,

The ground is still covered with snow, from 4 to 6 inches deep. *Owen Thomas.*

—— Few of your readers in the South of England can know that we are passing at this date through a long and very severe storm in the north of Yorkshire; for this late season no one can remember anything like it. I have been at this place for nearly forty years, and I have never seen anything like it in that time. The storm has lasted nine weeks to-day with snow and frost continually, and to finish up, on March 1, 14 inches of snow fell on the level; drifts in some places were terrible. The frost up to March 7 was not severe, when we had 22°, 24°, 21°, and 23° respectively. With the snow gradually melting away, vegetables, such as Broccoli and all kinds of Greens, are much injured, almost past recovery. Farm work as well as garden work is very much behind. If we have a break in the weather at once, nothing can be done on the land for another week, and this will throw the cultivation of land very much in arrear. *William Culverwell, North Yorkshire.*

Reports of Societies.

ROYAL HORTICULTURAL: Tuesday, March 9.

THE second meeting of the Society was held as usual in the conservatory of the Royal Horticultural Society's Gardens at South Kensington. The weather was most ungenial for the withdrawal of plants from their glass protection, and deterred many who otherwise would have witnessed the real beginning of what may be designated the Narcissus season. The conservatory itself was comfortably warmed, and when the occasional gleams of yellow sunshine shot through the glass, it seemed almost like real spring instead of being one of the coldest days of the year as yet. The row of tables on one side of the conservatory provided ample space for the display of Daffodils, Cyclamens, and a few other items—mostly Orchids, Lilies, and Begonias.

Scientific Committee.

F. Du Cane Godman, Esq., in the chair.

COLLETIA HORRIDA (SPINOSA) ON C. BICTONENSIS.

Dr. Lowe exhibited specimens of a shrub of C. bictonensis with dimorphic branches, the smaller kind growing on the larger, differing from C. horrida in having the branches flattened and not rounded, as in the latter. This was also the case of the specimen exhibited at the last meeting; and Dr. Lowe raised the question whether the growth of this small form of C. bictonensis had not been mistaken for C. horrida. It is requested of persons cultivating this plant to examine them and report to the Secretary as to the frequency of the true C. horrida growing upon flattened C. bictonensis; also, if C. bictonensis with broad flat branches is ever known to grow upon a shrub of C. horrida with round branches. Specimens will be very acceptable.

MELIANTHUS MAJOR.

Dr. Lowe showed a plant completely killed by the late frost, but which was in blossom at the same perion of the year of 1885.

NEMATOID WORMS IN CUCUMBERS.

Mr. Michael gave a very interesting communication upon the great injury occurring to Cucumber plants in Cornwall. In a collection grown largely for the London market plants were continually being struck down. A careful examination of the earth proved that the source of the mischief was entirely due to these worms. On examining the sound parts of the roots where the disease was just commencing, he discovered cysts of eggs deposited in those parts, the female having burrowed more deeply into such tissues to provide food for the young ones. Mr. Murray said that he had made similar observations in conjunction with Mr. Carruthers, and they had come to precisely the same conclusion. Other animals, such as acari (Serraton rostratus), as well as Rhizobryphus, were present; but these were not the cause of injury, but only followed on the decayed condition induced by the nematoid worms. He suggested sulphur and lime should be applied round the roots, and that all affected plants should be burnt.

ORCHIDS, MONSTROUS.

Mr. O'Brien showed a specimen of Odontoglossum crispum, and Mr. Smee brought a blossom of Cœlogyne cristata; the latter was a fusion of two flowers, but one was represented solely by a labellum and a bract. They were referred to Mr. Ridley for further examination.

CAMELLIAS AND FROST.

Mr. O'Brien, commenting on the leaves sent by Hon. and Rev. Mr. Boscawen to the last meeting, remarked that he had observed exactly the same result to accrue from scorching by the sun; that the younger leaves resist it much better than the old mature leaves, though if immature they suffer to a proportionately greater degree.

CINERARIA DIMORPHIC.

Mr. F. Braby of Bushey Lodge, Teddington, sent a plant having half the flowers crimson and the other half deep mauve; it was a seedling. Mr. Lynch exhibited blossoms showing somewhat different character in the central and terminal flowers to the lateral ones, not only in being larger, but with a different disposition of the ray petals.

ABUTILON IGNEUM.

Mr. Lynch exhibited sprays of the South American species with dark purplish flowers.

Floral Committee.

Present: G. F. Wilson, Esq, in the chair; and Messrs. J. Laing, W. Bealby, Amos Perry, G. Daffield, J. Walker, H. Herbst, R. Dean, H. Ballantyne, J. Dominy, H. M. Pollett, J. O'Brien, E. Hill, J. Douglas, W. Holmes, G. Paul, A. Lendy, H. Turner, H. Cannell, T. Baines, H. Bennett.

ORCHIDS.

Taking the Orchids first, a pretty white form of Dendrobium crassinode was observed, brought by Mr. J. Salter, gr. to J. Southgate, Esq., Selborne, Streatham. It is a distinct variety, the flower white, and marked interiorly with yellow. From the same garden were the following plants:—The handsome D. nobile nobilius, bearing several well-developed spikes of rare beauty; D. heterocarpum, shown as D. h. Ellianum, a stout spike, bearing primrose-coloured flowers, the inside of the tube being of a greenish-orange, splashed with brown at the sides; and Cœlogyne cristata maxima, a showy white flower, having yellow hairs at the base of the lip—the drooping racemes of large flowers and its vigour and healthiness making it a very effective plant; the variety bears much resemblance to the Chatsworth form of the species.

From the garden of F. A. Philbrick, Esq., Oldfield (gr., Mr. Heims), there were Lælia lilacina, a supposed natural hybrid between Lælia (Cattleya) crispa and L. Perrini, collected in 1883. It differs in the labellum from L. Pilcheri, a hybrid artificially raised by Mr. Dominy (Cattleya crispa × L. Perrini), and is intermediate in the period of flowering between the two supposed parents. The scape is usually twin-flowered, the sepals and petals pale lilac, the tube white, as is also the labellum, the latter having a ray-like purple patch in the middle, the interior of the tube being marked with lines of the same colour. It is a flower of subdued but not unpleasing tints.

Mr. Clarke, Eversleigh, Herne Hill, S.E., showed Dendrobium devonianum, a long spike, well flowered, the plant being in a diminutive basket of 4 inches square.

A. H. Smee, Esq, The Grange, Wallington (gr., Mr. G. H. Cummins), showed a grand specimen of Cyrtopodium Saintlegerianum, showing two spikes of about 5 feet in height, considerably branched at the upper part, bearing great numbers of orange and brown-spotted flowers. The stems were cylindrically pressed and about 2 feet in height, and the plicately-veined leaves were just about to expand. C. Saintlegerianum bears a distinct resemblance to C. punctatum if it be not a synonym of that species. Mr. Cummins showed likewise Odontogossum maculatum bearing two strong spikes of flower, of reddish-brown and sulphur colours: it is distinct.

Messrs. F. Sander & Co., nurseries, St. Albans, showed two fine examples of Cœlogyne cristata maxima, getting a well-deserved Cultural Commendation.

Messrs. Thomson & Sons, Clovenfords, exhibited cut blooms of Dendrobium Leechianum, a somewhat coarse flower, white, suffused with a pale rose-colour, the lobate lip is rose-tipped, and with an amaranth blotch in the central portion. The column is green, with stripes of purple running towards the base. The variety was raised by Mr. W. Swan between D. nobile and D. aureum.

Messrs. J. Laing & Co., the Nurseries, Forest Hill, showed Dendrobium crassinode var. having white sepals and petals, which are tipped with carmine-rose, the lip being similarly tipped, and the base of throat of a bright golden-yellow. From the same nursery came two plants of Cattleya Lawrenceana, bearing several blooms. The plants form part of a recent importation, and showed by their renewed vigour and health that the species is by no means difficult to deal with. Cattleya Trianæ Langii, a fair sized richly coloured variety, the usual yellow stains in the throat of the flower being absent. A pretty well coloured Cattleya Trianæ Ingrami came from C. L. Ingram, Esq., Elsted, Goldalming.

Mr. W. Bull, King's Road, Chelsea, showed a small plant of Cattleya Lawrenceana, bearing one bloom; Cupania grandidens, an Aralia-like plant, with compound leaves of a deep green colour; and several plants of the so-called Bermuda Lily, Lilium longiflorum floribundum, grown in 6-inch pots. Each plant had from two to four large white blossoms open at once, thereby proving the value of the variety for early flowering in the conservatory.

CYCLAMENS, DAFFODILS, &c.

Messrs. H. Page & Sons, Grove Nursery, Teddington, showed one group of white Cyclamens, and one of mixed colours, that were excellent in every way, but few of the tubers being more than eighteen months old. The groups obtained a Silver Banksian Medal. Three new varieties were also shown, but no award was made them, although one—Advance—was a good flower for a true C. persicum.

A Silver Banksian Medal fell to the St. George's Nursery Company, Hanwell (Mr. H. B. Smith, manager), for another collection of Cyclamens of much merit; and a Bronze Banksian Medal to Mr. B. S. Williams, Victoria Nurseries, Upper Holloway, for a group of Cyclamens.

Narcissus were well shown by Messrs. Barr & Son, Covent Garden, the finest of the early section of the genus being present in the cut state. A part of the collection had been sent over from Tresco Abbey, Scilly, by Mr. Dorrien Smith (who received a Bronze Banksian Medal), the whole of which were from the open ground, and very fine they were, equalling in their tints the best of Mr. Barr's collection, which had been brought on under glass. Chionodoxa Luciliæ, Scilla sibirica, and Iris reticulata, gave the necessary amount of complementary colour to this group. A Silver Banksian Medal was awarded.

Mr. T. Ware, Hale Farm, Tottenham, showed Narcissus in pots, the best way certainly to show off the flowering abilities of the different varieties. The collection was a pretty extensive one, but being intermingled with the foliage of the plants it did not exhibit so much colour as some others. We remarked Pushkinia Libanotica compacta, pale blue striped with deeper blue; Narcissus cernuus fl. pl., a cream coloured form, the doubled portion of the flower being the corona; pansiful of hardy Cyclamens and small specimens of Rubus australis, and a panful of the dwarf orange-coloured Crocus Aucheri, the grass and flowers of which do not exceed 3 inches in height, came from this home of good hardy plants. A Silver Banksian Medal was awarded.

Messrs. Collins Brothers & Gabriel, 39, Waterloo Road, London, S.E., had a collection of cut blooms of Narcissi, also Galanthus Elwesii, Chionodoxa sardensis. The collection of Narcissus shown by them included many of the rarer kinds, as N. Graelsi, N. corbularia alba, N. c. citrina, N. capax, and N. nana. A Bronze Banksian Medal was awarded for this excellent collection.

G. F. Wilson, Esq., Weybridge, showed a potful of Galanthus imperati and one of G. Elwesii, to furnish a ready means of comparing the two, when the verdict was given decidedly in favour of G. Elwesii.

Messrs. H. Cannell & Sons, The Home of Flowers, Swanley, showed the bright winter-blooming Begonia rosea gigantea, in several specimens, well furnished with trusses of flowers. From this nursery came the old Begonia nitida and B. n. alba, both equally serviceable in the cut state as shown.

Messrs. J. Carter & Co., High Holborn, exhibited a collection of Primulas in fourteen baskets, each basket containing six to seven plants. The flowers were of various colours, and some were single, others semi-double and double. A Vote of Thanks was awarded.

CERTIFICATED PLANTS.

To Mr. B. S. Ware, for Narcissus Bulbocodium citrinus.

To Mr. H. Cummins, for Cyrtopodium Saintlegerianum.

To H. Cannell & Co., for Begonia rosea gigantea.

Fruit Committee.

Present: Dr. R. Hogg, in the chair; and Messrs. H. Veitch, G. Norman, W. Warren, J. Woodbridge, F. Rutland, J. Ellam, C. Silverlock, G. Goldsmith, P. Crowley, T. Saltmarsh, G. T. Miles, T. B. Haywood, J. Roberts, Harrison Weir, G. Bunyard, and R. D. Blackmore.

Mr. H. Mitchell, gr. to Sir G. Ellis, Bart., Aberaman House, Aberdare, South Wales, showed a very fine specimen of Pine-apple Black Prince, of about 8 lb. weight; and a seedling Apple of much the same appearance as Waltham Abbey Seedling was sent by Mr. Miller, gr., Rood Ashton Park, Wiltshire, under the name of Rood Ashton Seedling.

Messrs. J. Carter & Co., High Holborn, London, were awarded a Vote of Thanks for a collection of fruits and vegetables preserved by a process patented by them. The subjects appeared to have been coated by some wax or other substance. Among the preserved objects were Apples, Tomatos, Onions, Peas, Potatos, Mango, Capsicum, &c.

Mr. Crute showed some specimens of his hollow-bottomed garden pottery, amongst the novelties being some pots with saucers attached to be used placed in a row instead of window-boxes, each pot to be attached by cement to a plaque of ornamental character, showing outwards from the window.

BIRMINGHAM, AND MIDLAND COUNTIES GARDENERS' MUTUAL IMPROVEMENT ASSOCIATION.

WE are indebted to the courtesy of Mr. J. Hughes, Hon. Secretary of the above body, for the following report:—

The first lecture in connection with this Association was delivered on Wednesday evening, March 3, at the Society's rooms, Albert Chambers, Paradise Street, Birmingham, by A. W. Wills, Esq., F.C.S., one of the Vice-Presidents, the chair being occupied by Mr. W. B. Latham, Curator, Botanical Gardens, Edgbaston, about 120 members being present. The lecturer, who is an enthusiastic admirer of the various forms of Nature, spoke of the honour conferred upon him in being asked to deliver the first address or lecture to the members of the Association, at the same time expressing his entire sympathy with the movement. After pointing out how the principal object of the Gardeners' Mutual Improvement Society should be to stimulate its members by intercourse and study to acquire a better knowledge of the wonders of creation into contact with which they are brought by their daily work, Mr. Wills proceeded to show what are the subjects comprised in the study of botany; he pointed out that this may be made one of the most uninviting, or one of the most fascinating, pursuits, according to the manner in which it is approached, and as an illustration of one of its aspects, which lifts it into the region of poetry and romance, he chose the topic of "The Mutual Relations of Flowers and Insects," the object of the speaker being to prove how and why it is that, but for the co-existence of insects, and their services in the fertilisation of flowers, the glory and the grace of the plant world would vanish from the face of the earth, and all the myriad forms of beauty which adorn the forests of the tropics, and the moorlands, woods, and meadows of temperate regions would disappear, so that only a few tribes of plants all bearing sombre and inconspicuous flowers would survive, while all colours, and scent, and variety of form, would cease to exist. In tracing this subject, Mr. Wills dealt first with the structure of a typical and perfect flower and the functions of the parts concerned in reproduction, and then after showing how the visits of insects are the chief agency for ensuring fertilisation, proceeded to show how Nature encourages cross-fertilisation and discourages self-fertilisation by a variety of general arrangements, as well as by special contrivances, these latter reaching their climax in the structure of Orchids. The address concluded by a brief reference to the connection of this subject with that of natural selection. It was illustrated by a large number of illuminated transparencies, mostly drawn from Nature by the lecturer.

Mr. Latham, in moving a hearty vote of thanks to Mr. Wills for his able and interesting address, said he thought that he had dealt with a subject of the greatest importance to the gardening profession, more particularly to its younger members, whom he advised to try and acquire a thorough knowledge of the parts and functions of flowers. The resolution was carried unanimously, after which the Chairman drew the attention of those present to the subject of the next lecture, to be delivered by Professor Hillhouse on Wednesday evening March 17, namely, "The Scientific Value of Gardeners' Experience," which he had no doubt would be very interesting, and he hoped to see as good an attendance of members as on the present occasion. The meeting then terminated.

MANCHESTER HORTICULTURAL IMPROVEMENT.

THE INTERNAL STRUCTURE OF PLANTS. — The last meeting for the present session of this Society was held on Thursday evening, March 4, at the Memorial Hall, Albert Square, Mr. Bruce Findlay, the President, in the chair. Mr. Richard Astley exhibited to the members under the microscope a few botanical specimens. They comprised transverse sections of the Black Alder and Nutmeg trees, the Clematis Jackmani, Cocos nucifera, Lilium album, and Aristolochia.

The Chairman said there is what is termed the external structure of the plant and the internal structure or anatomy of the plant. The former included such parts and peculiarities as are discoverable by means of outward inspection, and the latter such portions or organs as are discoverable only by means of dissection: their attention was about to be called to the second part. If a plant is surveyed externally it may be perceived, even by the most inattentive observer, to be composed of the following distinct parts:—The root, the trunk, the branch, the leaf or frond, the flower, the fruit, and the seed. These are called the conservative organs, inasmuch as they are absolutely necessary to the growth and preservation of the plants, but these organs are themselves reducible to component organs which are again resolvable into constituent and primary organs. It is a lamentable fact that many gardeners do not give this subject a moment's consideration. They go about their work in a mechanical sort of way, and often deal with their plants as if they were inanimate and destitute of feeling or life; hence it is that one so frequently meets with plants in an unhealthy and sickly state. Water is poured into them daily without a moment's thought as to their requirements or organisation. How often one meets with plants suffering from chronic indigestion, which is mainly brought about by over-potting and over-watering. The roots cannot imbibe the elements by which they are surrounded, and the result is a sickly appearance, and if the supplies are not stopped the poor plant dies. We know very well what the wise doctor prescribes to his dyspeptic patient—a plain diet, and a diet that his patient can digest. Sometimes a plant is greatly benefited by a climatic change; one thing is certain, that if a plant is doing badly under a certain treatment, it is high time that a change of treatment was made; but is this always done? Not a bit of it—and why? Just because gardeners forget the important fact that they are dealing with the precious thing called life, which, unless properly tended, will die. It is to be hoped that their meetings during the past session would have the effect of making the members feel their responsibility in connection with the beautiful and perishable subjects with which they have to do, and that they should feel more than ever that their calling as professional sons of Adam is both ancient, honourable, and dignified.

A short paper treating of the internal structure of plants was then read by Mr. J. S. Butterworth. The paper included the following passages. Plants exhibit, he said, great diversity in their length of existence. Some of them live only one year, some two, and some a few years. The Elm lives 300 years, the Ivy 400, the Maple 500, the Larch 600, the Olive 800, the Lime 1100, the Oak 1500, the Cedar 2000, the Yew 3200. These figures were given by Mr. Leo H. Grindon. All plants are simply composed of cells, and the development of these cells varied in the different sections of the vegetable kingdom. The cells in the varieties of plants expand and develope in their own special manner, and performed the manifold duties they were called into life to execute. *Manchester City News.*

THE EXETER NURSERY HYACINTH EXHIBITION.

THE ninth annual show of Hyacinths at Messrs. Lucombe, Pince & Co.'s nurseries was opened on March 5, and in spite of the bitterly cold dreary season a strikingly beautiful display was made. As in former years the display was staged in the great show house, and comprised two sections. On the one hand there were the Hyacinths sent in by customers for competition, and on the other the well grown and striking collection raised by the firm. The prizes offered by the firm are similar to those of former years, viz., for groups of twelve Hyacinths, the 1st prize, two guineas; the 2d, one guinea; and the 3d, half-a-guinea. The 1st prize was awarded to the Rev. T. J. Yarde, Chudleigh (gr., Mr. Dawe), for a collection in which there was not a single weak bloom. The 2d prize was taken by a very nice collection sent in by Mr. S. Norris, Pinhoe (gr., Mr. Viney). The 3d prize fell to Mr. A. Barnett, Tiverton (gr., Mr. Sparks). Apart from the competitive exhibition there was the usual varied display of rich foliage plants, Palms, and flowering specimens, charmingly arranged, which, together with the Hyacinths, formed one of the prettiest floral pictures we have seen for a long time. The Camellia trees in the conservatory, and for which these gardens are famous, are now clustered with their beautiful flowers, and the sight is one not easily forgotten.

THE RED SPIDER, SO CALLED.

THIS creature is not a spider, but an acarus or mite, and lives exclusively upon vegetable products. In zoological classification they both belong to the class Arachnida, but the mite is in the order Trachearia, the spider in that of Pulmonaria. The function of breathing in the two orders is different. In the mite it is performed by air tubes distributed through the body, whilst in the spider the air is admitted by spiracles situated on the abdomen, and

which are lined by a membrane plaited into numerous folds, which resemble gills. On these characters is founded the sub-division of the class into pulmonary and tracheary Arachnida.

But apart from all technicalities any one with a good pocket lens might satisfy himself that the pests of gardeners differ in important particulars from the spider. The head and breast, or thorax, of the spider is connected with the abdomen by a slender cord, as in insects. It has eight eyes, and the same number of legs, besides two short arm-like projections, or palpi, with which to catch and to hold its prey. The body of the mite is not so divided; is somewhat oval in form and tapering to the head, which is terminated by a syphon or sucker, with which to extract the juices of plants. It has six legs, but by undergoing a transformation similar to insects an extra pair is not unfrequently acquired. The body is transparent, with dark vein-like ramifications along the back, which we take to be the tracheæ. The aged females only are red, which may have given rise to the popular name by which they are known. They spin webs, but not artistically as spiders do, as they seem chiefly designed for nests, or, when the workers are unmolested, convenient residences for large communities; whereas the web of the spider is not only a snug retreat in times of danger, but a base from which to

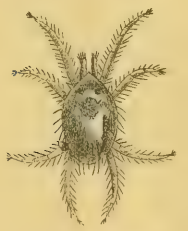


Fig. 68.—The red spider.

operate against enemies as well as a snare to entrap unwary flies or other creatures upon which it feeds. *Gardeners' Monthly.*

Obituary.

Mr. Robert Preston Ker, the senior partner in the firm of Messrs. R. P. Ker & Sons, of Barsett Street and Aigburth Nurseries, Liverpool, and one much respected by the trade generally, died on the 4th inst., at the age of seventy years. He might have been regarded as a born nurseryman, for he was a son of Andrew Ker, at that time manager of the Messrs. Dicksons' nursery at Hassendean Burn, near Hawick.

On July 18, 1816, the subject of this notice was born, and represented a third generation engaged in the nursery business. At the time of the birth of R. P. Ker, Dicksons' nursery was one of the most extensive in Scotland, and Andrew Ker's position was one of great trust and responsibility. The father of Andrew—John Ker—held the same position for forty years. The uncle of R. P. Ker—William Ker—was sent from Kew to China, and afterwards to Ceylon, where he died in 1814. Kerria (Corchorus) japonica was named after him.

At the age of fourteen R. P. Ker left Hassendean for Edinburgh, being apprenticed to Messrs. Dickson & Co., of Waterloo Place, and after serving the usual seven years' term he went to Mr. Skirving's nursery at Liverpool, whose business was then beginning to expand, both locally, in the Midland Counties, and in Ireland. In 1840 Mr. Ker was placed by Mr. Skirving in charge of the seed department, which under his supervision became considerably extended, and for a period of eighteen years, including that dreadful time known as the Potato famine, he travelled through the whole of Ireland. He also represented the firm at the Smithfield Cattle Show, held in the Carriage Bazaar, Baker Street, from the commencement of these exhibitions. In 1860, having been refused by Mr. Skirving what he thought to be a reasonable claim for a share in the business he had so much assisted to develope, Mr. Ker commenced business on his own account at Liverpool, showing great energy and determination in his endeavour to establish it. In 1870, finding it would be to his advantage to have a nursery in connection with it, that at Aigburth was commenced, and it now contains one of the best collections of trees, shrubs and plants, both hardy and tender, that it is possible to find in the trade.

Mr. Ker took a deep interest in gardeners, and was always willing to be of service to them, sympathising with their cares and struggles, and never withholding a helping hand when needful. He took a deep interest in the Gardeners' Royal Benevolent Society, was a generous donor to its funds, and a member of the committee up to his death. Local gardening and benevolent societies always found in him a staunch friend.

The remains were interred in the Toxteth Cemetery on March 8, in the presence of a large gathering of old and attached friends. He leaves three sons, two of whom have been partners in the business for some years; and two daughters. The senior partner is now Mr. Robert Wilson Ker, who is widely known, and especially to those who are in the habit of attending the Whitsun exhibition of the Manchester Horticultural and Botanical Society at Old Trafford, where the firm makes a practice of exhibiting collections of Crotons and Dracænas showing marvellous development, and groups of plants arranged for effect, the like of which is, perhaps, scarcely seen elsewhere.

The Weather.

State of the Weather at Blackheath, London, For the Week ending Wednesday, March 10, 1886.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°			In.
4	29.67	—0.22	40.2	23.4	16.8	30.7	— 9.8	24.3	75	W.; W.N.W.	0.00
5	29.12	—0.79	37.5	26.5	11.0	31.8	— 8.7	30.4	89	E.	0.00
6	29.65	—0.28	38.6	27.5	11.1	32.2	— 8.3	29.6	90	W.; N.W.; E.	0.00
7	30.06	+0.13	36.0	21.8	14.2	28.8	— 11.7	27.2	84	N.E.	0.00
8	30.22	+0.28	38.2	23.4	14.8	30.6	— 9.9	26.8	84	E.; E.S.E.	0.00
9	30.24	+0.31	39.6	23.3	16.3	31.4	— 9.1	25.5	79	E	0.00
10	30.28	+0.36	35.5	27.2	8.3	30.2	— 10.4	27.8	90	E.N.E	0.08
Mean	29.89	—0.03	37.9	24.7	13.2	30.8	— 9.7	27.4	84	variable	0.00

Mar. 4.—Fine bright day.
— 5.—Fine, dull.
— 6.—Dull day; slight fall of snow in afternoon.
— 7.—Fine, bright, cold day.
— 8.—Very fine.
— 9.—Very fine.
— 10.—Very fine generally; overcast at times.

London: *Atmospheric Pressure.*—During the week ending March 6, the reading of the barometer at the level of the sea decreased from 30.25 inches at the beginning of the week to 29.31 inches by 9 A.M., increased to 29.33 inches by 1 P.M., and decreased to 29.27 inches by 5 P.M. on the 2d, decreased to 29.89 inches by 9 A.M. on the 4th, and was 29.85 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.63 inches, being 0.61 inch lower than last week, and 0.42 inch lower than the average of the week.

Temperature.—The highest temperature in the shade in the week was 40°.2, on March 4; on February 28 the highest was 31°.7. The mean of the seven high day temperatures was 36°.3.

The lowest temperature was 23°.4, on March 4; on the 2d the lowest was 32°. The mean of the seven low night temperatures was 27°.8.

The greatest range of temperature in one day was 16°.8, on the 4th; the smallest, on February 28, was 3°.7. The mean of the seven daily ranges was 8°.5.

The mean temperatures were, on February 28, 29°.8; on March 1, 30°.5; on the 2d, 35°.2; on the 3d, 30°.9; on the 4th, 30°.7; on the 5th, 31°.8; and on the 6th, 32°.2; and these were all below their averages by 10°.3, 9°.8, 5°.2, 9°.6, 9°.8, 8°.7, and 8°.3 respectively.

The mean temperature of the week was 31°.6, being 0°.2 lower than last week, and 8°.8 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 84°.6, on March 4. The mean of the seven readings was 64°.7.

The lowest reading of a minimum thermometer placed on grass was 23°.9, on the 4th. The mean of the seven readings was 26°.4.

Rain.—Rain fell on two days, to the amount of 0.27 inch.

England: *Temperature.*—During the week ending March 6, the highest temperatures were 52° at Truro, 50° at Plymouth, 43°.6 at Cambridge; the highest at Bradford was 37°.2: at Liverpool 37°.3, at Wolverhampton 37°.9. The general mean was 41°.

The lowest temperatures were 18° at Sheffield, 20°.5 at Wolverhampton, 21.°2 at Liverpool; the lowest at Leeds was 28°, at Truro, Prestoh, and Newcastle 27° The general mean was 24°.3.

The greatest ranges were 25°.6 at Plymouth, 25° at Truro, 20° at Sheffield; the least ranges were 10°.6 at Bradford, 12° at Leeds, Preston, and Newcastle. The general mean was 16°.7.

The mean of the seven high day temperatures was highest at Truro, 44°.4, at Plymouth 42°.5, at Bristol 38°.6; and was lowest at Bradford, 34°.9, at Wolverhampton, Sheffield, and Liverpool 35°.3. The general mean was 37°.4.

The mean of the seven low night temperatures was highest at Truro, 34°.4, at Plymouth 31°.1, at Leeds 29°.5; and was lowest at Wolverhampton, 23°.8, at Sheffield 26°.8, at Nottingham 27°.3. The general mean was 28°.6.

The mean daily range was greatest at Wolverhampton, 11°.5, at Plymouth 11°.4, at Truro 10°; and was least at Bradford, 6°.4, at Newcastle 7°, at Liverpool 7°.5 The general mean was 8°.8

The mean temperature was highest at Truro, 38°.7, at Plymouth 36°.1, at Bristol 33°; and was lowest at Wolverhampton, 28°.8, at Sheffield 30°.3, at Liverpool 30°.9. The general mean was 32°.3.

Rain.—The largest falls were 1.40 inch at Bradford, 1.33 inch at Truro, 1.09 inch at Leeds; the smallest falls were 0.27 inch at Blackheath, 0.32 inch at Preston, 0.41 inch at Wolverhampton. The general mean fall was 0.75 inch.

Scotland: *Temperature.*—During the week ending March 6 the highest temperature was 46°.9, at Perth; at Edinburgh the highest was 39°.5. The general mean was 42°.3.

The lowest temperature in the week was 21°.2, at Perth; at Leith the lowest temperature was 27°.1. The general mean was 24°.2.

The mean temperature was highest at Paisley, 33°.6; and lowest at Dundee, 31°.4. The general mean was 32°.3.

Rain.—The largest fall was 0.70 inch, at Dundee; the smallest fall was 0.27 inch, at Leith. The general mean was 0.40 inch. No rain fell at Glasgow.

James Glaisher, F.R.S.

Summary of Temperature, Rainfall, and Duration of Bright Sunshine in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, March 8, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been considerably brighter than of late, excepting on the north-west of Scotland. Very little rain or snow was experienced generally, but as the period commenced heavy snow was falling over Scotland and the northern counties of England, and at the close of the week some rather large amounts of rain were measured on our extreme south-west coasts.

Temperature has continued extremely low in all parts of the kingdom, the deficit ranging from 7° or 8° in Ireland and Scotland, to 9° or 10° in nearly all the English districts. The maxima, which were recorded on irregular dates, ranged from 42° in "England, N.E.," and "England, N.W.," to 47° in "Ireland, S." The lowest of the minima, which were registered on the 4th in Ireland, and on the 7th

or 8th at the English and Scotch stations, were abnormally low for the season. At Tean, Stoke-on-Trent, the sheltered thermometer fell to 7°, at Worksop to 8°, at Newton Reigny to 10°, and at Bawtrey to 11°, while in most other of the more central parts of England, and also in "Ireland, S.," readings below 20° were registered. Thermometers exposed on the grass fell several degrees lower than the readings quoted: thus at Newton Reigny a reading of 2° was recorded, while at Worksop an instrument exposed on the snow descended to —5°. At some of our north-western stations the mean temperature for the week was lower than at any time during the winter.

The rainfall has been more than the mean in the "Channel Islands," but less in nearly all other districts.

Bright sunshine shows a decided increase, excepting in the extreme north, the percentages of the possible duration ranging from 21 in "Scotland, N., to 38 in "England, N.W.," and 43 in "Ireland, S."

Depressions observed.—At the commencement of the period the depression which appeared on our south-west coasts towards the end of last week was observed over the east of England, whence it travelled east-south-eastwards to the Netherlands, and finally disappeared in an east-north-easterly direction. Fresh to strong northerly winds were experienced over our islands in the rear of this disturbance during the 2d and 3d, but by the fourth they had fallen light, and in the northern districts westerly breezes had appeared. The next depression which reached our neighbourhood lay at 8 A.M. on the 5th, near the Scilly Islands, whence it moved east-south-eastwards over France and disappeared over the Mediterranean. This depression brought easterly and north-easterly winds to most of our coasts, and in the south they blew with the force of a gale. At the close of the period other depressions were approaching our western coasts from the Atlantic and the wind was blowing strongly from the south eastward.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that in pursuance of the new telegraph regulations our Registered Telegraphic Address is* "GARDCHRON, LONDON," GARDCHRON *being written as one word. Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

A WORK ON BRITISH FERNS: *A. B. S.* The *Handbook of British Ferns*, by Thomas Moore, of the Botanic Garden, Chelsea.

CAMELLIAS PLANTED OUT, AND CULTURE OF THE SAME: *W. Abrey.* You will find *Choice Stove and Greenhouse Plants* the best, by B. S. Williams; published by him at Paradise Nurseries, Holloway, price 7*s.* 6*d.*

ERRATA.—In the article on "Extraordinary Tithe," p. 307, col. 2, instead of "the tenth pocket of Hops," read "the tenth bill of poles;" and on the second line from the bottom of the same column, for "farmer" read "parson."

DOUBLE CYCLAMEN: *Florence.* Not at all uncommon here.

NAMES OF PLANTS: *T. B.* 1, Nephrodium molle; 2, one of the many forms of Pteris serrulata cristata, and not a very good one; 3, Pleopeltis Billardieri—broad form, called lepidopodum; 4, Doryopteris palmata; 5, Selaginella Martensii; 6, Nephrolepis tuberosa.—*R. M.* Odontoglossum Lindleyanum.—*Robt. Grindrod.* Cattleya Trianæ delicata. — *W. W.* 1, Pinus Laricio, var Pallasiana; 2, Aloe variegata. — *Alfred Walker.* Oncidium pubes.—*C. M. O.* Ilex Perado. —*F. Rogers.* Picea polita.

PRESTON AND FULWOOD HORTICULTURAL SOCIETY. —Our correspondent states that Mr. A. Waters is gardener to J. Eccles, Esq., Farington House, near Preston, and not to the Misses Farrington, Worden Hall, as stated last week at p. 307.

ROSES: *W. G.* If these are still in the ground, and are not very aged, you may expect bloom from them, even though they should be transplanted when the weather breaks. Use care in taking the bushes out of the ground, shorten back the longer roots, and plant in rich soil; but do not place, as some do, rank manure directly on the roots, and do not let the plants lay about before planting. Shorten back the head a little, but prune finally in April, when the weather has got mild.

SHRUB POISONOUS TO CATTLE: *R. Bethune.* It is Cupressus Lawsoniana, and is not poisonous. It has a disagreeable taste and smell, which we should suppose would make it distasteful to them.

WHITE CHRYSANTHEMUM MRS. C. CARY: *T. S. W.* That this variety should have continued to produce blooms in quantity ever since Christmas last is an unusual circumstance. The blooms are fairly good, and the sort is worth growing by any one who admires these now somewhat unseasonable flowers.

INTELLIGENT READERS, PLEASE NOTE. — *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

SAMUEL SHEPPERSON, Belper—Florists' Flowers, Choice Seeds, &c.

J. BRECK & SONS, Boston, Mass., U.S.A.—Garden, Field, and Flower Seeds.

WAITE, NASH & CO., 79, Southwark Street, London, S.E.—Wholesale Catalogue of Seeds, &c.

JAMES DICKSON & SONS, 108, Eastgate Street, Chester —Farm Seeds.

COMMUNICATIONS RECEIVED.—Professor Henriques, Coimbra. —J. T. B.—G. H.—C. M. O.—W. B.—H. H. D'O.—Professor Lange, Copenhagen.—A. W. A., Natal.—F. Sander & Co.—B. Stein, Breslau—J. M.—R. A. R.—W. Kettlewell. —R. P.—G. Schneider.—C. B. P.—C. O.—J. G. B.— E. J. C.—G. S.—Strebor.—D. M.—Sir T. Lawrence.—J. R. J.—W. W —W. S. M.—Dr. Brandis, Bon.—J., B.

Markets.

COVENT GARDEN, March 11.

MARKET very dull. Prices lower all round, Grapes alone maintaining their value. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0– 4 0		Lemons, per case	8 0–10 0	
— Canadian, barrl.	10 0–14 0		Pine-apples, Eng., lb.	1 0– ..	
Grapes, per lb	3 0– 8 0		— St. Michael, each	2 6– 8 0	
Kent Cobs, 100 lb.	35 0– ..				

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0– ..		Mustard and Cress, do.	4– ..	
Asparagus, Eng., 100	0 0– ..		Onions, per bushel	5 0– ..	
— French, bundle	18 0–25 0		Parsley, dozen bunch	2 0– 3 0	
Beans, Kidney, lb	4 0– ..		Parsnips, per do.	1 0– ..	
Beet, red, per dozen	1 0– 2 0		Potatos, per cwt	4 0– 5 0	
Broccoli Sprts., bush.	6 0– ..		,, kidney, per cwt	4 0– 5 0	
Carrots, per bunch	0 6– ..		Salsafy, per bundle	0 3– ..	
Cauliflowers, per doz.	3 0– 4 0		Savoys, per dozen	3 0– 5 0	
Celeriac, per root	0 4– ..		Scorzonera, bundle	1 0– ..	
Celery, per bundle	1 6– 2 0		Seakale, punnet	2 6– ..	
Coleworts, doz. bunch	8 0– ..		Shallots, per pound	0 3– 0 9	
Cucumbers, each	1 0– 1 6		Spinach, per bushel	4 0– 6 0	
Endive, per dozen	1 0– 2 0		Sprouts, per pound	0 9– ..	
Herbs, per bunch	0 4– ..		Sprue Asparagus, per bundle	1 0– ..	
Leeks, per bunch	0 0– ..		Tomatos, per lb.	1 6– 2 6	
Lettuce, per dozen	1 0– 1 6		Turnips, bunch	0 6– ..	
Mint, green, bunch	1 0– ..				
Mushrooms, punnet	1 0– 1 6				

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0–18 0		Ferns, in variety, per dozen	4 0–18 0	
Arum Lilies, dozen	9 0–12 0		Foliage Plants, various, each	1 0–10 0	
Azaleas, per doz.	24 0–42 0		Genistas, per dozen	10 0–15 0	
Begonias, per dozen	6 0–12 0		Hyacinths, per doz.	6 0– 9 0	
Bouvardias, doz.	12 0–18 0		Lilies in clumps, or pots, per dozen	18 0 30 0	
Cinerarias, per doz.	10 0–12 0		Marguerite Daisy, per dozen	8 0–12 0	
Cyclamen, 12 pots	12 0–24 0		Myrtles, per dozen	6 0–12 0	
Cyperus, per dozen	4 0–12 0		Palms in var., each	2 6–21 0	
Daffodils, per dozen	9 0–12 0		Pelargoniums, scarlet, per dozen	6 0– 9 0	
Dracæna terminalis, per dozen	30 0–60 0		Primulas, single, 12 pots	4 0– 6 0	
— viridis, per doz.	12 0–24 0		Solanums, per dozen	8 0–12 0	
Ericas, various, per dozen	12 0–24 0		Spiræa, per dozen	12 0–15 0	
Euonymus, in var., per dozen	6 0–18 0		Tulipa, 12 pots	6 0– 9 0	
Evergreens, in var., per dozen	6 0–24 0				
Ficus elastica, each	1 6– 7 0				

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0– 1 6		Lily-of-the-Valley, 12 sprays	0 9– 1 6	
Anemone, French, 12 bunches	3 0– 6 0		Marguerites, 12 bun.	6 0–12 0	
Arum Lilies, 12 blms.	4 0– 8 0		Mignonette, 12 bun.	4 0– 9 0	
Azaleas, 12 sprays	0 6– 1 0		Pelargoniums, per 12 trusses	1 0– 1 6	
Bouvardias, per bun.	0 6– 1 0		— scariet, 12 trusses	0 9– 1 0	
Camellias, 12 blms.	2 0– 6 0		Primulas, double, per bunch	1 0– 1 6	
Carnations, 12 blms.	1 0– 3 0		— single, per bunch	0 4– 0 6	
Chrysanth., 12 blms.	2 0– 4 0		Roses (indoor), doz.	3 0– 9 0	
— 12 bunches	9 0–18 0		— Tea, per dozen	2 0– 3 6	
Cyclamens, doz. blms.	0 4– 0 6		— red, French, doz.	2 0– 4 0	
Daffodils, per bunch	0 6– 1 6		Snowdrops, 12 bun.	1 6– 3 0	
Epiphyllums, 12 blms.	0 6– 1 0		Tropæolums, 12 bun.	2 0– 3 0	
Eucharis, per dozen	4 0– 6 0		Tuberoses, 12 blms.	2 0– 3 0	
Gardenias, 12 blooms	6 0–18 0		Tulips, doz. blooms	0 9– 1 0	
Hyacinths, Rom, 12 sprays	0 6– 1 0		Violets, 12 bunches	1 0– 1 6	
Lapageria, red, 12 blooms	1 0– 2 0		— Czar, Fr., bunch	1 6– 2 6	
Lilac, French, bunch	2 0– 7 0		— Parme, French, per bunch	4 0– 6 0	

SEEDS.

LONDON: *March* 10.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., write that there was a fair attendance on the seed market to-day. The protracted winter restricts and postpones the usual spring demand for Clover seeds, &c. Meantime values all round continue steady at the moderate range characteristic of this season. The offerings of home-grown red Clover exceed expectations. Unprecedentedly low figures still prevail for Trefoil. Alsike and white Clover remain firm. There is no quotable variation in either perennial or Italian Rye-grasses; both varieties are in better demand. Feeding Linseed is steady. Hemp continues exceedingly cheap. Canary seed quiet. Owing to the cold weather the trade for blue boiling Peas is daily increasing.

CORN.

MARK LANE: *March* 8.—An advance of 6*d.* to 1*s.* had to be paid for English red Wheat. Among imported descriptions Russian Wheats have risen most, and are 1*s.* dearer; Australian, 6*d.*; Indian hardly as much. The flour trade moved rather slowly, but 6*d.* per sack more was realised occasionally. Grinding Barley was the turn dearer. Beans and Peas were unchanged. Oats were firm, with a fair demand at 6*d.* over the rates of Monday last.

March 10.—The trade, whilst firm, was quiet. Both English and foreign Wheats were fully as dear as on Monday, though sales were very moderate. Flour sold in small quantities at firm value. Barley was fully steady. Oats were firm, with a steady sale. Beans and Peas unaltered.

Average prices of corn for the week ending March 13: —Wheat, 29*s.*; Barley, 28*s.* 1*d.*; Oats, 19*s.* 5*d.* For the corresponding period last year:—Wheat, 31*s.* 8*d.*; Barley, 31*s.* 3*d.*; Oats, 20*s.* 8*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *March* 10.—Good trade at fair prices. Supplies moderate. Quotations:—Apples, 3*s.* to 6*s.* per bushel; Savoys, 8*s.* to 14*s.* per tally; bunch Greens, 6*s.* to 8*s.* per dozen bunches; do. Turnips, 3*s.* to 4*s.* 6*d.* do.; do. Carrots, 2*s.* to 2*s.* 6*d.* do.: do. Parsley, 1*s.* 6*d.* to 2*s.* 6*d.* do.; do. Celery, 8*s.* to 14*s.* do.; Beetroot, 6*d.* to 9*d.* per dozen; Spinach, 3*s.* 6*d.* to 4*s.* per sieve; Brussels Sprouts, 4*s.* to 6*s.* do.; Sprouting Broccoli, 3*s.* 6*d.* to 5*s.* do.; Cauliflowers, 3*s.* to 4*s.* per dozen; Onions, 5*s.* to 6*s.* 6*d.* per cwt.; Carrots, 18*s.* to 40*s.* per ton; Mangels, 17*s.* 6*d.* to 21*s.* do.; Swede Turnips, 15*s.* to 25*s.* do.; white do., 30*s.* to 60*s.* do.

STRATFORD: *March* 9.—With a fair supply a good trade has been done during the past week at the following prices:—Savoys, 10*s.* to 12*s.* per tally; bunch Greens, 3*s.* 6*d.* to 6*s.* per dozen bundles; Broccoli, 4*s.* 6*d.* to 5*s.* per sieve; Mangels, 21*s.* to 23*s.* per ton; Swedes, 23*s.* to 24*s.* do.; Turnips, 45*s.* to 55*s.* do.; Onions, 80*s.* to 100*s.* do.; do. pickling, 70*s.* do; Carrots, cattle feeding, 20*s.* to 25*s.* do.; do. household, 35*s.* to 45*s.* do.; Apples, 2*s.* 6*d.* to 4*s.* per bushel; Celery, 10*d.* per roll; Horseradish, 1*s.* to 1*s.* 3*d.* per bunch; Rhubarb, 2*s.* to 2*s.* 6*d.* per dozen; Parsnips, 9*d.* do.

POTATOS.

BOROUGH AND SPITALFIELDS: *March* 9.—The supplies were not large, but they appeared quite adequate to the demand, and prices were not materially altered; best qualities are, however, rather dearer. Quotations:—Regents, 60*s.* to 110*s.*; Magnum Bonums, 50*s.* to 90*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *March* 10.—Trade dull, except for first-class samples. Quotations:—Magnums, 50*s.* to 75*s.*; Regents, 55*s.* to 70*s.*; Victorias, 55*s.* to 65*s.*; and Champions, 45*s.* to 60*s.* per ton.

STRATFORD: *March* 9.—Quotations:—Magnums, 65*s.* to 70*s.*; Regents, 45*s.* to 55*s.*; Early Rose (seed), 110*s.* per ton.

Imports.—The imports into London last week consisted of 993 bags from Hamburg, 140 from Boulogne 49 from Gothenburg, and 2 boxes from Malta.

HAY.

WHITECHAPEL: *March* 9.—With good supplies, a fair inquiry prevailed for best qualities of hay and Clover, the latter bringing higher prices. Quotations:—Clover, prime, 87*s.* to 104*s.*; inferior, 70*s.* to 86*s.*; hay, prime, 72*s.* to 90*s.*; inferior, 50*s.* to 65*s.* and straw, 25*s.* to 35*s.* per load.

March 11.—A good supply was on offer. There was a brisk trade, and prices were dearer for Clover. Prime Clover, 95*s.* to 104*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 60*s.* to 90*s.*; inferior, 40*s.* to 60*s.*; and straw, 28*s.* to 35*s.* per load.

CUMBERLAND (Regent's Park): *March* 9.—A fair supply, with a rather brisker trade for meadow hay. Quotations:—Clover, best, 90*s.* to 100*s.*; second, 70*s.* to 90*s.*; hay, best, 75*s.* to 85*s.*; seconds, 65*s.* to 70*s.*; and straw, 28*s.* to 34*s.* per load.

STRATFORD: *March* 9.—Hay, 70*s.* to 80*s.*; Clover, 80*s.* to 100*s.*; and straw, 50*s.* to 70*s.* per load.

Government Stock.—Consols closed on Monday and Tuesday at 101 to 101⅛ for delivery, and 101⅛ to 101⅛ for the account. The final quotations of Wednesday and Thursday were 100⅞ to 101 for delivery, and 100⅞ to 101⅛ for the account.

STANDEN'S MANURE.

ESTABLISHED OVER 20 YEARS.

THIS OLD-ESTABLISHED MANURE is acknowledged by most of the leading practical Gardeners in the United Kingdom and the Colonies to exceed all others in general fertilising properties and staying powers. It promotes a rapid, healthy, and robust growth in plants generally. It is a clean and dry powder, with very little smell, which renders it particularly adaptable for ladies interested in plant culture.

The highly fertilising properties of this Manure render its money value, in comparison with other manures, at least double, as users will find that very small quantities will produce favourable and lasting results.

Sold in TINS, 1s., 2s. 6d., 5s. 6d., and 10s. 6d. each; and in KEGS, at reduced prices, 28 lb, 12s. 6d.; 56 lb, 23s.; 112 lb., 42s. each.

May be obtained from all Nurserymen and Seedsmen in the United Kingdom and the Colonies.

SOLE MANUFACTURERS:

CORRY, SOPER, FOWLER & CO.
(LIMITED),
18, FINSBURY STREET, LONDON, E.C.

J. JENSEN & CO.'S NORWEGIAN FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash.		Herring and Potash.	
Per Cent.			Per Cent.
7.0	Ammonia		8.30
20.0	Phosphates		9.0
15.0	Potash		15.0
10.0	Magnesia		10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.
IN TINS.—2 lb. for 1s.; *and*
IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6d.; 56 lb., 10s. 6d.; 1¾ cwt., 20s.; 2 cwt., 30s. Bags free.

☞ Apply to all Nurserymen and Florists, or to
J. JENSEN & CO.,
10, ST. HELEN'S PLACE, LONDON, E.C.

PAINE'S PATENT VENTILATING GEAR.
Any number of Ventilators can be worked with a child's strength, by one regulating wheel, to any adjustment. 30,000 feet of this gearing has been fixed up to the present time. Never fails to give satisfaction.
Full particulars and testimonials obtained of
G. PAINE, Broadwater, Worthing.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.
4*d.* per bushel; 100 for 25*s.*; truck (loose, about 2 tons), 40*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks 25*s.*; sacks, 4*d.* each.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* per half ton, 26*s.* per ton in 2-bushel bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—**H. G. SMYTH**, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

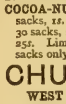
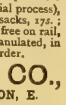
PEAT.—Finest quality Hampshire Brown Fibrous, 11*s.* per yard, in trucks free on rail in London. Special for Orchids.
YELLOW FIBROUS LOAM, 15*s.* per ton.
COCOA-NUT FIBRE REFUSE, bags, 1*s.* each; 30 bags, 22*s.*; trucks free on rail, 22*s.* Special quotations for large quantities.
ROLL TOBACCO CLOTH and PAPER, best quality.
Samples and prices from
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NATIVE GUANO, price £3 10*s.* per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4*s.* per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5*s.*
Extracts from Tenth Annual Collection of Reports —Native Guano for Potatoes.—H. S. EASTY, Great Totham, Essex:—"Used for Potatos. Good. Consider this manure about the best for Potatos. Very economical. Took about twenty prizes." Native Guano for Vegetables and Fruit Trees.—J. SMITH, Head Gardener to the Right Hon. Lord Rosebery:—"Used for Pears, Onions, Lettuces, Cabbages, Potatos, Turnips, and Fruit Trees. Onions a splendid crop. Other crops most satisfactory." Native Guano for Vines, Roses, Strawberries, Pot Plants, &c.—J. TOWNSEND, Florist, Putney:—"Used for Celery, Roses, Cucumbers, Tomatos, Chrysanthemums, Pelargoniums, Fuchsias, &c. Excellent results. Best and safest manure I have tried." D. WILLIAMS, Gardener to Lord Wimborne:—"Used for Vines, Strawberries in pots, Peaches, Asparagus, Onions, &c. Very good on all kinds tried." A. F. BARRON, Royal Horticultural Society, Chiswick:—"Without doubt a very valuable manure, and easy of application."—Orders to THE NATIVE GUANO CO. (Limited), 29, New Bridge Street, Blackfriars, London, E.C., where Pamphlets of Testimonials may be obtained.

SALT for MANURE and DESTROYING WEEDS, in any quantities.
Prices, &c., on application.
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GENUINE GARDEN REQUISITES, as supplied to the Royal Gardens.

FRESH COCOA-NUT FIBRE REFUSE, 4-bushel Bags, 1*s.* each; 50 for 20*s.*—bags included; 1-ton Truck, free on Rail, 25*s.* BEST BROWN FIBROUS KENT PEAT, 5*s.* per Sack; 5 for 22*s.* 6*d.*; 10 for 35*s.*; 20 for 60*s.* BEST BLACK FIBROUS PEAT, 4*s.* 6*d.* per Sack; 5 for 20*s.*; 10 for 30*s.* COARSE BEDFORD SAND, 1*s.* 6*d.* per Bushel; 14*s.* per ½ Ton; 25*s.* per Ton. SPECIALITE TOBACCO PAPER, 10*d.* per lb.; 28 lb., 21*s.*; cwt., 70*s.* FINEST TOBACCO CLOTH, 8*d.* per lb.; 28 lb. for 18*s.* LEAF-MOULD, 5*s.* per Sack. PEAT MOULD, 4*s.* per Sack. YELLOW FIBROUS LOAM, 3*s.* per Sack. CHARCOAL, 2*s.* 6*d.* per Bushel; Sacks, 4*d.* each. MOSSES, GUANO, SPHAGNUM, &c. LIST Free. Special Prices to the Trade for Cash.
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GARDEN REQUISITES.

TWO PRIZE MEDALS.
Quality, THE BEST in the Market. (All sacks included.)
PEAT, best brown fibrous .. 4*s.* 6*d.* per sack; 5 sacks for 20*s.*
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PEAT, extra selected Orchid 5*s.* 6*d.* ,,
LOAM, best yellow fibrous .. } 1*s.* per bush., sacks included).
PREPARED COMPOST, best }
LEAF MOULD, best only .. }
PEAT MOULD, ,, }
SILVER SAND, coarse, 1*s.* 3*d.* per bush., 12*s.* half ton, 22*s.* ton.
RAFFIA FIBRE, best only .. .. .. 1*s.* per lb.
TOBACCO CLOTH, finest imported .. 8*d.* lb., 28 lb. 18*s.*
TOBACCO PAPER, ,, (Specialité) 8*d.* lb., 28 lb. 18*s.*
MUSHROOM SPAWN, finest Villtruck .. 5*s.* per bushel.
SPHAGNUM MOSS, all selected, 2*s.* per bush., 6*s.* per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1*s.* each; 10 sacks, 9*s.*; 15 sacks, 13*s.*; 20 sacks, 17*s.*; 30 sacks, 25*s.*; 40 sacks, 30*s.* Truck-load, loose, free on rail, 25*s.* Limited quantities of G., special quality, granulated, in sacks only, 2*s.* each. Terms, strictly Cash with order.

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Effectually clears all **Insects** and **Parasites** from the Roots or Foliage of Trees and Plants. Kills all Vegetable Grubs, Turnip Fly, &c. Cures Mildew and Blight. Clears Grapes from Mealy Bug, &c., and makes a good Winter Dressing. Of all Seedsmen and Chemists, 1*s.* 6*d.*, 2*s.* 6*d.*, and 4*s.* 6*d.* a bottle, per post 3*d.* extra. Per gallon, 10*s.*, or less in larger quantities.
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Wholesale from HOOPER & CO.; CORRY, SOPER, FOWLER & CO.; C. E. OSMAN & CO., and all the London Seed Merchants and Wholesale Patent Medicine Houses.

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Roll Tobacco Paper and Cloth (English)

For Fumigating, is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb., 10*s.*; 28 lb., 20*s.*; carriage paid to London or any railway station in Kent: 2¾ lb., 2*s.* 6*d.*; 4¼ lb., 4*s.*; 6 lb., 5*s.*; 6¾ lb., 5*s.* 6*d.*; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest Tobacco Paper and Cloth (imported), 14 lb., 8*s.* 6*d.*; 28 lb., 16*s.* **Trade Inquiries Solicited.**
MANUFACTURERS, MERCHANTS, and IMPORTERS,
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Post-office Orders, &c.—DARLINGTON BROS., Chatham.

PURE WOOD CHARCOAL
FOR
VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES,
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GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.*

GISHURSTINE keeps Boots dry and soft on wet ground. Boxes, 6*d.* and 1*s.*, from the Trade. Wholesale from PRICE'S PATENT CANDLE COMPANY (Limited), London.

EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½*d.* per yard; 4 yards wide, 3*d.* per yard; or 2 yards wide, 10*s.* per 100; 4 yards wide, 20*s.* per 100 yards. New TWINE NETTING, 1 yard wide, 2*d.* per yard; 2 yards wide, 4*d.* per yard; 4 yards wide, 8*d.* per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7*d.* per yard run.
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GREENHOUSE and FRUIT TREE SHADINGS, GARDEN NETTING.

RUSSIA MATS, RAFFIA FIBRE, SACKS and BAGS.
At remarkably low prices.
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J. BLACKBURN and SONS are offering Archangel MATS lower than any other house in the Trade. Also Petersburg MATS and MAT BAGS, RAFFIA FIBRE, TOBACCO PAPER, and Shading Materials. Prices free on application.—4 and 5, Wormwood Street, London, E.C.

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NEPTUNE WORKS MANCHESTER.
COTTON WOOL and WADDING for Florists and Nurserymen.
THE TRADE SUPPLIED.

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S. A. SANDS
(Successor to J. W. HAYTHORN),
Manufacturer of Hexagon and Chiswick GARDEN NETS.
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IRISH DAMASK TABLE AND CAMBRIC AND HOUSE LINENS, POCKET HANDKERCHIEFS.



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IRISH LINENS.—Real Irish Linen Sheeting, fully bleached, 2 yards wide 1*s.* 11*d.* per yard; 2½ yards wide, 2*s.* 4½*d.* per yard (the most durable article made, and far superior to any foreign manufactured goods). Roller Towelling, 18 inches wide, 3½*d.* per yard. Surplice Linen, 8½*d.* per yard. Linen Dusters, 3*s.* 3*d.*; Glass Cloths, 4*s.* 6*d.* per dozen. Fine Linens and Linen Diaper, 10*d.* per yard. Samples, post-free.

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FROM

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_____ 1886.

Please send me "THE GARDENERS' CHRONICLE" *for* _____ *Months, commencing* _____, *for which I enclose P.O.O.* _____.

Please Note that all Copies Sent Direct from this Office must be paid for in advance.

THE UNITED KINGDOM:—12 Months, £1 3*s.* 10*d.*; 6 Months, 11*s.* 11*d.*; 3 Months, 6*s.*; Post-free.
FOREIGN SUBSCRIPTIONS (excepting India and China):—Including Postage, £1 6*s.* for Twelve Months. India and China, £1 8*s.* 2*d.*

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Cheques should be crossed "DRUMMOND."

G. C., March 13, 1886.

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HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.
(Registered Trade Mark.)



This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in Casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom

UNSOLICITED TESTIMONIAL.

"*Pierceield Park, June* 21, 1876.—Sirs, I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Pierceield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX"

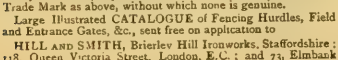
CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.





GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

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Agents for LOOKER'S PATENT "ACME" FRAMES, PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price LISTS Free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheet of Plain or more elaborate Design, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.
See Addresses above.

SILVER SAND, fine or coarse grain as desired. Price, by post, per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

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N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

HORTICULTURAL GLASS

14 × 12	20 × 15
16 × 12	20 × 16
18 × 12	22 × 16
20 × 12	24 × 16
16 × 14	20 × 18
18 × 14	22 × 18
20 × 14	24 × 18

21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.

A large stock of similar current sizes of 16-oz. glass in 200 feet boxes.

Propagating and Cucumber Glasses, and all Miscellaneous Glass Articles, can be obtained from

GEORGE FARMILOE & SONS,
GLASS, LEAD, OIL and COLOUR MERCHANTS.
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Stock List and Prices on application. Quote *Chronicle.*

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For Glass, Slates, or Hand-glass, or for the protection of all &c., from the weather, pests.

other Material, to form series of Hand-glasses, kinds of plants, flowers, and all kinds of garden

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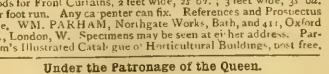
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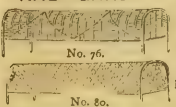
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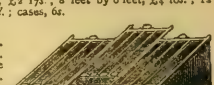


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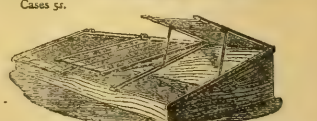
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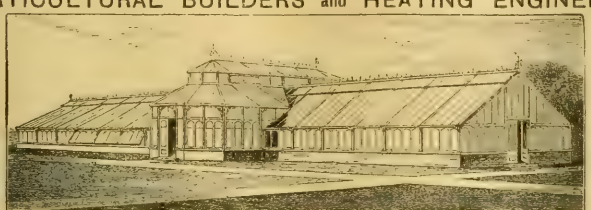
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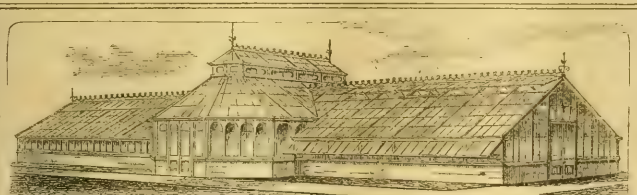
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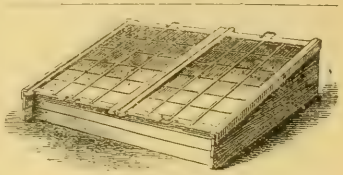
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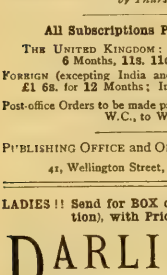
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GARDENER (HEAD); age 28.—Mr. MITCHELL, Head Gardener to Sir George Elliot, Bart., desires with the strictest confidence to recommend his Foreman (T. Tebby), who has completed his three and a half years in charge here, and has proved himself capable of taking a good place of trust. Thoroughly practical in Pines, Vines, Stove and Greenhouse Plants, and Flower and Kitchen Gardens.—Apply to above, or to W. LITTLE, Esq., Estate Agent, Aberaman Park, Aberdare, who will give satisfaction as to ability and character.

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FOREMAN; age 29.—J. FRANCIS, Gardener to R. G. Allan, Esq., Rosemont, Aigburth, near Liverpool, will be pleased to recommend W. Davies to any Gardener requiring a good practical and trustworthy man as above. Fifteen years' experience in first-class establishments. Abstainer.

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JOURNEYMAN, in the Houses in a good establishment.—Age 22; seven years experience. Good references.—J. GREGORY, Mickleover, near Derby.

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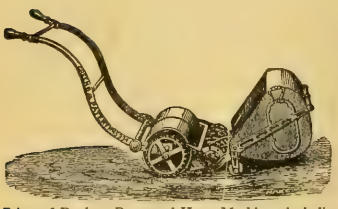
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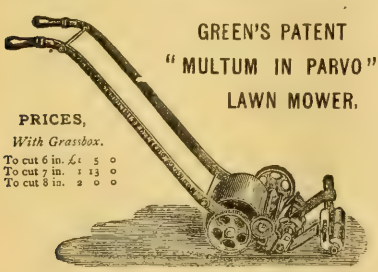
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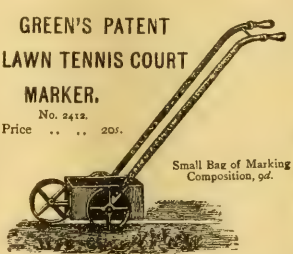
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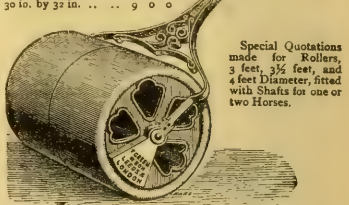
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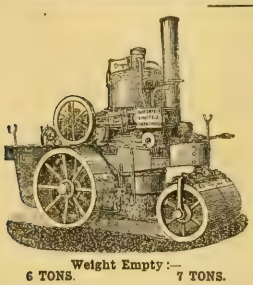
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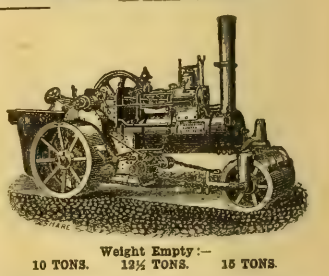
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Volume XXIV., JULY to DECEMBER, 1885.

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7000 grand Bulbs of LILIUM AURATUM, just received from Japan in the finest possible condition; 800 FREESIA REFRACTA ALBA, rare INDIAN LILIES, 1000 EUCHARIS CANDIDA, CALOCHORTI, CALIFORNIAN and HOME-GROWN LILIES, GLADIOLI, LILY of the VALLEY, TUBEROSES, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., as above, on MONDAY NEXT, March 22, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7124.)

HARDY PLANTS and BULBS in variety.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 24, at half-past 12 o'Clock precisely, First-class Standard, Dwarf, and Climbing ROSES, including all the leading varieties; FRUIT TREES of sorts; SHRUBS, CONIFERS, CLIMBERS; HARDY BORDER PLANTS in great variety; GLADIOLI, TUBEROSES, &c

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7125.)

IMPORTATION FROM BRAZIL.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, March 25, a fine importation of CATTLEYA CRISPA, C. WALKERIANA, LÆLIA PERRINI, CATTLEYA BICOLOR, ONCIDIUM VARICOSUM ROGERSI, O. CRISPUM, O. FLABELLIFERUM, O. ALTISSIMUM, STANHOPEAS, and other ORCHIDS, just received direct from Brazil.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7125)

The SEVENTH PORTION of the extensive COLLECTION of ORCHIDS formed by the late E. K. Harrison, Esq., of Kingsbury House and Elstree.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on THUSDAY NEXT, March 25, at half-past 12 o'Clock precisely, without the least reserve, the SEVENTH PORTION of the above extensive COLLECTION, comprising fine plants of CATTLEYA TRIANÆ, C. MOSSIÆ, C. MENDELII, and C. GIGAS, LÆLIA PURPURATA, and CATTLEYA WARNERI, also several hundred unflowered plants of ODONTOGLOSSUM ALEXANDRÆ and O. PESCATOREI, DENDROBES, CŒLOGYNE CRISTATA, &c

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7125.)

FINE IMPORTED ORCHIDS.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on THURSDAY NEXT, March 25, a fine importation of ODONTOGLOSSUM ALEXANDRÆ (best type), COMPARETTIA MACROPLECTRON, &c., from Messrs. Shuttleworth, Carder & Co.

On view morning of Sale, and Catalogues had.

Tuesday Next.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, March 23, at half-past 12 o'Clock precisely, the following ORDS:—

From Messrs. Fred. Horsman & Co., ODONTOGLOSSUM ALEXANDRÆ, in superb condition; and fine growing Tubers of DISA GRANDIFLORA.

From the New Plant and Bulb Co., the last portion of Plants from Acalta, comprising ODONTOGLOSSUM CORONARIUM PESCATOREI, O. BLANDUM, and many others; also LILIUM NEILGHERRENSE and FREESIA REFRACTA ALBA.

Also a fine Lot of ESTABLISHED ORCHIDS, including Cypripediums, Odontoglossums, Angræcums, Oncidiums, Cattleyas, &c; an importation of the rare Cypripedium japonicum, and other hardy Cypripedes; together with Seventy-one Baskets of East Indian Orchids, to be sold as received.

On view morning of Sale, and Catalogus had.

Tuesday Next.

MESSRS. PROTHEROE AND MORRIS will include in their SALE on TUESDAY NEXT seventy-one Baskets of East Indian ORCHIDS, to be sold as received.

Wednesday Next.

4000 splendid Bulbs of LILIUM AURATUM, also LILIUM RUBRUM CRIMSON, MELPOMENE, KRAMERI, BROWNI, WITTEI, and other fine LILIES, together with numerous distinct varieties of beautiful IRIS from Japan, in unusually good condition; 2000 EUCHARIS CANDIDA, 1000 FREESIA REFRACTA ALBA, and enormous Bulbs of LILIUM NEILGHERRENSE, CAMELLIAS, AZALEAS, PALMS, 800 Standard and Dwarf ROSES, and selected FRUIT TREES from English Nurseries, 300 CARNATIONS and PICOTEES, PÆONIES, an assortment of HARDY PLANTS and BULBS, and 50 splendid plants of EUCHARIS AMAZONICA.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, March 24, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Tooting, S.W.

FINAL CLEARANCE SALE, WITHOUT RESERVE.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, on the Premises, the Exotic Nursery, Tooting, S.W., on WEDNESDAY, March 24, at 12 o'Clock precisely, the whole of the remaining stock, comprising a large variety of well-grown CONIFERS and EVERGREENS, all in fine condition for removal; a quantity of ORNAMENTAL DECIDUOUS TREES, several thousands of IVIES of sorts in pots; also the second and final portion of the celebrated COLLECTION of HERBACEOUS ALPINE, and AQUATIC PLANTS created by Mr. Robert Parker, who formerly occupied this Nursery, including 3000 named Pæonies, 2000 Iris, Delphiniums, golden and green Euonymus, and other stock.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Wednesday Next.

SALE of SPECIMEN EUCHARIS AMAZONICA,

Entirely free from all Insects Pests, by

MESSRS. PROTHEROE AND MORRIS, at their Rooms, Cheapside, London, E.C.

Hendon, N.W.

To Gentlemen, Florists, Builders, and others.

2000 oval-leaved PRIVET, 2 to 4 feet; 3000 common ditto, 2 to 4 feet; 4000 LAURELS of sorts, 500 Portugal LAURELS, 3000 CURRANTS, 500 English and Irish YEWS, 2 to 5 feet; 2000 LIMES, 500 POPLARS, a great quantity of CONIFERS in the borders, IVIES, EUONYMUS, GREENHOUSE PLANTS in variety; 500 Pot ROSES coming into bloom, and other Stock.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Bell Lane Nurseries, Hendon, N.W. (1 mile from Hendon or Finchley station), on THURSDAY, March 25, at 12 o'Clock precisely, by order of Mr. James Wright.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Friday Next.

SACCOLABIU CŒLESTE.
ONCIDIUM RUSSELLIANUM.
CATTLEYA TRIANÆ, from the Popayan districts.
3000 ODONTOGLOSSUM ALEXANDRÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, March 26, at half-past 12 o'Clock precisely, a small but exceedingly healthy Importation of the very rare and beautiful SACCOLABIUM CŒLESTE, just to hand from Cochin China. It is one of the loveliest of the Orchids from the East. Also a fine Importation of ONCIDIUM RUSSELLIANUM, now offered for the first time; flowers have a deep yellow ground colour, and are densely spotted purple, lip is white, with two red blotches towards the centre. The individual flowers are 2 inches in diameter. Together with a grand Importation of CATTLEYA TRIANÆ, from the Popayan districts; 3000 ODONTOGLOSSUM ALEXANDRÆ, CALANTHES, ODONTOGLOSSUMS, &c., in different Species and fine Importations.

On view morning of Sale, and Catalogues had.

Special Sale of Flowering Orchids.

MESSRS. PROTHEROE AND MORRIS beg to announce that their next SPECIAL SALE of the above will take place on TUESDAY, March 30, for which they will be glad to receive early notice of entries.

Ascot.

HIGHLY IMPORTANT three days' SALE of WELL-GROWN and THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. John Standish & Co. to SELL by AUCTION, on the Premises, The Royal Nurseries, Ascot, Berks, on WEDNESDAY, March 31, and two following days, at 12 o'Clock precisely each day, several acres of remarkably well-grown NURSERY STOCK, in capital condition for removal, including 30,000 Scotch and 10,000 Scotch Firs, 5000 Larix, 5000 P. austriaca, 10,000 Retinosporas of sorts, 2500 Cupressus Lawsoni, 1300 Yews, 9000 oval-leaved and evergreen Privet, 1200 Aucubas, 2000 Laurels, 2000 variegated Hollies, 7000 Rhododendron ponticum, 2000 named Rhododendrons, 10,000 Manetti Stocks, 5500 Standard, Half-standard, and Dwarf Roses, 2000 Red and Black Currants, 2000 Standard and Pyramid Fruit Trees; also a large assortment of Greenhouse Plants, Palms of sorts, Pot Roses, Azaleas, large Camellias, Gardenias, &c.

The stock may now be viewed. Catalogues may be had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Barnet Common.

Opposite the "Three Elms Inn," within half a mile of the High Barnet, and a Mile and a Half from the Barnet Main Line Stations, Great Northern Railway.

Without Reserve. Cornwell's Old Nurseries, Established over a Century.

IMPORTANT SALE of NURSERY STOCK.

MR. SYDNEY H. CRAWLEY has been favoured with instructions from Mr. Charles Cornwell to SELL by AUCTION, on MONDAY, March 22, at 12 for 12 o'Clock precisely, on account of the number of lots, 2000 Scotch SPRUCE and Silver FIRS, 3000 Portugal and common LAURELS, 1000 choice named RHODODENDRONS, 2 feet to 6 feet high; 250 AZALEAS, PONTICUM of sorts; 400 LIMES, 500 BIRCH, 300 Balsam and Black Italian Lombardy and White POPLARS, 500 Standard LABURNUMS, 6 feet to 10 feet high; 2000 Standard ACACIA, 500 Scarlet and common CHESTNUTS, 10 feet to 12 feet high; 500 well-grown SYCAMORES, 5000 PRIVET, 500 ELM, 350 Green HOLLIES, 300 Double Scarlet, White and Pink, and Cockspur THORNS; 3000 Standard and Dwarf-trained and Pyramid FRUIT TREES, including Peaches, Nectarines, Apricot, Plum, Apple, and Pears; 1000 Standard and Dwarf ROSES of the choicest sorts, PICEA NORDMANIANA, THUIAS of sorts; together with a large assortment of DECIDUOUS and FLOWERING SHRUBS.

The Auctioneer would respectfully call the attention of the Trade and others to this important Sale.

The whole of the above Stock having been frequently transplanted, will insure safe removal, as they are strong and well-rooted.

May be viewed at any time (Sundays excepted). Catalogues can be obtained of Mr. CHARLES CORNWELL, The Nurseries, Hadley and Barnet; of Mr. JOHN TOONE, the "Three Elms," Barnet Common (opposite the Nurseries); and the other usual Inns in the neighbourhood; and of SYDNEY H. CRAWLEY, Auctioneer and Appraiser, The Old Market Place, Barnet, N.

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, wish to announce that the REVISED CATALOGUE of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

The Vineyard, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

Surrey, about 20 Miles from London.

TO BE SOLD, with Possession, a First-class FREEHOLD MARKET GARDEN of 20 Acres (cropped with Fruit and other Trees), adapted for Building, with modern Dwelling-house, Forcing-house, Ranges of Pits, &c. Excellent opportunity. Owner relinquishing in consequence of ill-health.

Apply to PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Surrey, within easy distance of Covent Garden.

Excellent opening for two persons to commence a Partnership in the Market Trade.

TO BE SOLD, on easy terms, a capital NURSERY, with an Acre of Ground, and 21,000 feet of Glass; all well heated. Price and full particulars of Messrs. PROTHEROE AND MORRIS, 67, Cheapside, London, E.C.

To be SOLD, the LEASE of a MARKET NURSERY, seven-een years to run, 2¾ Acres, 13 miles from London. 230 feet of Glass, in five Houses; 100 feet of Pits and Lights.

Two new Houses and the Pits with Lights will be So'd with the Lease.

A good eight-roomed Cottage with Gas and Water laid on. Potting-shed, Cow-house, Stable, Cart-shed and Pigstyes.

C. JOHNSON, The Cottage, Tangley Park, Hampton.

Croydon District—(6210)

A great sacrifice. No reasonable offer refused. Important to Beginners.

SMALL NURSERY, Lease 40 years. Rent only £12.

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TO LET, a piece of GROUND, rather more than an Acre. Has been used as a Florist's over thirty years. Can be seen any time by applying to

A. WINKLEY, Wingate Road, Hammersmith, W.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 67 and 68, Cheapside, London, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

OSMAN AND CO., Windsor Street, Bi-hopsgate, London, E.

The Cheapest House in the World for all HORTICULTURAL SUNDRIES. The Trade should refer to our new Catalogue before ordering, Any firm not having received a copy, please write for one.

Beccles Burial Board.

NOTICE IS HEREBY GIVEN that the Burial Board of the Parish of Beccles INVITE TENDERS, and intend on or after the 6th day of April, 1886, to enter into contracts for LAYING OUT and PLANTING the LAND lately purchased by the Board adjoining and intended to be added to the present parish Burial-ground in the London Road, Beccles, and for certain alterations in the old ground, in accordance with the plans prepared for the Board by Reginald Upcher, Esq., and in accordance with the Specification prepared by the Board, which Plan and Specification, together with a Draft of the Contract, can be seen at the office of the Clerk of the Board at Beccles.

And (as a SEPARATE TENDER) for FENCING the LAND so purchased by the Board, in accordance with the Specification and Plan prepared for the Board by Mr. Arthur Pills, together with a Draft of the Contract, can be seen at the office of the Clerk of the Board at Beccles.

Each Contractor must be prepared (if required) to find a Surety, to be named in the Tender, and to be approved by the Board, who will join with the Contractor in the Contract.

Tenders, sealed, and marked outside "TENDER for LAYING OUT," or "TENDER for FENCE" (as the case may be), must be sent to the Clerk of the Board not later than the 5th day of April, 1886.—By order,

F. S. RIX, Clerk of the said Board.

To Market Gardeners, Contractors, and Others.

THE VESTRY of the PARISH of ST. GEORGE, HANOVER SQUARE, is prepared to receive TENDERS for the REMOVAL of the STABLE MANURE of Fifty-two Horses from the Parish Yard, Commercial Road, Pimlico. Specification as to terms, &c., may be seen, and any further information had, on application to the Surveyor, at his Office, 1, Pimlico Road, S.W., any day between the hours of 9 and 5 o'Clock. Sealed Tenders, endorsed "TENDER for STABLE MANURE," and addressed to the undersigned, to be sent in on or before the 22d instant. The Vestry does not bind itself to accept the highest or any Tender.

By order,

J. H. SMITH, Vestry Clerk.

Board Room, 9, Commercial Road, S.W., March 11, 1886.

GERMAN ASTERS, STOCKS, BALSAMS, finest assorted, 12 packets, 1s. 2d. Stamps or P. O. O F. DONLOP, 51, Highbury Quadrant, London, N.

To the Trade.

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms from carefully selected stocks and transplanted Bulbs.

Seed Growing Establishment, Wisbech.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEE MEETINGS, Fruit and Floral, at 11 A.M. in the Conservatory; Scientific at 1 P.M. in the Lindley Library, on TUESDAY NEXT, March 23

SECOND PROMENADE and BAND from half past 3 o'Clock P.M. Admission, 2s. 6d.

N.B. Entrance for Fellows and the Public, North-east Orchid-house, Exhibition Road; and Exhibitors' Entrance, East side of the Royal Albert Hall.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The SCHEDULE of ARRANGEMENTS for the Shows and Meetings to be held in the Conservatory at South Kensington during the current year is now ready, as also that of the PROVINCIAL SHOW to be held at Liverpool from June 29 to July 3 inclusive.

Applications for the same should be made to the SECRETARY, Royal Horticultural Society, South Kensington, S.W.; or, to the SUPERINTENDENT, Royal Horticultural Gardens, Chiswick.

ROYAL HORTICULTURAL SOCIETY.

The REPORT on the ORCHID CONFERENCE is now ready, and may be had by Fellows of the Society on application to the ASSISTANT SECRETARY at the Office, South Kensington, S.W.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of SPRING FLOWERS.

The FIRST EXHIBITION of the Season will take place on WEDNESDAY, March 24. Schedules of Prizes now ready.

The Dates of the SUMMER EXHIBITIONS are WEDNESDAYS, May 19, and June 9. Schedules of Prizes now ready.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

VEITCH PRIZES for AMARYLLIS.—The Prizes offered for Amaryllis on MARCH 24, are ONLY OPEN to AMATEURS and AMATEUR GARDENERS—

NOT TO THE TRADE.

GLASGOW and WEST of SCOTLAND HORTICULTURAL SOCIETY.

The SPRING FLOWER SHOW will be held within St. Andrew's Halls, Granville Street, Glasgow, on WEDNESDAY, March 24. Prize Schedules and Tickets of Admission to be had from the Treasurer, Mr. CHAS. MACDONALD WILLIAMSON, 193, West George Street, Glasgow; any of the Directors, or at my Office here. Member's Tickets, 2s. 6d. each.

FRANC. GIBB DOUGALL, Secretary.

167, Canning Street, Glasgow.

ROYAL AQUARIUM, Westminster. HORTICULTURAL EXHIBITIONS.

Great EXHIBITION of HYACINTHS, &c., MARKET PLANTS, and CUT DAFFODILS, on MARCH 30 and 31.

Great ARTISTIC ROSE SHOW, on JUNE 25 and 26. Great STRAWBERRY EXHIBITION and FÊTE, on JULY 2 and 3. Great DISPLAY of TABLE DECORATIONS, BOUQUETS, &c., on AUGUST 20 and 21. Liberal Prizes are offered. Schedules of Prizes on application to

Mr. RICHARD DEAN, Superintendent of the Exhibitions, Ranelagh Road, Ealing.

SHROPSHIRE HORTICULTURAL SOCIETY.

The SPRING SHOW, APRIL 1; SUMMER SHOW, AUGUST 18 and 19. Twenty plants, £25, £20, £15. Collection of Fruit, £10, £6, £3. For Grapes, £35. All Classes open to All England. Schedules from

Messrs. ADNITT AND NAUNTON, Hon. Secs.

Shrewsbury.

HEREFORD and WEST of ENGLAND ROSE SOCIETY.

The ANNUAL SHOW will be held in the Shire Hall, on THURSDAY, July 8. For Schedulee and further particulars, apply to

Edgecombe, Hereford. HUGH RONALDS, Hon. Sec.

CLAY CROSS HORTICULTURAL SOCIETY.

TWENTY-NINTH ANNUAL EXHIBITION, AUGUST 10. Amount offered in Prizes, TWO HUNDRED and NINETY POUNDS. Schedules now ready.

Clay Cross, Chesterfield. J. STOLLARD, Secretary.

PUTNEY and DISTRICT CHRYSANTHEMUM SOCIETY, will hold their NINTH ANNUAL EXHIBITION at the Assembly Rooms, High Street, Putney, on TUESDAY and WEDNESDAY, November 16 and 17. Schedules can be had by applying to

Mr. J. MOORE, Hon. Sec.

Richmond Nursery, Upper Richmond Road, Putney, S.W.

ORCHID SHOW.—BIRMINGHAM BOTANICAL and HORTICULTURAL SOCIETY. ONE HUNDRED and FIFTY POUNDS in PRIZES. For Schedules apply to W. B. LATHAM, Curator, at the Gardens.

INVINCIBLE CARMINE SWEET PEA (Laxton).

The most beautiful colour of all Sweet Peas. The most free blooming. The finest for Market or Cutting. Sealed Packets, 6d. each. Trade price on application.

HOOPER AND CO., Covent Garden, W.C.

HARRISON'S EXHIBITION MARROW PEA, a vastly improved Ne Plus Ultra. Per quart, 2s. 6d., post-free. A few bushels to spare to the Trade: price on application.

HARRISON AND SONS, Seed Growers, Leicester.

Just Published.

OUR NEW ORCHID LIST, No. 79. With List of Mr. Ed. Wallace's Importations.

A small Importation of Rare Cape Bulbs. Special LIST. Our Spring LIST of Bulbs (No. 78) for immediate Planting.

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CREEPERS for WALLS, &c.—By planting what is suitable an ugly object may easily be made beautiful. Descriptive LIST and advice free.

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Cineraria, Large-flowering French	2 6
Cockscomb, Williams' Prize	2 6
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Primula sinensis fimbriata, Williams' Superb Strain, mixed, 1s. 6d., 2s. 6d., 3s. 6d., and	5 0
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NEW EARLY POTATO,

DAY'S "EARLY SUNRISE."

An entirely New Variety, as early as the "Ashleaf," and a much heavier cropper. It is a *semi-kidney*, somewhat flat, and much resembles *in shape* the old "Fluke" or "Lapstone."

Very early, of first-class quality, and a great cropper. All Gardeners, Market Gardeners, and Potato Growers should obtain a stock of this Potato. No one can have more than four sacks.

Among numerous very favourable opinions may be quoted F. WYLES, Esq., Rochester, who grew 190 varieties last year, who writes of "Sunrise" Potato:—"Early, a good cropper, excellent cooker, and likely to become a most useful variety." Mr. LAWRENCE, Gardener to Lord Northbourne, writes:—"I have grown Day's 'Early Sunrise' Potato two seasons. It is a really good early, and most prolific. I have not found any diseased."

Price 6s. per Gallon, 25s. per Bushel, 63. per Sack, £1 to 10s. for 4 Sacks, free on rail, less 5 per cent. Cash Discount on Sack orders. Liberal Terms to the Trade.

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DAY'S well-known "EARLY SUNRISE" PEA should only be obtained direct from the Raiser. Price, 80s. per quarter, 12s. per bushel.

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HOLBORN PRIZE PRIMULA.

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The Highest Prize Medal, Ceylon 1883

FINEST MIXED, all colours,

Price, 1s 6d, 2s. 6d., 3s. 6d. & 5s. pkt., post-free.

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237 & 238, HIGH HOLBORN, LONDON.

To Intending Planters.

WILLIAM BARRON AND SON beg to invite an inspection of their unrivalled Stock of CONIFERÆ, and HARDY ORNAMENTAL TREES, RHODODENDRONS, ROSES, FOREST and FRUIT TREES, &c. Their new Descriptive CATALOGUES will be sent post-free on application.

Elvaston Nurseries, Borrowash, near Derby.

S. SHEPPERSON, FLORIST and SEEDSMAN, Prospect House, Belper, Derbyshire, begs to inform the Readers of this Paper that he is prepared to execute Orders for the following Plants, all of which are of the very finest possible strains that money can buy; they are all grown on the Derbyshire hills, and are therefore very hardy and strong. All Carriage Free for Cash with orders.

Descriptive LIST of Florist Flowers, 4d. (stamps), or free with each order.

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CARNATIONS, PICOTEES, and CLOVES.—Beautiful self, striped and spotted varieties, sweetly scented, all strong, well-rooted layers. Twelve distinct sorts, named, 4s.

POLYANTHUS.—Beautiful white, very fine, full of bloom-buds. Six for 1s., 12 for 1s. 6d.

PINKS, pure white, strong, hardy 2-yr.-old plants; will give a mass of bloom. Six for 1s., 12 for 1s. 6d.

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100 Herbaceous and Alpine Plants for 25s.

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50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.

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GREEN HOLLIES, RHODODENDRON, BRIER, and GRIFFERII STOCKS, selected for Working.

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And other leading varieties. Prices on application.

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Spring Flowers—Spring Flowers.
Choicest varieties of Polyanthuses, Primroses, Cowslips, Auriculas, Hepaticas, &c. Apply to
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"NEW SEEDLINGS."
FIDLER'S GENERAL GORDON, FIDLER'S SNOW QUEEN, FIDLER'S BOUNTIFUL, FIDLER'S PERFECTION, FIDLER'S READING GIANT (heaviest cropper in cultivation). These new introductions are the result of a long and thorough test as regards quality, appearance, and abundance of crop; and I have no hesitation in confidently recommending them as varieties that will give the very best satisfaction. I am offering valuable Prizes for the above, at the Royal Horticultural Society's Show, to be held at Kensington, in October next.
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100 Varieties of HARDY HERBACEOUS PLANTS, strong, 21s and 30s.

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The following Free per Parcel Post:—
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Seeds of Calceolaria, Cineraria, Primula, Cyclamen, Begonia, Carnation, Hollyhocks, Petunia, Mimulus, and Pansies. See first quality offered in CATALOGUE. 1s. and 2s. 6d. each.

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None genuine unless in sealed packages and printed cultural directions enclosed, with our signature attached.
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VEGETABLE, FLOWER, and Farm Seeds,
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Send for large CATALOGUES (Gratis and Post-Free) and compare.
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Have now issued their Descriptive Catalogue for 1886. Free on application.

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The best Plant for shelter, retaining its old foliage until the Spring.

Stout transplanted, 2½ to 3½ feet, 6s. per 100, 40s. per 1000; 3½ to 4½ feet, 7s. per 100, 50s. per 1000.

QUICKS.

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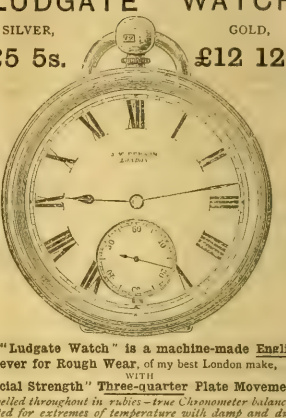
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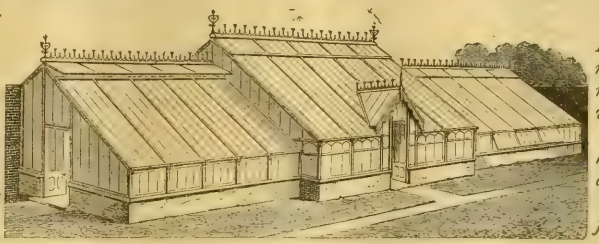
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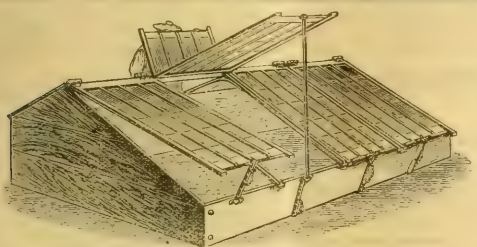
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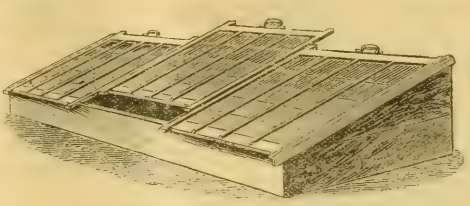
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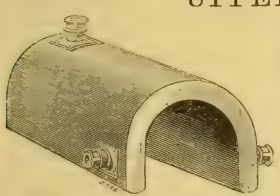
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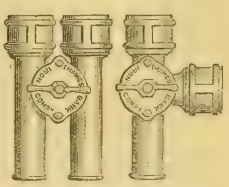


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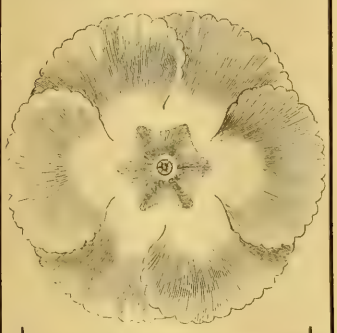
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THE

Gardeners' Chronicle.

SATURDAY, MARCH 20, 1886.

THE SILVER TREE.

FORMERLY it was supposed that the Silver Tree—known to botanists as Leucadendron argenteum, and whose leaves are now so much used for decorative purposes—was restricted to the Table Mountain; but recent explorations have led to its discovery in several localities in the Drakensteenberg, lying from 50 to 60 miles distant; still, there is not the same certainty that the Silver Tree is really indigenous in these localities, as there is that the glory of the Table Mountain, Disa grandiflora, which also was believed to be peculiar to Table Mountain, is so in the Cedar Mountains in the Clanwilliam district, much farther away.

The Silver Tree is in every way such a distinct tree, so different in aspect from all its congeners, and so striking an object in the limited district where it is at all common, that any new particulars concerning it are generally interesting.

Dr. R. Marloth contributes an article on this subject to the current part of Engler's *Botanische Jahrbücher*, in which he briefly sketches the history and distribution of this remarkable tree, which, it may be mentioned in passing, is well illustrated in the "North" Gallery at Kew. It appears that it has been observed by Mr. H. Bolus, the most accomplished of South African amateur botanists, on the Heldenberg, by Dr. P. D. Hahn on the Schaapenberg, and by the Rev. Mr. Faure on Simonsberg. Discussing the probabilities of the Silver Tree being indigenous or planted in these localities, which lie some miles apart, Dr. Marloth thinks they favour the assumption that the former is the case. Certainly they have not been planted within a considerable period, for nobody in the neighbourhood of those places knows anything about them. That they were planted in earlier times during the Dutch occupation he holds to be very unlikely, because planting was then limited to avenues of European Oaks and a few groves of Pines. He also urges that the intervening sandy plain of some 20 miles in breadth is a sufficient obstacle to have prevented modern migration. Of course no opinion, worthy of consideration, could be hazarded on the foregoing points without a complete knowledge of the early history of the settlement of the country and a thorough acquaintance with its topography; but we have the testimony of the accurate and observant Burchell that the Silver Tree was planted to some considerable extent as long, or longer ago, than the beginning of the present century. In his *Travels* (vol i., p. 61) is the following passage relating thereto, premising that it was in the year 1811:—"Neither of us being acquainted with the proper road to Constantia, we missed it, and wandered till we came to a very pretty farmhouse, where, on inquiring our way of two women, we received an answer in good English. They informed us that the place belonged to Mr. Duckett, an English agriculturist, who has for many years

resided in the colony, and whose knowledge of European husbandry has enabled him to manage a Cape farm with considerable success; he is one of the small number of English colonists who were at this time to be met with in the country. This place is called Witteboom, a name which, with great propriety, it has received on account of numerous plantations of large Witteboom, or Silver Trees, which grow about it. The native station of this handsome tree is the sloping ground at the foot of the eastern side of Table Mountain; and at present very large plantations occupy the same situation on the northern side, next to the town. That this space should be the only part in all the colony where it grows wild can be no subject of wonder to any person who has the least knowledge of Cape botany, since the natural places of growth of a multitude of other plants are circumscribed by limits equally contracted."

Here, then, is irrefragable evidence that the Silver Tree was extensively planted long ago in the peninsula, if not elsewhere. From his route map it would appear that Burchell just missed the localities in the Drakensteenberge cited above; therefore, although he is silent on the subject, the Silver Tree may have existed there in those days. Yet it is surprising that it should have been so long overlooked or disregarded in so accessible a part of the country.

With regard to the cultivation of the Silver Tree Dr. Marloth states it only grows in a soil strongly impregnated with decomposed granite. He nowhere met with it in sandy or slaty soil, and repeated attempts to cultivate the tree in and around Cape Town have, it is said, failed.

With regard to natural means of dispersion, the Silver Tree exhibits a very singular adaptation of the withered perianth, which doubtless assists in conveying the seeds short distances, at all events. Miss North's painting shows some plumed bodies floating away from the opened cones, which puzzled us much until we had examined herbarium specimens, and ascertained what they were. The strongly bearded or plumose, four-lobed, finally scarious perianth breaks away from the base of the light one-seeded nut, the lobes still cohering by their tips, and forming an orifice through which the persistent capitate style does not slip. When the fruit is quite ripe and the weather dry and sunny the four lobes of the perianth spread outwards from below, and the winds carry them away, bearing the seed-vessel hanging by the tip of the style; the withered perianth thus forming, as Dr. Marloth observes, an admirable breakfall. Such a contrivance or provision is unique so far as we know, but of course much remains to be learnt in this direction.

In habit of growth the Silver Tree bears some resemblance to a stout Pine or Araucaria, and the cone-like aggregation of the seed-vessels adds to the likeness. It is, however, of comparatively small stature, not exceeding 40 feet in height, even in the most favourable situations. The male and female flowers of all the species of Leucadendron, and the allied South African genus, Aulax, are borne on different plants, and in consequence of the cones being persistent the females are readily distinguished from the males. This is very striking in Leucadendron platyspermum, an expanse of which is represented in one of Miss North's paintings.

The silvery, soft, downy leaves of the Silver Tree are crowded, and lie almost flat on the branches, like slates on a roof, each leaf partly covering several others. This down is so dense that it is easy to write or paint upon it when the leaves have been dried; and leaves thus manipulated are among the first curiosities sent home by Europeans arriving at the Cape, *W. B. H.*

MANILLA HEMP.—The plant so well known as the Abaca (Musa textilis), from the stem of which Manilla Hemp is prepared, is described as doing remarkably well at Sandakan, in Borneo. The smallness of the population, the well-to-do character of the people, as well as their disinclination to hard work, is said to prevent anything like an industry in the preparation of the fibre being established similar to that in the Philippines. Should a machine, however, be discovered adapted to its production, at however small a profit, there is no limit to the quantity that can be produced.

New Garden Plants.

EPIDENDRUM ARACHNOGLOSSUM (*Rchb. f.*) CANDIDUM, *nov. var.*

THIS is a discovery of Mons. E. André, and was published by this successful traveller in the *Revue Horticole*, Dec. 16, 1882, with a plate. It is also spoken of in the last edition of the *Orchid Growers' Manual*, p. 309, where I am quoted as the author, just as Mons. E. André says—"*cette nouvelle espèce a été nommée par* M. Reichenbach." I have, however, seen it quoted in excellent papers as E. arachnoglossum, André. It is much in the way of the fine Epidendrum evectum, Hook. *f.* The flowers are of the finest amethyst-purple, with a yellow callus; the lip is comparable to the lips of Epidendrum tricrure and E. neogranatense. The laciniæ are, however, very deeply cleft, and the fringes are often toothed, now with one tooth, now with several teeth. On each side of the column are one or two seriate broad lateral calli, the median one being rhombic, usually five-toothed, the median tooth being the most prominent. There are also usually small side calli outside the lateral ones, each side one. I am now very agreeably surprised at the receipt of a fine variety, having white flowers, and only the lateral calli orange. It is likewise a discovery of Mons. E. André, and was kindly forwarded to me by Mons. Godefroy Lebeuf, of Argenteuil, Rue du Sannois, who is so well known as a most enthusiastic orchidist and as a most successful botanic traveller in Cochin China. *H. G. Rchb. f.*

CYPRIPEDIUM CONCOLOR (*Parish*) REYNIERI, *nov. var.*

It is well known that some Orchids produce their most luxuriant varieties in some territories, while they appear in far more modest guise in other regions. One might believe such to be the case with Cypripedium concolor. I have before me a wild specimen, gathered by this excellent botanist, as well as the first flowers developed in Europe, and numerous other flowers.

And now comes a grand plant, sent by M. Godefroy Lebeuf, of Argenteuil, Paris, 26, Route de Sannois. It surpasses everything I ever saw of Cypripedium concolor—said to be now-a-days a very rare plant, but seen in glorious development with Sir Trevor Lawrence, M.P., President of the Royal Horticultural Society. The very fine, well-marbled, very blunt leaves of the fresh plant attain a span in length, and exceed 2 inches in breadth. The large flowers are of distinct yellow colour; those on the plant are rather vivid, and have on the outside of the sepals a blotch of mauve-purple. The staminode is quite rhombic, with a blunt tooth on each side in front of the apex, ochre, with dark purple spots, and a white (!) margin in front. I had a few weeks ago a flower of Cypripedium concolor with a staminode of the same shape, but totally yellow with blackish dots. It was kindly sent me by Mr. E. Harvey, Aigburth, Liverpool.

Then there is another flower, sent by M. Godefroy Lebeuf, with a far darker tint, which is quite superior. It is said to come from a three-flowered inflorescence. I learn that inflorescences with four similarly fine flowers were seen! This would be phenomenal.

M. Godefroy Lebeuf informs me that this was the last discovery of poor Auguste Reynier, who fell a victim to his zeal by bloody hands in Cambodia. It is a great satisfaction to add the name Reynier to this plant, which may have afforded the last satisfaction to him. August Reynier must hereafter be kept in our grateful memory as one of the many martyrs of botany and horticulture. *H. G. Rchb. f.*

CYPRIPEDIUM WINNIANUM, *nov. hybr. Angl., ex hort. reg. Veitch.*

At my left hand is the *Revue Horticole*, 1885, No. 20, containing M.E. Bergman's interesting memoir, *Les Cypripedium de Semis*: before me are my sketches of C. Germinianum, Drewettianum, and Winnianum, and the last is undescribed. It was raised at the Royal Exotic Nursery of Messrs. J. Veitch & Sons. This time we have as parents C. villosum and C. Druryi. I am informed by Mr. Harry Veitch that the plant has more the habit of Cypripedium Druryi than that of C. villosum. The leaf at hand has the breadth, the dark mark at the base, and that peculiar dark, nearly glaucous green of C. villosum. The peduncle has dark red hairs, and the ovary is quite as hairy, yet the hairs are neither as long nor as crowded as those of Cypripedium villosum. The bract is much shorter than the ovary, and has some dark purplish spots at the base, longer than it usually is in C. Druryi. The upper sepal is oblong-acute, not broad, whitish-yellow, with the centre of dark Indian-purple (colour of Messrs. Winsor & Newton). The lateral sepals form a far smaller body, much shorter than the lip, of the lightest ochre colour. Petals are nearly as in C. villosum, reddish on outer side against the upper sepal, yellow on the inner side, with a long and not too narrow brown line on the mid-line, borrowed from C. Druryi, and with numerous small brown spots at the base. The lip is that of C. villosum, and so is the staminode, yet it is broader than in C. villosum, though the shape is the same excepting in breadth.

Mr. Harry Veitch has requested that it may bear the name of Mr. Charles Winn, of Birmingham, one of my very assiduous correspondents, who is so very famous for his splendid Masdevallias, among which the little known gorgeous port-wine coloured M. Roezlii has often flowered. *H. G. Rchb. f.*

PHAIUS TUBERCULOSUS, *Bl.*

The excellent variety, sent in February, 1884, by Mr. Sillem from Laurie Park, has reappeared on even a larger scale with Sir Trevor Lawrence, who kindly forwarded me a fine example. The very large side laciniæ of the lip may be described as reddish-brown, with scattered small orange spots. The mid-lacinia has mauve blotches on its margin, no mauve-purple ones. The lip has yellow at its base in front and some mauve-purple markings in the middle. I am very pleased with this great beauty, which might be called var. superba. *H. G. Rchb. f.*

DISA GRANDIFLORA.

THIS beautiful and curious ground Orchid was introduced into this country as long ago as 1825, its native home being the top of Table Mountain, behind Cape Town, where it grows in wet peat earth on the margin of lakes and streams, in an atmosphere which, we are told, is often involved in dense mists, which even in the hottest months prevail for a week or a fortnight together, and where the temperature is occasionally as low as 31°, and as high as 95°.

Seeing that this fine plant has been introduced into this country for so long a period, and is so fine a subject when well flowered (sometimes described as the Flower of the Gods), it seems surprising that it is not more generally cultivated, especially when it is known that the chief elements necessary for its successful culture were fairly well understood at least as far back as 1854. At a meeting held at Chiswick in July of that year (see *Gardeners' Chronicle* of that date) a fine specimen of this plant was shown by Mr. Leach, who also, in a letter to the same journal, gave details of his treatment, which agrees with my own, and appears to suit them. The reason, therefore, that this beautiful Orchid is not more generally cultivated cannot be that the necessary treatment is not pretty widely known, but is due, in my opinon, to some local peculiarities and conditions of the atmosphere, and also probably to the properties of the water used, a liberal supply of which is absolutely necessary while in active growth.

I suppose there are very few Orchids the growing of which has puzzled more experienced Orchid growers than this Disa; and what makes the matter more tantalising is the fact that at a few places here and there we find its cultivation to be the simplest matter imaginable. Here we have no plants in the garden which give us less trouble than the Disas. Probably our rather humid position in the valley of the Derwent, and the heavy rainfall, may have something to do with the success in the growth of this flower, but I am inclined to think that the quality of our water, which is soft, and comes off the peaty moors between here and Chesterfield, has a good deal to do with our success.

Our plants have occupied the same position for some years—namely, a wooden stage in the Cape Heath house (the conditions which suit the Cape Heaths seem to suit the Disa), one portion of the stage being over the water-tank, and close to an outer door, which is left open during the day in the summer, as well as the side ventilators opposite, so that there is always a strong current of air playing among the plants. We are careful never to remove

the plants from their position except when they are in bloom, when a few are mixed with flowering Odontoglossums. As an experiment, I had a few offsets placed in a cold-house with a northern aspect last July, where they have done fairly well.

Our plants are usually potted about the middle of December in a mixture of fibrous peat and sphagnum in equal quantities, with a sprinkling of broken crocks and small pieces of charcoal well mixed. The plants are potted firmly, the crowns being well elevated above the rim of the pot and the pots well drained. Pots having perforated sides are to be preferred, as the offsets find their way through the side holes quicker and better than when they have to push through to the surface. The after-treatment consists in moderate and careful watering until they are well in active growth, which will be from March until flowering time, when they must receive abundance of water overhead with a rose pot. On very warm days it will be necessary to apply water three or four times a day.

Their natural time of flowering is July; but if a few plants are wanted earlier, they can be forced into bloom three weeks or a month sooner, but forcing must not be attempted until the flower-spike is visible. When flowering is over the plants do not receive so much water, but are never allowed to approach dryness at the root. The Disa is propagated from offsets and by division of the roots. *Owen Thomas, Chatsworth.*

KEW AND ITS WORK.

(*Continued from p. 267.*)

The Recent History of a Tropical Colony.—Take a tropical colony like Ceylon, and study how all the conditions of life there are revolutionised by the entrance of the irrepressible Anglo-Saxon:—"In 1837, when Coffee planting was started, Ceylon was a mere military dependency, with an annual revenue amounting to £372,000, or less than the expenditure, costing the mother country a good round sum every year, the total population not exceeding 1,500,000, but requiring nearly 6000 British and native troops to keep the peace. Now we have the population increased to 2,750,000 with only 1200 troops, all paid for out of an annual revenue which exceeded £1,300,000; a people far better fed, educated, and cared for in every way. The total export and import trade since planting began has expanded from £500,000 to £8,000,000 or £10,000,000, according to the harvest. During the forty-five years referred to some £30,000,000 or £40,000,000 have been paid away in wages earned in connection with the plantations to Kandyan axemen, Tamil coolies, Singhalese carpenters, and domestic servants. More than 200,000 Tamil coolies were saved from starvation in Ceylon in the Madras famine of 1877-8. According to official papers there are more than 16,000,000 of people in Southern India whose annual earnings, taking grain and Rice at its full value, do not average per family of five more than £3 12*s.* a-year, or about ½*d.* a head per day. In Ceylon each family can earn from 9*s.* to 12*s.* a week, and save half or three-quarters of that amount. Our calculation is, that from each acre of Coffee or Tea land kept in full cultivation five natives (men, women, and children) derive their means of subsistence. It is no wonder that, with a population nearly doubled during the planting era four or five times the quantity of cotton-cloth is consumed, and ten times the former quantity of food is imported into the island."*

How a Botanic Garden can Help the Colonies.

It is in selecting the plants for new colonies, or old ones that have been ruined by neglect, or in helping to bring into cultivation plants valuable economically that run the risk of being exterminated in their native localities, that the help and advice of a botanic garden is required, particularly for the correct identification of the best species. Take, for instance, Cinchona, Indiarubber, and Gutta-percha.

Cinchona.

In temperate climates quinine is one of the most useful of drugs, and in tropical climates it is now used universally in curing and warding off fever. Quinine and its allied alkaloids are the product of the bark of trees of the genus Cinchona, which is restricted in a wild state to a narrow belt of the Andes of South America, at an elevation of between 2000 and 8000 feet above the sea-level, principally along their eastern declivities, from latitude 19° S. in Bolivia to latitude 10° N. in Venezuela. Here, of course, they are very difficult of access, and they are getting destroyed rapidly. C. succirubra, for instance, which was found formerly in all the valleys that open to the plain of Guyaquil, is now almost confined to the western slopes of Mount Chimborazo. In 1860 an expedition was sent out under Mr. Clements Markham to the Andes to procure living plants with seeds, for conveyance to India, and after many adventures and disappointments its efforts were crowned with success. There are in the genus about thirty-six species, differing from one another in their climatic constitution, and still more in their economic value, but they are very difficult of botanical discrimination, because the primary types are linked to one another by puzzling intermediate forms. The Dutch sent out an expedition to the Andes under Hasskarl in 1854, but unfortunately a large proportion of the plants which they obtained proved to belong to C. Pahudiana, a species of very small medicinal value. In the Indian plantations four distinct species have been planted extensively—1. C. succirubra, which yields the red bark of commerce, yielding about 5 per cent. of alkaloids, quinine and cinchonine in almost equal proportions. It thrives at a lower elevation than the three others, but is specially sensitive to frost and long-continued drought. 2. C. micrantha, which yields the grey or silver bark, also poor in quinine, but rich in cinchonine. 3. C. Calisaya, and its variety Ledgeriana, which yields the royal, called also the yellow or Calisaya bark—the richest of all in alkaloids, of which quinine forms half or three-quarters (not less than two, and, in exceptional cases, as much as ten per cent. of quinine). 4. C. officinalis, which yields the pale or Loxa or crown bark, containing half or 1 per cent. of alkaloids, of which more than half is quinine.

In India the product of the bark is used mainly in the form of a mixed febrifuge, in which the different alkaloids are not separated from each other. This is prepared from the finely powdered bark by mixing it with milk of lime and spirits of wine. At the close of 1882 there were in the Bengal plantations a stock of nearly 5,000,000 trees, of which three-quarters were C. succirubra, yielding an annual crop of 400,000 lb. of dry bark. The amount of capital altogether expended in Bengal in the plantations and manufactory was £100,000, and on this the receipts for 1878-9 yielded 4¼ per cent. on the capital outlay, exclusive of 5500 lb. of the alkaloid taken for the Government hospitals, replacing an equal amount of quinine, which if purchased would have cost the Government £44,000. Dr. King estimates that by the end of 1878-9 the total amount saved to Government was £80,000; and Mr. Wood, the Government quinologist, estimates that the cost of the mixed febrifuge will ultimately be brought down to 1*s.* per ounce. The price of the sulphate of quinine in England has been reduced during the last few years from 13*s.* to 5*s.* per ounce. As before explained only four out of the thirty-six species have been extensively planted in India, and of the economic value of many of the others very little is known clearly.

Indiarubber.

The substance sold under the name of indiarubber is the stiffened milky juice of at least six different genera of trees, belonging to three widely different natural orders—Landolphia and Willughbeia in Apocynaceæ, Castilloa and Ficus in Artocarpeæ, and Hevea and Manihot in Euphorbiaceæ. Part of it comes from South America (shipped principally from Para and Carthagena), part of it from Sierra Leone, Mozambique, and Madagascar, and the remainder from tropical Asia. Besides these two genera of Apocynaceæ there are at least six others which yield a similar milky juice not at present utilised to any considerable extent. In the United States in 1883 there were 120 indiarubber factories, employing 15,000 hands. The total importation of raw material into the States in that year was 30,000 tons, worth about £6,000,000 sterling. The value of the manufactured goods made in a single year is estimated at £50,000,000. The quantity of unwashed rubber imported into the United Kingdom in 1883 was more than 10,000 tons, worth about £3,500,000, but in 1885 it had sunk to less than £2,000,000. None of the trees which yield indiarubber have yet been brought into cultivation on a large scale, and the time will soon come when either this will have to be done or the supply will gradually lessen. There are about sixty distinct species of these rubber-yielding genera, and the botanists and foresters will have to settle between them which of these are best worth cultivating and where it will pay to grow them. Unfortunately, at the present time the price of indiarubber of all kinds is exceptionally low, the best Para rubber being now only worth about 2*s.* 6*d.* per pound in London against 4*s.* in 1884, and the best of the African and Asiatic kinds about 2*s.* per pound.

List of the Indiarubber producing Genera, their Native Countries, with the Number of Species in each and Annual Import:—

Order.	Genus.	Number of species.	Native country.	Tons imported into England in 1882.
Apocynaceæ	Willughbeia	9	Tropical Asia	570
,,	Landolphia, including Vahea	16	Africa and Madagascar	2200
,,	Hancornia	1	Brazil	
,,	Urceola	7	Malay Peninsula and Archipelago	
,,	Dyera	3	Malay Peninsula	
,,	Couma (Collophora)	4	Guiana and Brazil	
,,	Alstonia	3	Malaya and Fiji	
,,	Cameraria	2	West Indies	
Artocarpaceæ	Castilloa	3	Central America and Cuba	100
,,	Ficus	2	Africa and Tropical Asia	370
Euphorbiaceæ	Hevea	9	Amazon region	5708
,,	Manihot	1	Brazil	55
		60		7003

Gutta-percha.

Gutta-percha of the best quality is the product of Dichopsis Gutta, a tree belonging to the natural order Sapotaceæ, inhabiting the Malayan peninsula. In order to obtain it the Malays follow the wasteful plan of cutting down the tree. The bark is first stripped off, and the milky juice which then exudes is collected in the shell of a Cocoa-nut, or the spathe of a Palm. The juice quickly stiffens on exposure to the air and forms gutta-percha. The average quantity obtained from one tree is 20 lb. In 1875 10,000,000 lb. in weight were imported into this country from Singapore, and this would involve the destruction of, perhaps, 50,000 trees. It was first brought into notice in 1842, and at that time the tree was plentiful in the forests of the island of Singapore; but during the next five or six years it was totally destroyed in the island except a few trees that were kept as curiosities. In 1847 it was plentiful in the forests of Penang, but a similar fate soon befell it there, and now the time has come when, unless it be systematically cultivated somewhere, the supply will decrease. According to the latest authority there are six distinct species of Dichopsis growing wild in the Malayan peninsula, and in Java and Sumatra, and several species of the neigbouring genera, Chrysophyllum, Sideroxylon, Bassia, Mimusops, Payena, and Imbricaria, yield a similar milky juice; but it still remains to be settled which species are best worth cultivating, and where they can be most profitably grown. The annual value of the gutta-percha imported into England is between £300,000 and £500,000 per annum. *J. G. Baker.*

(*To be continued.*)

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 268.*)

The Miltonia-like section comprises some of the most beautiful of Odontoglots, which, although differing from each other in the habits of the plants, agree in having the same peculiar flat form of flowers of which the labellums are the, large and showy parts, and not the sepals and petals, as in most other Odontoglossums. In my experience, none of this section will thrive in winter under the low temperature given to the ordinary cold house Odontoglossums, although I have always found them equally impatient of a high temperature. Any healthy house, in which the temperature ranges between 50° and 60° Fahr., keep

* *Ceylon.* By W. Ferguson, F.L.S. Pp. 83—84.

them in safety and vigour all the winter, and until their flowering is finished; after which, during the heat of the summer, the cold house is best for them until autumn. Shade in summer, and a still, even, healthy temperature, with a fair supply of rain-water all the year round, are important matters in the production of good plants of the Miltonia-like Odontoglossums.

ODONTOGLOSSUM VEXILLARIUM.—This lovely plant taxed the skill of many collectors before our collections were enriched by it. Poor Baumann, who found it on the western slopes of the Andes of New Grenada when collecting for the Royal Horticultural Society, made the first unsuccessful attempt to get living plants into this country, and afterwards Wallis, Roezl, Chesterton, and Klaboch, each in his turn, made many attempts, most of them being utter failures; and up to a certain time Chesterton's plants, brought Trevor Lawrence received a First-class Certificate for it at the Royal Horticultural Society, May 8, 1883.

O. v. COBBIANUM has a large and well-formed flower. Sepals and petals pale rose, white towards the edges, lip white, with four or five red lines at the base.

O. v. HILLIANUM.—Sepals and petals rose-coloured, the sepals having purple lines; lip yellow at the base, with three dark red lines, the rest of the lip covered with purple spots, and with a rose margin.

O. v. KIENASTIANUM.—Sepals and petals rose, with broad white margins; lip yellow at the base, from which radiates a fine rose-coloured veining, which extends to the broad white edge of the lip.

O. v. LEUCOGLOSSUM.—Sepals and petals rose, lip pure white.

C. v. MEASURESIANUM.—This is one of the purest of white vexillariums, the texture of the flower resembling that of a good O. Roezlii album. The Joseph van Warscewicz in the Cordillera de Chirique some thirty years ago, is still a very rare plant, not because it is more difficult to grow than others, but because it is a very bad traveller, rarely surviving the journey. It is also said to be rare in its present known habitats. Its flowers, which are borne like those of O. vexillarium, have something the appearance of those of O. Roezlii. They are pure white, with pale violet blotches at the base of each of the petals, and the lip-crest yellow. It was first flowered by Messrs. James Veitch & Son, in February, 1875.

O. ROEZLII.—This has become a great favourite, and many growers succeed in making fine specimens of it; among the best examples may be noted those fine plants with many flowers which Mr. Douglas, of Great Gearies (who grows the vexillariums also up to their very best), flowers so well every year, their delightful odour, as well as the appearance of their flowers, being most grateful. There are many forms



FIG. 69.—ODONTOGLOSSUM PHALÆNOPSIS.

to Messrs. James Veitch & Son, together with a few others in their hands from various collectors, formed the stock, entirely in the hands of the Chelsea firm. Since that time, however, the late Frank Klaboch succeeded in getting a good quantity sent over alive, and later still most other collectors have had reasonable amounts of success with it. Few plants have so well answered the collector's enthusiastic description as this. Many will remember the surprise created by the illustration, taken from the first dried flowers, and published in the *Gardeners' Chronicle*, 1872, pp. 66, 67. All who know the beauty and proportions to which the plants under cultivation have attained, will readily agree that, wonderful as the flowers were thought when first presented, they are greatly exceeded in beauty by later introductions. The old form has pale rose-coloured flowers, lighter at the margins; but out of the different importations have flowered many handsome and distinct forms, of which the following are the best:—

M. v. ALBICANS.—This is a very beautiful variety, with wholly pure white flowers, except for a tinge of yellow with a few reddish lines in the centre. Sir

only colour is a pale yellow tinge at the base of the lip. R. H. Measures, Esq., of The Woodlands, Streatham, received a First-class Certificate for it at the Royal Horticultural Society last season.

O. v. RUBELLUM (KLABOCHIANUM), called the autumn-flowering vexillarium, has flowers of rather small size, but of a rich rosy-lilac tint.

O. v. SPLENDENS.—An exceedingly fine form, well flowered last year by Mr. B. S. Williams. Flowers about 4½ inches in diameter, wholly bright rose, the two lateral sepals being striped; the large labellum has three short dark red stripes in the centre.

O. v. SUPERBUM.—Sir Trevor Lawrence's famed *protégé* is never likely to be deposed from the highest place among coloured vexillariums. The flowers are bright pink or magenta-rose, and at the base of the labellum is a triangular bright dark crimson blotch, picked out with dark scarlet lines, the whole clearly set on a pure white ground.

O. WARSCEWICZII.—This handsome Orchid, which much resembles O. vexillarium in its greyish compressed pseudobulbs, plentifully clad with sheathing leaves at the base, and which was discovered by of O. Roezlii, of which the type has pure white flowers with yellow base to the lip, the petals having a distinct cuneate purple blotch at the base of each. The variety album is wholly white, with a yellow stain in the centre.

O. PHALÆNOPSIS, first sent from Ocaña by Schlim, about the year 1850, is one of the most elegant of the section, as will be seen by reference to our illustration (fig. 69). It has the reputation of not being a good grower, but many put it out of its power to thrive by placing it in unsuitable positions. It usually grows well in shallow Orchid pans, suspended near the glass and kept moist all the year, or otherwise placed where it is near the glass, in an even temperature of not less than 50° in winter or more than 65°. Flowers white, with purple markings on the labellum.

Direct sunlight is very injurious to all this section of Odontoglossums, and they are all very liable to be attacked by yellow thrips. As a preventative or a cure frequent dippings in weak tobacco-water, or some other safe insecticide is best, as fumigating them is very risky work. I have several times seen the ruin of the plants effected by one night's fumigating. *James O'Brien.*

FLOWERING AND FRUITING OF JUBÆA SPECTABILIS IN PORTUGAL.

This is the first time during the nearly forty years that Jubœa spectabilis has been introduced into Europe that it has been seen in flower and fruit. The knowledge of the fact that it flowered in 1885 in a private garden belonging to the late King Ferdinand I owe to M. Daveau, Inspector of the Botanic Garden of Lisbon, who also furnished me with the details which I now give. This Palm is nearly thirty-five years old; its stem beneath the crown of leaves which terminates it is 5 metres in height, and it is estimated at 1. 50 metre round the upper part of the stem, where it is covered by the base of the leaves. The circumference at some centimetres beneath the surface of the ground measures 4.50 metres, that is to say, about 14.76 English feet. of which, twenty-eight years old, is quite as large as that in Lisbon, but younger by some years, its stem beneath the corona of leaves does not measure more than 1½ metre in height, with a similar length in the leafy portions. We hope to see it in flower here in a few years. *C. Naudin Antibes.* [The fine specimen at Lisbon, alluded to by our correspondent, was the subject of a large illustration in our columns, Sept. 23, 1882. Ed.]

LAMORRAN.

In our number for June 11, 1881, we gave a large page illustration of a view in the garden at Lamorran, where Mr. Boscawen contrives to grow so many interesting plants in so excellent a way. This is not to be wondered at, for Mr. Boscawen from taking an active part in the labours of the Council of the Royal Horticultural Society, and the preliminary arrangements for the forthcoming provincial show at Liverpool have been mainly undertaken by him in conjunction latterly with Dr. Hogg. The work of a Councillor who does his duty is no slight matter now-a-days.

CELERIAC.

Market Culture of Celery Root.—The Celery-root, or Celeriac, as it is sometimes called, is very common on the Continent, in France, Germany, Denmark, &c. It is there regarded as one of the most savoury and wholesome vegetables, and it has acquired an additional interest in recent years, as it is said to be one of the most excellent medicines for the gout.



Fig. 70.—The Lake at Lamorran. (see fig. 9, Jan. 9, 1886, p. 49.)

The flowering begins in January, and is continued in February. The flowers being monœcious (or perhaps hermaphrodite) on the same spadix self-fertilisation occurs; the fruits (which are like those of the genus Cocos) are ripe in August. Jubœa spectabilis is not only remarkable for the enormous size of its stem, which renders it one of the thickest-stemmed Palms known, but it is also noticeable for its great hardihood, which is nearly equal to that of Chamærops humilis, as it perfectly well resists a temperature of 10° Cent. below zero (= 14° F.), provided that the cold is not continuous; also, like Chamærops humilis, it thrives in dry soil, and can dispense with water—a valuable quality in our southern climates, where the summers are very dry and very hot. When it is remembered that Jubœa (the *coquito* of the Chilians and Peruvians) is a tree which contains a large amount of sugar, we may hope it will be multiplied with a good amount of success and profit in the Sahara of Algeria, only we must be patient for thirty years. We have at the Villa Thuret several specimens of Jubœa, one is an enthusiast, and he is what not all enthusiasts are—practical. Referring to our previous article for an account of the garden and its treasures, such as the big Chamærops and the Tree Ferns that do not miss the Tasmanian climate, the house, of which we now give an illustration (fig. 70), is backed up by slopes covered with Pines and Rhododendrons, described by our regretted friend, the late J. H. Mangles, and overlooks a lake which opens into the river Fal, and is well stocked with trout. Camellias line the banks to the water's edge. Water Lilies, Aponogeton, Pontederia, all flourish in the water. Lapagerias, Roses, and Passion-flowers cluster over gable and mullion. Todea superba lives like a hermit in a cell, all to itself, but is better off than most hermits, who are not reported to have glass doors to their caves. And so we might go on, but we should only have to repeat what has been said before. This little Eden is a few miles from Truro, yet the fact that its owner lives as far away from London as any Englishman can well do without crossing its boundaries does not prevent him

In England it is not quite unknown, as it is, for instance, to be found in Covent Garden Market during the autumn and winter, but it is not yet cultivated to any extent. There is no doubt that when the Celeriac is better known it will be in greater demand than hitherto; its cultivation deserves, therefore, some attention, especially as it is far from difficult. In the market gardens near Copenhagen it has been grown for a long time in a way that will suit the English climate as well as the Danish. A deep, well-manured, and well-worked soil, such as a rich sandy loam, an exposed situation, and sufficient moisture in the soil—or, instead of that, an ample supply of water at not too great a distance are necessary for the culture of this plant. Water from a river or lake, or rain-water, is preferable. The conditions are very nearly the same as those the common Celery demands when it is to be grown to perfection, only the Celeriac does not want quite such deep-worked soil as the Celery, because it is not planted in the trenches. The land destined to the growing of Celeriac is heavily manured in the

autumn, and afterwards ploughed. It is then left during the winter in the rough state to be rendered friable by the frost. In the spring it is ploughed over once more, afterwards harrowed, and finally rolled. The rolling is considered to be very beneficial to the plants; it gives them a firmer roothold, and tends to keep the moisture in the soil.

Celeriac is propagated by seed sown in hotbeds in sandy soil at the end of February or the commencement of March; as it is rather small, it is only covered with a thin layer of light, sandy soil. The lights are kept shut, and covered up until germination has taken place; after that time as much light as possible is given, and gradually more air till the end of April, when the lights are removed during the day and later on during the night too. Sometimes the seedlings are pricked out in another frame, but that is far from always the case. When the grower does not intend to prick out the seedlings he is obliged to give them a little more space on the seed-bed, about a square inch each, in order to render the plants stout and stocky. Most of the market gardeners do not sow their own seed, but prefer to buy their plants from gardeners who grow large quantities of seedlings of Celeriac and other plants for sale.

The planting takes place at the beginning or middle of May. Before the planting all the roots are cut off to half of their length. In order to promote the formation of the tuber it is recommended to tie the root into a knot, but the market gardeners do not think that that is necessary, and their excellent crops justify their view. The plants are dibbled in, in squares of 18 inches. In the summer nothing is done except the necessary hoeing. The weeding is done by hand in order not to injure them. In the autumn, when the frost commences, usually about the end of October or beginning of November, all the tubers are taken out and stacked in the open air in a position where they can easily be protected when the frost renders it necessary. The Celeriac is as little able to withstand a severe frost as the Celery.

There are several sorts of Celeriac in cultivation belonging to two different groups. The one contains plants whose tubers grow a little above the soil's surface, the other has the tuber beneath the surface entirely. The former is said to give tubers most freely from roots on their upper parts, the latter is said to keep better in the winter. Besides being free from roots on the upper surface a good sort of Celeriac is required to have tubers of a regular shape, a firm flesh, and, if possible, to have the flesh marbled with slightly pink-coloured veins. The top must not be very large. *C. V. Larsen, Copenhagen.* [Considering the excellence of this vegetable, properly cooked, it is remarkable that it should be so little known here, and that what supplies we have are mostly from French sources. ED.]

Orchid Notes and Gleanings.

CATTLEYA PERCIVALIANA.

IN a large group of this species there are some that stand out prominently ahead of others. One large plant in the St. Alban's Nursery has magnificent flowers over 5 inches across, the sepals and petals rich rosy-purple, the labellum purple-maroon with the front magenta-purple, the throat rich orange. This fine species seems to supply us with its richly coloured flowers for quite six months—in fact, all through the winter.

CŒLOGYNE CRISTATA.

In looking over the rich collection of Orchids at St. Alban's, Mr. F. Sander drew my attention to a form of this species under the name of C. cristata maxima. This form was exhibited before the Floral Committee on March 9. As it is to be seen here growing with all the best forms of cristata, including C. Lemoniana, the Chatsworth variety, and the pure white form, it is seen to be quite distinct in form, and the flowers are much larger than those of the Chatsworth variety. In the *Orchid Growers' Manual* Mr. Williams describes a variety under the name of major, which description would apply to Mr. Sander's maxima. It is certainly very fine. *J. Douglas.*

CALANTHE COLORANS.

A new species, introduced through Mr. B. S. Williams, with evergreen foliage and compact heads of white flowers, which become buff-coloured as they grow older. The spur is slightly forked at its extremity. It requires the same treatment as Calanthe veratrifolia, and to be grown in large pots with good fibrous loam, mixed with leaf-mould and a few lumps of charcoal. It flowers in winter and autumn, and the new growth follows the flowering period.

PACHYSTOMA THOMSONIANUM.

This beautiful species, says Mr. Williams in the last number of the *Orchid Album*, requires the heat of the East India-house; and Mr. Bickerstaff, Sir Trevor Lawrence's gardener, grows it in sphagnum moss and fibrous peat with good drainage. It requires to be kept well in the light, but shaded from the hot sun, and should have a moderate supply of water about its roots.

CATTLEYA TRIANÆ.

Mr. Ballantine grows plants of this section in rough fibrous peat, with good drainage, in a light house, with very little shade. A moderate supply of water is given during the period of vigorous growth, but only just enough to keep the stems plump during the resting-time.

RISKS OF ORCHID CULTURE.

A great many of our Orchids are very easy to cultivate. Moreover, they will endure more hardships than most people are aware of, but, like other plants, they require ordinary attention, and this attention must be given at the proper time. There is no difficulty whatever in the case of many species. Occasionally, however, failures occur through circumstances over which we have no control. Sometimes the plant may get exhausted through disease which might have been checked if operated upon in time; sometimes the pseudobulbs rot away, but this may often be remedied by cutting off all the decayed parts, and, when this is done, applying some sulphur or charcoal, which should be rubbed over the cut surface, in order to dry it and prevent the rotting from going further. There are other things that cause the roots to decay—among them are the errors of keeping them too wet or too dry. In the latter case the plants often shrivel, and thus get into a bad state of health; the evil may, indeed, go so far as to quite destroy their vitality; but even if they are not killed outright it will take a long time for them to recover their vigour. This is especially the case with such subjects as those species of Cattleya and Lælia which have tall thin wiry stems. Sometimes the blooming of a plant will be detrimental to it, especially if in a weakly state; if such is the case the buds should be removed before they attain any great size; or should this not be done the flower-spike itself should be cut off, by which severe treatment the plant will be greatly benefited for another year. The result in such instances is worth the sacrifice, as the plant will become much more vigorous and be enabled to endure any ordinary strain that may be placed upon it. Secure strong pseudobulbs, good roots, and healthy foliage, and then flowers with some substance in them—a most important point—may be expected to follow. *B. S. W., in "Orchid Album."*

The Rosery.

ROSES IN POTS.

WE had our first forced Roses in flower this year about the end of February, with very little forcing; indeed, they were not put into a gentle heat until the second week in the new year. The plants were planted into the pots in which they were to flower about the end of the summer, and in October they were pruned and put into a late vinery, but received no water at the roots; the vinery was heated to dry up damp for the preservation of the Grapes. Under these conditions the buds became prominent, and showed signs of starting before they were put into heat; water being applied to the roots they soon made very vigorous growth, both Teas and hybrid perpetuals. The well-known pests, green-fly and mildew, can easily be destroyed if looked after in time; but if either be allowed to increase they speedily do much damage to the plants, checking the perfect development of the leaves, and the consequent production of imperfect flowers. The same effects are produced by the plants being too far removed from the glass. We place them over the pipes near the front lights, and raise them nearer the roof glass by placing an inverted pot under each. In many gardens the only places that can be found for forcing plants, Roses, &c., are the vineries, and the treatment to be pursued with the Vines is that most suitable to Roses. They and most other subjects should be in close contact with the glass, especially in the early months of the year, such a position being best for most things, as promoting a better growth and the production of superior flowers. Amongst the numerous recently introduced varieties, there may be some valuable for forcing, but we hold to the good old sorts such as Dr. Andry, Duke of Edinburgh, Général Jacqueminot, John Hopper, Jules Margottin, La France, Madame Lacharme, Madame Victor Verdier, Prince Camille de Rohan, Victor Verdier, amongst hybrid perpetuals; the best Teas being Alba rosea, Belle Lyonnaise, Devoniensis, Homer, Hon. Edith Gifford, Madame Falcot, Madame Lambard, Madame Margottin, Madame Villermoz, Marie Van Houtte, Niphetos, Perle des Jardins, President, Rubens, Safrano, Souvenir d'Elise Vardon, Souvenir d'un Ami, and the recently introduced Sunset. *J. Douglas, Great Gearies, Ilford.*

The Flower Garden.

SEEDS OF SUMMER FLOWERING PLANTS.

TAKE the earliest opportunity of making a sowing of Sweet Peas, giving them a warm situation and rich soil. There are now some splendid varieties of these in the market. Also sow a good breadth of Mignonette and hardy annuals. These may be sown in shallow pans or boxes, in cold frames or pits, and planted out by-and-bye. They will attain to a larger size, and flower much better than if sown on the beds and borders in which they are to stand. The ground must be well worked and manured if they are to be seen in perfection.

HARDY BEDDING AND EDGING PLANTS.

Attention will have to be given to the planting of hardy edgings such as Cerastium tomentosum. This succeeds best planted in the same way as that described in a recent note on Box laying. The groundwork plants for carpet beds should also be planted with such, as Mentha, Herniaria glabra, Antennaria tomentosa, and the various species of Sedums and Saxifragas. A splendid subject as a dotplant is the Saxifraga longifolia. It is perfectly hardy if given a dry situation, and it will stand the severest weather, but will succumb to damp. Many of the mossy Saxifragas are charming things to use in carpet beds. They are specially adapted for covering perpendicular edges, although many of them are seen to most advantage creeping among rockwork. Rockwork should be looked over, and any plants in indifferent health attended to. All should be picked carefully over and receive a slight surface dressing of suitable compost.

ROSES.

In many places it will now be safe to prune the bulk of Roses, but in late or cold districts this had better be deferred till the first week in April. In pruning all the weakly growing sorts should be pruned to two eyes, while the strong growers should be left considerably longer. It is a mistake to crowd the plant with too many shoots, as these do not ripen their wood so well, and frost plays sad havoc with them in winter time. Cut out all the weak shoots that are not likely to bloom entirely, leaving no snags, as these only impoverish the flowering shoots. Pillar Roses may also be pruned and tied in. This must not be done in haphazard style, but with discrimination. Commencing at the bottom of the pillar cut back several shoots to furnish the base with flowering wood, and any vacant space higher up must likewise be provided for. Thin out and prune to three or four eyes the shoots of the previous year, but always have sufficient young shoots to replace the older ones, and to assure vigorous root-growth. A famous old Rose is the Chinese or Noisette, which yields a profusion of charming flowers till near Christmas. These should be trimmed out well, and every strong shoot which pushes from the base will throw a number of its beautiful flowers. *W. M. Baillie.*

Plants and their Culture.

STOVE PLANTS.

Creepers that were pruned early will now be breaking freely, and should be looked over and disbudded where required before the shoots get entangled; and late-flowered ones should be pruned at once. Dipladenias of various species, Allamandas, Clerodendron Thompsonæ and C. Balfourianum, and Gloriosa superba should be kept close to the glass, and receive all the light possible, for if this point be overlooked it will be a waste of time and space to grow them. The general potting in this department should now be nearly completed, but if it is not, no time should be lost. The young stock of coloured-leaved Dracænas, Crotons, and Panicum sulcatum and P. variegatum should be placed on shelves near the glass if they have become rooted into the new soil. Any flowering plants that may be wanted to flower in small pots should be liberally supplied with liquid manure; the same applies to specimens of Stephanotis floribunda, Francisceas of various kinds, Gardenias, and Tabernæmontana coronaria, when swelling up their flower-buds, for if the supplying of extra nutriment be neglected, a number of the buds will turn yellow and drop off. Attention should now be paid to the equalisation of the growth, and any shoots that show a tendency to run away should at once be checked by stopping them, or bending them down. This applies especially to plants that are required for specimens, and if overlooked it is impossible to get a well balanced plant.

Stove Herbs, Corms, and Tubers.

A batch of Achimenes, Gesneras, Tuberoses, Impatiens, Balsams, Celosias, Coleuses, &c., should be pushed on if wanted for the summer decoration of the conservatory or house. If it is intended to increase the stock of, or grow on to specimen size, any plants of Eucharis amazonica, E. Sanderiana, or the true E. candida, now is a good time to begin either shifting into larger pots, or shaking out the bulbs and repotting in fibrous loam with a slight addition of sand and dry cow manure. Plunge the pots or pans in bottom-heat at about 90°, when they will soon make a good start in root and growth.

Pits.

In warm pits, where show and fancy Pelargoniums are grown, the plants should have all the air given them possible; pinching should now be done for the last time, or a large proportion of leafage will be the result. The earliest batch will by this time be filled nicely out, and should have a few stakes put to them, and the shoots regulated. When the earliest varieties begin to knot for bloom they may be supplied with weak liquid manure. Cinerarias and Calceolarias should be placed together where they can have more air and less heat than other things in this department. Primulas of the best strains that were marked a week or two ago to keep or increase, should be placed near the glass, as such a position greatly assists fertilisation. Fuchsias will now need attention by bringing them out of cellars, sheds, &c., and placing them in heated pits or houses, pruning them into shape, and leaving them to break before potting. *A. Evans, Lythe Hill, Haslemere.*

The Orchid Houses.

EAST INDIAN HOUSE.

Plants of Vanda cœrulea in this house must have a vigilant eye kept on them, as thrips are apt to appear after the hard firing that has been necessary lately. If these are not got rid of at once on detection the young leaves will be quite disfigured. Pleiones should be examined, and if there are any roots near the surface, a top-dressing of sphagnum should be applied at once, as any check caused by the roots becoming dry while they are making their growth would entail much harm.

Calanthes and Cœlogynes.

If not already done, the compost for Calanthe Veitchii should be prepared. The proper time to pot them is just when they start into growth; but before doing so, sponge the bulbs thoroughly to eradicate all insects that may be infesting them. A good mixture for them is fibry peat, turf from pasture land, some charcoal, silver-sand, and cow-dung, the latter to be well dried and rubbed through a small-meshed sieve. Any plants of Cœlogyne cristata in want of repotting should have it done directly the flowers have faded. If Cœlogynes are disturbed too much at their roots they are shy to flower the next season; the better plan being to repot them into larger pots or pans without division.

Miscellaneous Plants.

We have just potted the singular and beautiful Mormodes luxatum eburneum, which with Anguloa Clowesii requires to be well raised above the rim of the pot when potting, and to be grown in the Lælia-house. In potting Odontoglossum Insleayi and O. leopardinum they ought also to be well raised above the pots, as the growth starts from the under-side of the pseudobulb, and if they were placed low in the pot the growth will get injured. In the Cattleya-house the potting off the C. Trianæ section must be pushed on; it will be found better to put pots that are much entwined with roots into a larger one entire than to try to separate the roots from the pots. Avoid the lodgment of water in the sheaths of any specimens of C. Warneri that are now showing flower. Insects will be busy with these and with C. Gaskellianas too, as they are starting their new growth, therefore especial pains must be taken to keep down greenfly and other pests. It is the greatest mistake to let insects increase and then to think of applying strong measures to eradicate them, entirely forgetting that Orchids are quite as sensitive as the insects, and injury must follow, although the Orchids may be some little time before they show it. We grow Oncidium Jonesianum in the Cattleya-house on Teak-rafts with sphagnum; their leaves droop perpendicularly downward, and they grow and flower freely under this treatment. Cattleya crispa must still be kept rather dry at the root if this dull weather should continue, as its leaves so very soon become disfigured if kept too wet—a temperature of 58° to 62° at night will do very well for the present. *A. Bradshaw, Waddesdon, March 9.*

Fruits Under Glass.

PEACH HOUSES.

The very adverse season we are now contending with—snow, cold, with easterly winds and frost every night, ranging generally from about 8° down to 16° of frost—renders forcing difficult. But the early house, notwithstanding, if kept at the temperature previously advised, will now be far advanced, and the trees swelling their fruits prior to stoning. By no means allow the borders to become dry, as that would probably cause the fruits to fall, but occasionally give abundant soakings of tepid water, and sometimes manure-water, which will assist their swelling. The fire-heat may be increased to 60° by night, with a rise of 5° or 10° by day, allowing the thermometer to rise another 5° or 10° before giving air, which must be done in accordance with the conditions of the weather; shut up early with sun-heat, letting the temperature rise to 80° or 90°. Syringe in the morning, and again in the afternoon, as soon as the house is shut up, the back and front of the trees, not leaving one dry branch, with clean soft water of the temperature of the house. Attend to tying-in the shoots regularly, and keep a sharp watch, so that greenfly does not get established, as it will take a great deal more killing then, than if fumigated at first, and will also injure the young shoots more.

The Second House.

The trees in this house being brought on in the manner before advised will now be in flower, or setting their fruit. Give plenty of air on all favourable occasions, to enable the blooms to set a good crop, but do not allow a high temperature until this is accomplished, say 45° to 50° at night, with a rise of 5° by day, at the same time keep the house dry, excepting on bright days, when the floor may be damped a little towards evening, which will have a tendency to freshen up the blooms for the following day. When a set is insured, the borders may have a good watering to help the fruit to swell off; and if the fruit is required to be ripe about the middle of May a rise of 10° may be given. *J. Vert, Audley End Gardens.*

The Kitchen Garden.

MUSHROOM BEDS.

The present is a good time to prepare a bed for the summer supply. For this purpose no place would be more suitable than a cold dark cellar or shed, the beds made 2 feet in depth, and kept warm after being spawned, and until the Mushrooms show, by having a good covering of litter placed over the beds. The produce from beds of this description will be superior to those grown in the Mushroom-houses proper during hot weather.

Autumn-sown Onions.

Transplant these into lines 1 foot apart, either on a portion of the plot selected for the main summer crop, or on one prepared for the purpose. In planting, the surface should be made firm, and care taken not to bury the bulb deeply in the soil. If extra-sized specimens are required frequent light top-dressings during the growing season of some artificial manure, such as "Clay's Fertiliser," or an equal mixture of common salt and soot, should be given, the surface after each application being moved with a sharp Dutch hoe.

Lettuces and Potatos.

Lettuces that were sown last August on beds outside to stand the winter may now be thinned and transplanted to warm situations, the remainder being allowed to stand until fit for use. Of Potatos, the early and second early varieties should be largely planted this month. The ground should have been previously dug over, and, unless very poor or light, rotten manure avoided. In planting, the distances between the rows should in a great measure depend upon the character and habit of the different varieties and the condition of the soil. We have found a top-dressing of fish guano, applied before earthing-up, to be an excellent stimulant. Medium-sized tubers make the most desirable sets, and where these have been prepared on shelves or in boxes they will now have made stout, sturdy shoots; two or three on each set should be retained, and the remainder removed at planting time.

Asparagus Beds.

These should be lightly forked over and raked down, and a top-dressing of salt applied at the rate of from 2 to 3 lb. per square yard. Nitrate of soda also makes an excellent dressing for Asparagus, and would be preferable on stiff retentive soils. Ground intended for new plantations, and which has been trenched and manured, should receive attention, by way of having the surface in proper condition for planting. This operation, however, would be best deferred until the intended plants have commenced growing and are from 4 to 6 inches in height. A deep sandy soil and an open situation suit the Asparagus best, but it also does well on almost any soil with cultivation, an essential and necessary condition being, that it must be thoroughly drained.

Warm Frames.

The exceptionally severe weather we are having will necessitate great care and attention in the management of all frames, particularly dung frames. These should have the temperature maintained by renewed linings and good coverings at night; air cautiously on bright days, avoiding draughts, closing early and before the sun's rays have quite left the frames. From the middle to the end of the month, on prepared beds, make the principal sowing of Broccoli, also one of Cabbage, Lettuce, Radishes, Mustard and Cress, Leeks, &c., to meet requirements. *John Austen, Witley Court.*

Horticultural Club.—A dinner and *conversazione* will take place on Tuesday, March 23, at 6 o'clock. The discussion will be opened by a paper by Mr. J. Polman Moöy, of Haarlem, on the Hyacinth.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Mar. 22	Sale of 7000 Lilium auratum, Freesia, Eucharis, Tigridia, and other Bulbs, at Stevens' Rooms.
TUESDAY,	Mar. 23	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
WEDNESDAY,	Mar. 24	Glasgow and West of Scotland Hyacinth and Spring Show. Bath Bulb Show (two days). Royal Botanic Society's Show, at the Gardens, Regent's Park. Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms. Sale of Lilium auratum, Irises, Roses, &c., at Protheroe & Morris' Rooms. Clearance Sale of Peonies, Irises, and Nursery Stock at the Royal Exotic Nursery, Tooting, by Protheroe & Morris.
THURSDAY,	Mar. 25	Sale of the Seventh Portion of the Collection of Orchids of the late E. K. Harrison, Esq., at Stevens' Rooms. Sale of Nursery Stock at the Bell Lane Nursery, Hendon, by Protheroe & Morris.
FRIDAY,	Mar. 26	Sale of Imported Orchids, at Protheroe & Morris' Rooms. Meeting of the Société Botanique de France.
SATURDAY,	Mar. 27	Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms.

SOMETHING like a scare was experienced by those interested in the fate of Kew by the success of Mr. LABOUCHERE'S motion in the House of Commons for reducing the vote for public gardens and parks in the metropolis. Mr. LABOUCHERE'S object, and that of those who voted with him, was merely to throw the cost of maintaining the parks on to the ratepayers of the metropolis, and to remove this impost from the nation at large. The general principle that local institutions should be maintained by local means is no doubt a good one, and so thought the House of Commons. But in their eagerness to relieve the imperial taxpayer they paid no heed to the peculiar circumstances of the Royal Parks, while Kew was, so far as we have seen, not taken into consideration at all, our legislators knowing "the parks," of which we have not only no monopoly, but in which we are surpassed by other countries, but being apparently ignorant of the one garden in which we excel all other countries. The effect of the vote would have been to cut down the estimates for Kew and the parks by at least one-half. Fortunately the new proposal was found to bristle with absurdities to such a degree as to be impracticable. The royal parks—the parks proper—and we presume Kew—will remain under Governmental management, while the parks of more strictly local interest it is proposed to hand over to the Metropolitan Board of Works, and we suppose eventually to that governing body for London which has yet to be constituted. At any rate, for the present, we are spared the need for discussion whether the Vestries of Kew and Richmond are suitable bodies to manage a great scientific institution.

THE influential body known as the Landowners' Association for the Voluntary Extension of the ALLOTMENT SYSTEM * was formed a short time since for the purpose of affording reliable information on the practice of estates in regard to allotments, and also, in Lord ONSLOW'S own words, "To secure the adhesion of the greatest number of land and glebe owners to the principles of the Association, of which the main point is an extension of the system to all labourers on their estates who may desire to rent an allotment." From Lord ONSLOW'S book we learn that 248 members of the Association, owning one-fourteenth of the cultivated land of England and Wales, have expressed their desire for the distribution of land among the labourers of their respective neighbourhoods, and their determination to facilitate the provision of cow pastures and field allotments on their own estates. Such a resolution by the owners of such a considerable slice of 32,544,000 cultivated acres cannot but have an immense effect in the increased distribution of the land on the larger estates, the members owning 3000 each and more; but when we consider the *esprit de corps* of landowners and their laudable habit of imitating anything useful or commendable that may find introduction among them, we may be sure that a widespread and most interesting movement has commenced, which is destined to be felt in every neighbourhood and perhaps in every parish of the country. We can ourselves bear witness to the interest excited by this combination of great owners amongst others of their class. It is true that allotments and cow-keeping by farm labourers have a special history of their own, and that various prominent attempts by landowners to bring within the reach of labourers these never-failing means of comfort, have been made before. An association, having the well-meaning old king GEORGE III. at its head, recommended allotments in 1796; as many as seventy or eighty labourers on Lord WINCHILSEA'S estates kept from one to four cows each in 1810; while in 1830 the "Labourers' Association Society," an association almost as powerful as the present one, had for its special object the obtaining of land for labourers in suitable small plots at fair prices. It may prove an interesting detail if we add that the last-named Society reported that at West Horsley, Surrey (the Earl of LOVELACE'S place, described January 9, p. 39) all cottages had gardens of from a quarter to one acre, and in the adjoining parish of East Clandon (the Earl of ONSLOW'S, p. 711, 1885) twenty-one cottagers had half an acre of land besides garden, and eight enough meadow land to keep a cow. The Royal Agricultural Society of England has not neglected this subject, having published several papers on the allotment question; besides Mr. HENRY EVERSHED'S paper on "Cow-keeping by Farm Labourers," 1878, in which the management of Lord TOLLEMACHE was first made public. But knowledge dished up cold is not always freely taken. At any rate, enthusiasm was not awakened by these articles, excellent as they may have been; the bells were not set ringing at the joyful communication to the landowners of the means by which thousands of labouring men might have found their comforts and the blessings of their lives increased. But Lord ONSLOW writes with authority. He is the Hon. Secretary of the Landowners' Association, and his book will be very widely noticed by the Press, and eagerly read by all who acknowledge that "property has its duties as well as its rights."

It is slow work forming a cow pasture, even in the pastoral districts, but we are glad to bear witness that the Landowners' Association had no sooner published its programme than a sowing of grass seeds for future cow pastures for labourers' cows took place in several neighbourhoods. The appearance of Lord ONSLOW'S book will probably lead to further sowings, and in that case, besides the results already alluded to, it will aid in the education of the children of farm labourers in two most useful departments, the care of live stock and dairy management.

We can hardly close our remarks without observing that the inducing cause of this latest movement for the multiplication of gardens and cow plots has been the Radical agitation on the subject, and especially the action of Mr. JESSE COLLINGS. From our point of view, desiring the growth of gardens and standing aloof from party politics, the agitation seems to have been useful. Another advantage will be that the conduct of landowners will be placed in a proper light. Judging from our own observation we should say that cow pastures for farm labourers are comparatively rare and that the system may be very advantageously extended. As to field allotments their extension has been long encouraged. Some landowners, however, still remain inert, so that we rejoice in the present movement, and regret that the towns are far behind the country in this respect. The Birmingham gentlemen who have founded the Allotments Extension Association should look into this. Lord CARRINGTON has set an admirable example at High Wycombe. Handicraftsmen and the operatives of towns make enthusiastic gardeners when the opportunity is afforded them, and perhaps the influence of the Association just named might be brought to bear in this direction. Meanwhile, those who seek for information on allotments in the country districts, the practice of different counties, and a variety of interesting details relating to them, will find Lord ONSLOW'S book, published on behalf of the Landowners' Association, crammed full with such information.

* *Landlords and Allotments:* the History and Present Condition of the Allotment System. By the Earl of Onslow. Longman, Green & Co.)

—— PROVINCIAL SHOW OF THE ROYAL HORTICULTURAL SOCIETY AT LIVERPOOL.—By the time this number is published the schedule of prizes for this exhibition will be in the hands of those concerned, or may be had on application to Mr. A. F. BARRON, Royal Horticultural Society's Gardens, Chiswick. The prizes offered amount to £1200. The classes include competitions for stove and greenhouse plants, the prizes for twelve being £20, £15, and £10 respectively, and for foliage plants, Ferns, Crotons, Caladiums, &c. Prizes of £20, £15, and £10 are offered for collections of Orchids, with various minor prizes for smaller collections. The Liverpool Horticultural Company offers a cup of the value of 25 guineas for the best twelve Orchids in flower. Nepenthes, Sarracenias, Rhododendrons, herbaceous plants, Achimenes, hardy trees and shrubs, Conifers, and many other groups are provided for. There are two classes for new plants, in each case for twelve. It is a pity a prize or prizes are not offered for a smaller number, or even for one only. Cut flowers, table decorations, fruit and vegetables, are amply provided for; and Messrs. CARTER & Co., SUTTON & SONS, WEBB & SONS offer special prizes. Cottagers and artisans are not forgotten. Among the novel subjects is a class for the best exhibition of examples illustrative of the cultivation of plants, vegetables, &c., on board ship, with the various methods and appliances used. Another section is devoted to horticultural and botanical literature, science, and art, following a practice adopted in foreign horticultural exhibitions. Implements, garden structures, tools, and appliances will be exhibited, including practical trials of boilers and other implements. It will be seen that the schedule is very comprehensive, and that, so far as can be told beforehand, the exhibition is likely to be one of the most important, if not the most important, held in the provinces. It should be a point of honour with all interested in the Society, and with all who are sensible of the cordiality displayed by the Liverpool authorities, to render the meeting thoroughly successful. We may remind our readers that the date fixed for the show is from June 29 to July 5 inclusive, and that all entries should be sent to Mr. BARRON, at Chiswick, before Monday, June 21, and for the Implement department before June 12.

—— DR. DE REGEL.—We learn that the statement we published as to the resignation of DR. DE REGEL is incorrect, and that our highly respected friend has no intention of resigning his post of Director of the St. Petersburg Botanic Garden. This will be good news to those who value our indefatigable friend's services.

—— "REICHENBACHIA."—We learn that Messrs. SANDER & Co., of St. Alban's, are about to issue a monthly work on Orchids. Each number is to contain four coloured plates, with accompanying text in Latin, French, German, and English. Woodcuts will also be employed. The name is, of course, given in honour of the great orchidologist.

—— "FLOWERS, FRUITS, AND LEAVES."—Under this title Sir JOHN LUBBOCK has lately issued, through Messrs. MACMILLAN & Co., a little volume which will go far to remove the idea that botany is a dry science. We confine ourselves now to the mere announcement of the publication, as we shall take an early opportunity of speaking more at length on its contents.


E.W.Wm. Smith. Sc.

—— PHYLLOXERA IN FRANCE. — We have received for publication a copy of the following despatch addressed to our Ambassador in Paris by the Commercial Attaché in that city :—

"It appears from the report of the Director of Agriculture which I have the honour to enclose, that the plague of the Phylloxera has broken out at several places in Algeria, and that, in France, its ravages continue to extend. The French Government hope that the radical measures taken to stamp out the disease at Mansourah and Sidi bel Abbés, will prove effectual.

"In France Phylloxera has been found in six new districts, where it had not as yet appeared.

"But the labours of replanting or grafting in the infected districts have been great and, to some extent, successful; and it is said of the department of the Hérault that one-half of the Vine area—45,000 hectares, or 111,195 acres—has been laid with American Vine, which has begun to give returns.

"On the whole it would seem that in spite of the enlargement of the field of contagion, the number of acres of healthy and sick Vines has remained almost the same. At the close of 1885 the total acreage of Vines destroyed by Phylloxera had been 1,000,000 hectares or 2,471,000 acres, *i.e.*, about two-fifths of the whole Vine area of France. There are now under Vine 1,990,586 hectares, or 4,916,747 acres, so that the loss is about 500,000 hectares, or 1,235,000 acres.

"The report of the Director of Agriculture shows that American Grape has been substituted for French on a surface of 75,262 hectares. But Phylloxera is not the only disease against which the wine-grower has had to contend. Mildew has also been very destructive in 1885; but it is now known that sulphate of copper is a certain remedy for that malady. Parliament grants 2,000,000 fr. (£80,000) a-year in aid of Vine-growers desirous of destroying Phylloxera, or striving to replant their vineyards with exotic Vines.—I have, &c.,

(Signed) "J. A. CROWE.

"The Right Hon. the Viscount LYONS, G.C.B."

—— ROYAL HORTICULTURAL SOCIETY. — The schedule of the Society, for the present year, is now published, and may be had from Mr. BARRON. In addition to the fortnightly promenade shows, special exhibitions of Auriculas will be held on April 20 and 21, in conjunction with the National Auricula Society and the Primula Conference; on May 11 the Veitch Memorial Prize of £5 for the best collection of forced salads will be offered; May 25 will be devoted to pot Roses and Azaleas; on June 8 there will be a show of Orchids, on June 22one of Pelargoniums; on July 16 the Great Exhibition of the National Rose Society will be held; on July 13 a show of fruit will be held; the National Carnation and Picotee Society follow suit on July 27. The Cottagers' Show is to be held on August 24, that of Grapes, Dahlias, &c., on September 7 and 8. Hardy fruit are provided for on October 12 and 13 Chrysanthemums on October 26 and 27. At most of these meetings special prizes will be offered by Messrs. CARTER & Co., SUTTON & SONS, and WEBB & Co. It is clear that there will be plenty to do at the old Society, to say nothing of the Exhibition at Liverpool.

—— MAIDENHEAD HORTICULTURAL SOCIETY. —The annual show of the above Society is fixed for Thursday, August 19, 1886.

—— CHINESE PRIMROSES.—A box of handsome blooms of these was lately sent for our inspection by Mr. W. BULL, New Plant Nurseries, Chelsea. The single-flowered forms consisted of most of the pretty shades of colour now becoming commoner, and which have the attraction of a yellow eye, generally pentagonal in outline. The few semi-double flowers had the supernumerary petals in the form of half-closed sheafs springing from their centre. Amongst these was a variety similar in hue to Chiswick Red, but deeper; others were flesh-pink and rosy-purple.

—— HORTICULTURAL CLUB. — The usual monthly dinner and *conversazione* of the Club took place on Tuesday, the 9th inst. The *conversazione* was opened by an interesting paper by Mr. SHIRLEY HIBBERD on "The Preservation of the British Flora." A discussion took place afterwards, in which Dr. HOGG, Mr. J. G. BAKER (Kew), Mr. NICHOLSON (Kew), Messrs. COUSENS, DRUERY, GEORGE BUNYARD, and others joined. At the close the following resolution was proposed, and unanimously adopted, Mr. SHIRLEY HIBBERD remarking that great changes had been wrought from much smaller commencements, and hoping that this would result in great good to the British flora:—"That this Club, deploring the extinction in many places of British plants and Ferns, which tend so much to the beauty and enjoyment of the country, hereby undertakes to use its best endeavours to prevent their destruction, and especially invites all tourists to discontinue the practice of bringing away specimens from the places they visit, and which in ninety-nine cases out of a hundred never live, and which can most probably be procured from a nurseryman close to their own doors, and urges also on all professional collectors great care in obtaining plants; and, moreover, desires to impress upon managers of provincial shows the need of limiting the collections for prizes for wild flowers which they fear tends towards the wanton destruction of many plants."

—— OXFORD ROSE SOCIETY.—This show, announced in our last issue for July 8, will take place on July 7, in response to the earnest solicitations of intending exhibitors who wish to compete at both shows—Bath and Oxford.

—— TREE PLANTING THIS SEASON.—The immense quantity of snow which has fallen lately in the northern portions of Great Britain has so retarded the operations connected with planting, that already correspondence has reached us which indicates the certainty that the carrying out of orders for trees and shrubs, and their transmission to their destination, will be much delayed in nurseries situated in those parts. The same difficulties, if in a lesser degree, will be felt by those who have home nurseries for the supplying of their needs.

—— "TRANSACTIONS OF THE EAST KENT NATURAL HISTORY SOCIETY."—The publications of this Society have a long period of incubation. We find in the part before us, dated 1885, papers read three years previously. The interest of author and of auditor must needs be dulled by the lapse of time. Mr. SIBERT SAUNDERS' paper on the marine aquarium is a valuable contribution. The earthquake of April 22, 1884, was felt at Canterbury, as evidenced by the fact that the water which emerges from the artesian well in the chalk, which is usually perfectly clear, on that morning became very turbid, and remained so for some hours.

—— "PROCEEDINGS OF THE CHESTER SOCIETY OF NATURAL SCIENCE."—The last issued part contains some excellent papers on the geology of North Wales, some remarks on the climate of the Chester district, by Mr. A. O. WALKER, whose observations on the subject are familiar to many of our readers. Mr. SIDDALL contributes a paper on the anatomy of the American Water-weed. Taken as a whole the papers are of a high character and superior in value and general interest to those of many similar societies.

—— THE ROYAL GARDENS, KEW.—At the recent *Levée* Mr. W. T. THISELTON DYER, C.M.G., was presented by Mr. MITFORD, C.B., on appointment as Director of the Royal Gardens, Kew.

—— CARNATIONS AND PICOTEES.—Mr. HARRY TURNER informs us that there has been a great destruction of Carnations and Picotees layered in the open air, at the Royal Nursery, Slough. Probably others have to deplore like losses; something like 60,000 layers at least were made last season at the Royal Nursery, but the large majority were potted and placed under protection in cold frames. As showing how this beautiful flower has risen in popularity, Mr. TURNER states that the demand for plants during the autumn and early winter was unprecedented; and it should never be forgotten that the Carnation is an excellent town plant—one of the few that flourishes in some localities.

—— DISA GRANDIFLORA.—We are delighted to find from the Cape papers that an energetic protest is being made against the wholesale uprooting of this plant on Table Mountain, and that rangers have been appointed to see that no further reckless destruction shall take place. But we also learn that a local dealer has managed to to obtain permission, and that he and some six labourers with spades were lately doing their best to root out the comparatively few Disas still left. The work of destruction, says the *Volksblad*, was carried on in so wholesale a manner that the whole stream was converted into a muddy furrow, and by the bagful these roots were carried off. We earnestly hope the authorities will cease to enact stupid laws, such as the prevention of the importation of Dutch bulbs from fear of Phylloxera, and rigorously conserve the lovely and most interesting flora of the Cape. This might be done without any undue interference with legitimate claims.

—— HORTICULTURAL EDUCATION. — We are rejoiced to find that the principle for which we have contended for so many years is attracting attention, and that the superior advantages possessed by many foreign countries in the possession of Ministers of Agriculture and of Education are forcing themselves on the notice of the public. In the report of the Scientific Superintendent of the Royal Botanic Garden, Glasnevin, we find a proposal to provide for scientific requirements in herbarium, museum, library, lecture-room, and laboratory, [and] also to utilise the garden for instruction in horticulture and sylviculture, both of which subjects might well be added to the list of the May Science Examinations. "I am certain," says Dr. MCNAB, "that no greater benefit could be conferred by the Science and Art Department upon Ireland than by providing instruction in horticulture and sylviculture, and no more suitable place could be found than their own botanic garden."

—— HON. MARSHALL WILDER.—This gentleman has presented to the Massachusetts Agricultural College for its library 250 volumes of agricultural and horticultural papers and periodicals; sixty bound volumes of the *Gardeners' Chronicle*, a complete set, valued at 500 dollars; the *Proceedings* of the American Pomological Society for thirty-seven years, and the *Transactions* of the Boston Society of Natural History for twenty years—from 1866 to 1885, inclusive.

—— EALING, ACTON, AND HANWELL HORTICULTURAL SOCIETY. — The annual summer exhibition of this Society will take place on July 7 next, in the grounds of Hanger Hill House, Ealing; and the autumn exhibition on November 2 and 3, in the Lyric Hall, Ealing.

—— RHIPILIA ANDERSONI is a remarkable Alga form described by Mr. G. MURRAY at the Linnean Society, March 4. The genus was established by KÜTZING for the reception of two species collected by SONDER in the Antilles. To these Professor DICKIE added a third from Barbadoes. The new form obtained by Dr. JOHN ANDERSON on mud flats in King's Island Bay differs from all the others in several interesting particulars, and further proves the oriental habitat of the genus, for a specimen in a very imperfect condition obtained by CUMING doubtfully from the Philippines, has hitherto lain unidentified in the British Museum herbarium. The Alga in question, R. Andersoni, has a brown broad shield-like frond, which alone appears above the mud, and this is, so to say, rooted by a mast of rhizoids, these being composed of agglutinated fibrils of a peculiar cellular structure.

—— A PEACH ORCHARD.—The largest Peach orchard in the world, according to the *Illustration Horticole*, is the property of Mr. J. H. PARNELL, in Georgia. Mr. PARNELL is the brother, we believe, of Mr. C. S. PARNELL, of Home Rule notoriety. The Peach orchard in question comprises 840 hectares, containing about 150,000 trees, planted at a distance of 4 metres one from the other, and grown as bushes or low standards, to facilitate the picking of the fruit. Seventy thousand of these trees belong to the "Parnell" variety. The land was bought at a cost of 12,000 dollars, and at present the annual revenue is more than two-thirds of this sum. Mr. PARNELL sent as many as 900 boxes of Peaches in a single day to New York.

—— CALNE HORTICULTURAL SOCIETY.—The annual exhibition of this Society will take place, as usual, in Bowood Park, on August 17.

—— NEUMANNIA ARCUATA.—Under this name M. ANDRÉ describes in the *Revue Horticole* a Bromeliad discovered by him on the western slopes of the Andes of New Granada in the province of Cauca. The plant is an epiphyte, with a short stem, and glabrous, lanceolate leaves, 3—4 feet long, tapering into a long stalk nearly as long as the blade. The edges of the petiole are provided in some cases with small spines The inflorescence is a long scape, arising from amid

the leaves, and arching downwards. It is covered with appressed, lanceolate, cherry-coloured bracts, protecting the yellow flowers, each about 3—3½ inches long. It is a stove plant, remarkable for the beauty of the inflorescence, and the length of time it remains in bloom. As it inhabits a district where the temperature rarely descends below 68° Fahr., it requires to be kept in a uniformly warm temperature, or the plant loses its leaves.

—— Grass Seeds.—We have received from Messrs. E. Webb & Sons a case of samples of their grass and Clover seeds. This system of distributing authentic samples is an excellent one. Some day some of our enterprising seedsmen will see their way to produce a series of enlarged figures of the several seeds available for comparative purposes. In these matters we are behind the Germans, whose handbooks of seeds are in advance of anything that we have.

Gardening Appointment.—Mr. James Udale, for eleven years Gardener at Shirecliffe Hall, Sheffield, has been appointed Head Gardener and Clerk of Works to Howard F. Paget, Esq., Elford, Tamworth.

EXHIBITION FLOWERING PLANTS.

At a time when the falling off that has taken place during late years in the stove and greenhouse flowering plants shown at the leading exhibitions is a subject of frequent comment, an illustration of a group such as was forthcoming in times past may be interesting to our readers. The falling off in question applies more to the early shows, when Azaleas and a good many other greenhouse plants of the most effective description used to appear in all their glory, than to the more advanced summer exhibitions, the character of which is well sustained.

The illustration (fig. 71, p. 369) represents a group of fifteen plants that obtained the 1st prize, shown at one of the Whit-week gatherings at Old Trafford, Manchester, by Mr. Baines, when gardener at Southgate House. The photograph from which our artist had to work did not take quite all the group in. As will be seen they were staged four rows deep, and consisted of the following:—Back row, commencing on the left, Azalea Chelsoni, over 5 feet through by 5½ feet high; Erica Cavendishii, 6 by 5½ feet; Azalea Iveryana, 6½ by 5½ feet. Second row:—Darwinia tulipifera, 6 feet by 4 feet 10 inches; Azalea coronata, 6 by 5½ feet; Ixora coccinea, 5 by 5 feet. Third row:—Statice profusa, only partially shown, 4 feet 10 inches through by 3½ feet high; Erica ventricosa coccinea minor, 5½ by 3½ feet; Franciscea confertiflora, 5 by 4½ feet; Boronia pinnata, only a little of which is seen, 3½ by 4 feet. Fourth row:—Aphelexis macrantha rosea, 5½ by 3½ fee.; Dipladenia amabilis, 4 by 4½ feet; Erica ampullacea, 4 feet 3 inches by 3 feet. The two remaining plants not seen, were Ixora amboynensis, 5 by 4 feet; and Dracophyllum gracile, 4½ by 4 feet. The Ixora coccinea bore about eighty trusses, many of which were 6 inches in diameter; I. amboynensis had seventy trusses. The Franciscea was unusually well flowered, numbers of the shoots having from twenty-five to forty flowers and buds each. The Dipladenia was one of the most remarkable plants in the collection, considering the time of the show. As will be seen, the diameter of the specimens was more than their height, a form that shows more of their natural shape than when trained pyramidal fashion. Necessarily, from their size, many of the plants included in the group had attained considerable age, still, as is apparent, they were clothed with dense foliage, and flowers down to the bottoms over the rims of the pots, in the absence of which there is little merit in large specimens. Many old plant growers, capable of judging, pronounced them to be the best group of flowering plants that had been brought out, taking into account size and general condition, with the absence of inferior varieties. The Palms at the back were simply staged to give a little relief to the mass of colour. We give the illustration as an example of what our leading plantsmen could, and did do, with a class of plants now little grown; but, extraordinary as are these illustrations of the cultivator's art, we trust that in the future we may have equally good cultivation without the frightfully artificial formality of training here exhibited.

FLOWERS AND INSECTS.

(*Concluded from p. 331.*)

The Origin of Flowering Plants.—We now have to inquire into the origin of flowers. The simplest plants we know are water plants, and propagate themselves by subdivision only. A little higher in the series we find two minute cells uniting to form what is called a zygospore, which after a brief period of rest developes into a new plant. Still ascending we find the equivalent of pollen and ovules, or an organ producing a number of minute bodies, which find their way to another specially developed organ, and fertilise it. These minute bodies move in the water by means of cilia or hairs. Finally we note a higher group where these minute bodies no longer possess a cilium, but are merely borne along by the current, as pollen is carried by the wind. It is not necessary to mention the higher groups of flowerless plants, for the foregoing is only intended to show the easy steps up to the formation of a simple flower, which we reach in the group containing the Fir tribe. It is a very simple organism: the pollen is borne in one flower, the ovules in another; but the ovules are not enclosed in an ovary, and the parts which in ordinary flowers are coloured are here absent. As the plants no longer live in water the pollen is carried by the wind, and that it is a very efficient agent any one who has observed a Fir tree in flower can testify.

The Later Development in Flowers.

After this brief outline of the origin of flowers, let us attempt to trace their subsequent history and development, and thus complete the task we have in hand. Every plant supplies in its pollen a nitrogenous food, which is readily made use of by insects, and this fact is of special importance in explaining the origin of insect-fertilised flowers. The lowest and most primitive flowering plants are wind-fertilised, and it is here we may look for the first adaptations to insects visits. We therefore infer that certain primitive insects began to feed on the pollen of these simple, unspecialised flowers, and in course of time races arose whose mouths were specially adapted for grinding the pollen before swallowing it. Honey is an important attraction to insects, and a word as to the secretion of honey seems necessary. A sweet substance exudes from various plant tissues, under certain conditions, which induce a change in the sap, and this sweet exudation is greedily devoured by insects. The phenomenon known to us as honey-dew is a familiar example. Conditions must have arisen which induced the secretion of honey by some of these simple flowers, and it is equally clear that insects began to feed on it. These insects got dusted with the pollen, and in going from flower to flower began to assist in the work which had hitherto been performed by the wind. That this was an advantage may be inferred from the abundance of their descendants at the present time; and the explanation is very simple. All plants are exceedingly prolific; the seed-pod of an Orchid may contain over a million seeds. It may be affirmed that the progeny of any single plant of any kind would in a few generations be sufficient to populate the whole world, were all to come to maturity. But we know that, from various causes, only a very few reach maturity. The great law of natural selection is here seen in full play. No two organisms in Nature are identical in all respects. The offspring inherit in the main the peculiarities of their parents. Of those which come into existence only a certain number reach maturity. Finally, those which, on the whole, are best adapted to the circumstances in which they are placed are most likely to leave descendants. With these various considerations borne in mind we must rapidly follow insect-fertilised flowers to their present development. The secretion of honey led to an increase in the number of insect visits, and with the tendency to rely on this method of fertilisation came various modifications in the flowers themselves. Instead of producing pollen and ovules in distinct flowers, both were produced by the same; an obvious advantage in the event of scarcity of insects. The green colour of wind-fertilised flowers gave way to yellow, and further declined to white on the one hand, and increased to red and crimson on the other; and through these to purple and blue, the highest stage of colour development. Various colours, too, were developed, as they came to be of service in attracting insects. Colour and perfume thus served to show the insects where the honey was to be found. Thus were produced showy, open flowers, which could be plundered by all insects alike; in some cases without effecting the work of fertilisation. But Nature, with all her wealth, is ever one of the most rigid of economists; and certain plants took to producing tubular and irregularly-shaped flowers, and in some cases to concealing the honey in nectaries, so that only those insects which effectively transfer the pollen to the stigma could reach the honey. To this end also certain flowers acquired the habit of going to sleep or closing their petals—an arrangement which protects the honey and pollen from being plundered when the proper insects are not on the wing. Certain brightly coloured flowers sleep at night and during rain, and these are fertilised by day-flying insects; but other white or pale yellow flowers sleep by day, and these are fertilised by moths. Flowers which are fertilised by night-flying insects are generally pale in colour, and thus more distinguishable in the dusk; but strangest of all perhaps is the fact that many of these flowers only exhale their perfume at this time.

Mutual Adaptation of Flowers and Insects.

We thus see that flowers owe not only their scent and colour, but also their distinctive forms and peculiar habits, to insect selection; and on the other hand that certain insects have been modified and adapted to feed on honey and pollen, and to obtain these substances from flowers. But why these mutual adaptations? It would at first appear that with the pollen and stigma present in the same flower fertilisation might be much more easily effected by an arrangement which transferred the one to the other by a puff of wind. There must be a cause, as there is an obvious inconsistency in the co-existence of two elaborate arrangements, the one to simply effect fertilisation, the other to prevent its taking place except by the complex methods we have been considering. The reason is this. No two plants exist under precisely the same conditions, consequently no two are exactly alike. Cross-fertilisation produces finer, heavier seed than self-fertilisation; and these produce stronger individuals, which vanquish their weaker brethren in the struggle for existence.

So much for insect selection. But man appears on the scene. He, too, likes flowers. He removes them from their native wilds, and cultivates them through successive generations in his garden. Some of his seedlings show slight improvements in colour or size, and these he preserves, and propagates from. By small degrees he has so changed our garden flowers—Roses, Carnations, Hollyhocks, Chrysanthemums, Pansies, and many others—from their wild originals, in size, variation of colouring, and from single to double, that without actual historical evidence we might be led to doubt their origin—ay, and even grow warm in the attempt to disprove it. Garden flowers have been gradually developed through successive generations to supply a want felt, and in harmony with natural laws. *K. A. Rolfe.*

KUMAUN.

(*Continued from p. 299.*)

Kutti is a prosperous-looking village, commanding a large extent of cultivated ground. The principal crops are Wheat, China (Panicum miliaceum), Palti, or Buckwheat (Fagopyrum esculentum var.), Chua or Marsa (Amarantus frumentaceus), also Turnips, Mustard, and Tobacco. Two varieties of Wheat are grown, one of which, called "Oi," is used for the distillation of spirit. Both kinds are sown in May. On the walls of the village I saw some fine specimens of Blitum virgatum, which the people here call "Bompáling." It has large red Mulberry-like fruits, quite sweet to the taste, and they are eaten by the villagers. Asperugo procumbens is common as a weed of cultivation, so also is Scopolia lurida, a coarse Solanaceous plant, called "Lontan" by the Byáns people.

In the evening I explored some steep rocks a few hundred feet above the camp, and was fortunate in finding specimens of Asplenium Ruta-muraria, a well-known British Fern, but known only in Kashmir as an Indian plant. I also gathered on the open ground below the rocks a rare and beautiful Scabiosa (S. Hookeri), previously recorded only from Sikkim. Encouraged by the discovery of two such interesting plants as the above, I spent the greater part of the following day in exploring some higher ground up to

above 14,000 feet. Scabiosa Hookeri is abundant on the open pasture ground above the village, also Anemone rupicola. Aster Stracheyi grows plentifully beside the watercourses, together with Parnassia ovata and Primula involucrata. A new species of Scirpus, named S. dissitus by Mr. C. B. Clarke, was also found here.

The commonest shrubs met with on these hills are Caragana pygmæa and crassicaulis, Rosa sericea, Lonicera rupicola, Juniperus Wallichiana and J. communis, all of which are indications of a comparatively dry climate. An Iris, probably a new species, grows in masses amongst the above-mentioned bushes. The fruit of Podophyllum Emodi, called "Pharkála" in these parts, was beginning to turn red. It is eaten by the natives. A brilliantly blue-flowered Delphinium (D. cæruleum) is common, also Aster diplostephioides, one of the handsomest of the Himalayan Asters. Saxifraga afghanica, Aitch. and Hemsley, the same species which was gathered near the Lebung glacier, is abundant here.

I left Kutti on September 10 for Nábbí, a small village further down the valley. Mr. Reid had gone on the day before to Tákala Khár in Tibet, to which place there is a road from Kangua up the Káli valley over the Lipu Lekh Pass. Nábbí is about 1000 feet below Kutti, a descent which brings one within the limit of forests. Several interesting plants were seen on the way down, a complete list of which would be too long to enumerate here. A very common shrub is Microglossa albescens, allied to the Asters; Oxyria reniformis is also abundant. Just before reaching Nábbí the road passes through forests of Pinus excelsa. They extend for several miles on either side of the valley, and far up the hillsides on the right bank, the opposite side towards the east being too precipitous for almost any kind of vegetation except Juniper, which forms isolated patches on ledges of the precipices.

Having a day to spare here I employed the time in exploring a valley towards the west. Spiræa sorbifolia grows here abundantly, also Rosa sericea; Campanula cana and Senecio pedunculatus are met with on the steep rocks. Anemone rupicola is quite a common plant about here, even on ground which has been cultivated. I made my way with difficulty through dense woods composed of Birch and Rhododendron campanulatum up to an elevation of 13,000 feet. The following are some of the more interesting plants which were observed:—Geranium collinum, Gentiana Moorcraftiana, G. detonsa, Lonicera purpurascens, Senecio quinqueloba, Delphinium cashmirianum, Swertia species, Cotoneaster rotundifolia, Pellæa gracilis, Viola biflora, Hierochloa laxa, a handsome grass, having the odour of the English hay-scented Anthoxanthum; Saxifraga odontophylla, Aster Stracheyi, Picrorhiza Kurrua, Primula (two dwarf species, probably new), Isopyrum grandiflorum, Potentilla eriocarpa, Cortusa Matthioli, Thalictrum elegans, Saxifraga afghanica, Lactuca Dubyæa, Aspidium Lachenense.

The next day (September 12) I went on to Kangua, an easy march of about six miles down the Kutti valley. In the evening I was tempted to explore the lower portion of this valley. Pinus excelsa, which forms a dense forest on a plateau near the junction of the two rivers, suddenly disappeared as you enter the valley, the rocks on either side being too precipitous for the growth of trees. The Siberian Crab (Pyrus baccata) is plentiful here, and the trees when I saw them were covered with the nearly ripe fruits. It is called "Rutripuli" by the natives, and they eat the fruits. Amongst the large boulders under the crags some very fine specimens of Asplenium trichomanes, and A. septentrionale were found, also of A. Ruta-muraria. Hypecoum leptocarpum was also collected, a delicate little Fumariaceous plant previously recorded only from Western Tibet, and the inner ranges of the Sikkim Himalaya. Another interesting Fern found in this valley is what I take to be a glabrous variety of Woodsia lanosa. A few specimens of Potentilla coriandrifolia and Pterotheca Falconeri were also gathered.

On the following day I made an expedition to a ravine above the village of Napalcha, on the opposite side of the Kutti valley. It took some time to reach this ravine, as both the Kali and the Kutti streams had to be crossed, and steep descents and ascents were unavoidable. I was well rewarded, however, for my pains. The village of Napalcha is picturesquely situated at the entrance of the ravine. Above the village are extensive Birch forests, and beyond them open grassy slopes surmounted by precipitous rocks. To reach these rocks was my chief object. A crop of the "Calcuttia" variety of Tobacco was seen near the village; and, growing like a weed, I noticed Hyoscyamus niger (Henbane), the seeds of which are used by the villagers as a sedative. They call the plant "Loritari," the same name being applied to Scopolia lurida. Asplenium viride was gathered on rocks near the village. The vegetation in the upper part of this ravine is similar, on the whole, to that of the valley above Nábbí. The following additional species should be mentioned:—Senecio kumaonensis, a very handsome new species with pure white tomentum on the under-surface of the leaves; Senecio arnicoides, Saussurea bracteata, Primula elliptica and purpurea; a curious variety of Arenaria ciliolata with reflexed peduncles; Saxifraga odontophylla was plentiful on shady rocks; and near a glacier at the head of the valley Saxifraga Stolitzkæ and S. ramulosa were abundant; here also I gathered a new Primula resembling a dwarf variety of Primula elliptica. On reaching camp in the evening I found that Mr. Reid had returned from Takala Ka, after a successful and interesting expedition. He brought back specimens of two very interesting plants, viz., Eriophytum Wallichianum and Lancea tibetica, both of them characteristic of the Tibetan flora. *Dr. Duthie, Report of Botanic Garden, Saharanpur.*

(To be continued.)

PROLIFERATION IN TRICHOMANES PETERSII.

AMONGST the numerous and various instances of proliferation in Ferns lately mentioned in the



FIG. 72.—TRICHOMANES PETERSII.

Gardeners' Chronicle there does not seem to be anything strictly analogous to that in the accompanying sketch (fig. 72). The specimen was observed last autumn in a patch of the ordinary form in the Kew collection. The fronds of the species are extremely variable in outline, ranging through spatulate to obovate and cuneate, more or less lobed or entire, but always small, and bearing a considerable superficial resemblance to a Liverwort than the types more commonly seen in cultivation. Only one sorus is produced on a frond, terminating the midrib. The frond in question was normal in all these respects, even to the production of sporangia in the sunk, funnel-shaped urn, although it is questionable whether they were sufficiently developed to germinate.

Springing from the base of the free part of the receptacle was a rhizome about 5-16ths of an inch in length, bearing three small fronds, the longest of which was slightly under a quarter of an inch in length. The rhizome, of a dark colour, was densely clothed with stout deep brown or black root hairs, precisely like those of the parent, and the miniature fronds exhibited a similar venation, and were furnished with a few peculiar bifurcate hairs at the margins, as in the mother frond.

Proliferation does not seem to be common or constant in this genus, and notwithstanding the perfect adaptability of this instance for the purpose of propagation, it can hardly be looked upon as furnishing a regular and practicable means of multiplication. From its advanced condition when noted, it would be difficult to determine its origin morphologically; but its firmness of attachment to the receptacle would seem to indicate that it arose as a bud from the latter, and in no way connected with the spores or sporangia, except in proximity. Originally it projected from the involucral urn, parallel with the receptacle; but in the sketch the rhizome is somewhat depressed, to show its attachment. On this explanation of its origin it is less interesting than if the second and leafy generation had been reproduced by the spores without the intervention of the sexual generation. *J. F.*

THE ST. ALBAN'S ORCHID NURSERY.

HOLDING the belief that whatever is worth doing is worth doing well, Mr. F. Sander in his great undertaking, which so far as the building goes is now rapidly approaching completion, has succeeded in producing the model Orchid establishment, perfect in detail and vast in extent. The fine span-roofed houses, some of them over 300 feet in length, each with a pathway between them to allow bottom ventilation from the outer air, are connected at one end by a long corridor containing large quantities of each of the best Mexican Orchids, and at the other by a similar corridor opening into various workshops, the rooms in which importations are received, packing rooms, the artists' room, the clerks' offices, &c. Thus the whole is compactly arranged and convenient, as well for the care and inspection of the plants as for the carrying out of the necessary work connected therewith, without interfering with the well-being of the plants or the comfort of visitors.

THE CATTLEYA-HOUSES.

In these there are the now waning beauties of the Cattleya Trianæs which, notwithstanding the many hundreds of them which have passed out of flower for this season, still retain bloom enough to show the excellent qualities of the strain; several of the forms are very distinct, and one of them competes with the celebrated C. T. Osmani in the glowing colour of the labellum, but the sepals and petals are almost white. The new Cattleya Lawrenceana seems destined to be a useful plant in filling up the deficiency after the Trianæs are over, a blank which it seems well able to fill, as it will certainly last a month at least in perfection, which is greatly in its favour. A few plants are in bloom, and some are in bud on the plant, and which bear evidence of carrying a dozen flowers on a spike; and therefore from these much is expected.

Cattleya Percivaliana is still represented by examples in flower, and one large mass bears bloom of the greatest beauty, the sepals and petals rich rosy-red, and the velvety labellum dark maroon, changing towards the front into crimson, and again into mauve. Such a variety of Percivaliana is exquisitely lovely. Beside it, in flower, is the modest, pure white C. P. alba, a very rare plant with no trace of colour in it except the orange throat. It appears to be to the Percivaliana varieties what C. Wagneri is to the C. Mossiæ. For future flower the many thousands of healthy specimens give good promise by the numerous sheaths in all the kinds, a superb many-flowered example of C. amethystoglossa being open. The next to appear, as shown by their buds, which are well advanced, are the grand early-flowering varieties of C. Mossiæ, which Messrs. F. Sander & Co. recently imported from a new collecting district. Also in bloom, and together, are some good specimens of the different varieties of Cœlogyne cristata, and by comparison with the others, the St. Alban's variety named C. c. maxima is by far the largest flowered and best variety.

THE LÆLIA-HOUSE.

This section of the buildings is one of the more recent additions, and is of especial interest on account of the experiment made in planting out on a fine natural rockery, by that skilful artist, Clapham, of Stockport, which occupies each end of the house, large masses of such things as Lælia purpurata, L. Perrini, L. anceps and its white varieties; Zygo-

petalum Gautieri on growing stems of Alsophila ferox as imported; large masses of the different Cattleyas, &c.; the whole looking in fine condition. The effect of these producing their showy blooms on the rocks over which the water drips and the miniature cascades fall, will easily be imagined. The staging in the house is principally occupied by well sheathed plants of Lælia purpurata, L. elegans, Cattleya Skinneri, and C. Schofieldiana.

The Odontoglossum-houses.

There are six of these, ranging in length from 185 feet to over 300 feet, filled chiefly with the best forms of O. Alexandræ, and as the eye ranges over their clean, healthy foliage, the stout flower-spikes are seen projecting in countless numbers. The plants at St. Alban's are always kept cold, moist, and with abundance of air, and nothing could be more satisfactory than their condition. The Alexandræs and the hybrids are just beginning a show which will run without intermission throughout the whole year.

In flower is a good batch of the true Odontoglossum odoratum, a much more elegant, graceful, and pretty plant, than the stiff-growing form which usually blooms among the O. crispum importations; some nice specimens of O. Rossi majus, O. R. m. rubescens, O. Cervantesi, O. C. decorum, O. triumphans, O. Halli, O. Edwardi, many O. cirrosum, O. Pescatorei, O. Œrstedii majus, &c.

In the cool houses are also blooming Masdevallia melanoxantha, M. Shuttleworthii, M. xanthocorys, Epidendrum aurantiacum, Oncidium Phalænopsis, Sophronitis grandiflorum, the true snow-white Pilumna nobilis, Cymbidium eburneum in bud, with many spikes; and noticeable by their great vigour in the coldest situation, some very healthy plants of Odontoglossum coronarium and Oncidium macranthum.

The Mexican Corridor.

In this there is no staging, but the plants are either hung on the back wall or suspended overhead, in which situation they seem to delight, especially the many fine baskets of Odontoglossum citrosmum, which have up to this been kept tolerably dry, and now that their young growths from which the flower-spikes will proceed are well advanced they receive more water but should not be liberally supplied with it until the spikes are actually visible. Oncidium tigrinum, Cattleya citrina, Odontoglossum Insleayi leopardinum, the Barkerias, and all the Mexican things do remarkably well in this cool, airy structure; and the fragrant Lælia albida was flowering in many varieties, including the pure white; the variety Stobartiana with pink tips, and the variety sulphurea which is wholly of a pleasing primrose colour.

The Warm Houses.

In these there are a grand lot of Aërides, Vandas, Saccolabiums, &c., some of them quite new, among them in bud are many Aërides Rohaniana and A. Ballantinei, and in flower some good examples of Angræcum sesquipedale, A. citratum, Cypripedium selligerum, C. barbatum Warneri, and C. b. biflorum (which two, as seen here, are distinct, in the leaf at least); C. Druryi, several distinct forms of C. Haynaldianum, C. hirsutissimum, C. Lawrenceanum, and a new variety with yellow hairy stem, intermediate in form if not in marking between C. Lawrenceanum and C. Argus. Among the Dendrobiums the main feature is presented by a large batch of Dendrobium nobile from a new district coming into flower; some of them are grandly coloured varieties, seeming to partake much of the form and high colour of D. lituliflorum, while in others a pale primrose tint predominates; in their fragrance they differ also—differences that go to prove that at least a score of distinct and choice forms of the favourite old plant might be selected. With them in flower are some good D. Wardianum, D. crassinode, D. heterocarpum, &c. Among the noteworthy batches of rare things are a fine lot of the golden-yellow Sobralia xantholeuca, the pure white S. virginalis, a fine importation of Cochin Chinese things, including new Aërides and Saccolabiums and Calanthe Regnerii varieties, some grand masses of white Lælia anceps, and a healthy stock of the handsome Mormodes luxatum, among which are the spotted forms; and among the new structures now in the course of erection that in which the Vanda teres, V. Hookeriana, &c., are to be planted out is of special interest.

The houses at the home nursery in the town, which, although inconvenient, had in their time contained and grown many rare plants well, have now been done away with, and their places occupied by some neat little span-roofed structures which are designed for growing plants of small size. They contain the Phalænopsis, Odontoglossum Roezlii, Masdevallias, &c., and are in every respect better than those which formerly occupied the ground.

MESEMBRYANTHEMUM FICIFORME.*

Among the plants cultivated there are few that present such an odd appearance as the little group of the vast genus Mesembryanthemum, to which the subject of the present note belongs. To any one having no knowledge of botany the species belonging to this section would probably be thought to be plants consisting of a sub-globose, obovoid, or turbinate fleshy mass without leaves. But a careful examination reveals the fact that this fleshy mass is composed of two thick fleshy leaves, united by their edges throughout their entire length, leaving only a small chink in the centre of the top, the edges of the chink being closely applied to each other. The true stem of



Fig. 73.—Mesembryanthemum ficiforme.

the plant is exceedingly short, being as nearly obsolete as it is possible to be, I think. The roots are very fine, in a dense tuft, and according to my experience remarkably short. It is true that I have only seen the roots of two species, those being all I have cultivated myself; but in these I have not found roots more than 1—1½ inch long on the only two occasions when I have repotted them during the sixteen years I have had them in cultivation, for they do not like disturbance; and it is far better to leave them alone all the while they continue healthy, and do not show signs of having exhausted the soil. One of the most remarkable features connected with this group is the annual renewal of the leaves, which generally takes place during the summer. During the period of growing, flowering, ripening the seed, and forming material for fresh growth, the plants present a plump, bright appearance; but when that period is over they commence to shrivel and dry up, and then apparently become withered grey masses of skin, and to all external appearance lifeless, so that persons unacquainted with the habit of the plants might possibly throw them away for dead; but leave them alone for a time, and after a while the shrivelled skin is burst asunder at the top, and the new growth gradually pushes out through it, and it remains investing the base of the new plant. It sometimes happens, though rarely, I think, that the old leaves scarcely wither at all, and the new growth bursts through them whilst still plump and green, as was the case in the flowering specimen here represented (fig. 73), where the plump remains of the previous year's leaves are seen investing the base of the plants. Probably on such occasions as this an excess of moisture and nutriment has been stored up during the previous growing season. The plants of this section require very little water at any time, and scarcely any should be given them during their period of rest, that is, when they are shrivelling up.

The species at present under consideration (M. ficiforme), apart from its odd appearance, is interesting on account of its flowers having been hitherto undescribed, and more particularly because it is a night-flowering species, and has besides pink flowers—an unusual combination, as most night-flowering plants have white or yellow flowers; and although there are one or two other species that open their flowers at nightfall, yet the majority of this vast genus, containing upwards of 300 species, only open their flowers in full sunshine, and close them up in the evening.

As the correctness of the identification of the plant here figured and described with M. ficiforme, Haw., might possibly be questioned, it may be well to give reasons for this identification, which in the first place is due to Mr. T. Cooper, of Red Hill, to whose kindness I am indebted for the opportunity of figuring the plant. M. ficiforme appears to have been first sent to Haworth by Prince Salm-Dyck, and Haworth, finding it distinct from those already known to him, gave it the name it bears, which was first published by Salm-Dyck in 1820, in his *Observations Bot.*, and afterwards by Haworth himself, as quoted in the foot note. I have not seen the original description of Salm-Dyck; but as Haworth appears to have done so, and yet says that the flowers are unknown, and as Salm-Dyck has not figured this species in his magnificent work on the genus, they were probably unknown to the latter also. Nor can I find any mention of the flowers of this species in any book except in one of the later editions of Donn's *Hortus Cantabrigiensis*, where the flowers are said to be straw-coloured; but I cannot avoid the suspicion that the plant there mentioned is wrongly identified, because, in the first place, the plant I here consider to be M. ficiforme agrees exceedingly well with Haworth's description, so far as it goes; and in the second, there exists in the Kew Herbarium an unpublished drawing of M. ficiforme, made from a plant presented to the Royal Gardens, Kew, by Haworth himself, and is doubtless correctly named; with this drawing our plant agrees. On the sketch in question is written:—"Received from the Cape of Good Hope, from Mr. James Bowie, who says it grows on the rocks of Kogman Kloof and Lange Kloof. Received from Mr. Haworth in 1824."

The flowering plant figured is from an unusually fine specimen grown by Mr. T. Cooper; the cluster of plants without flowers represents the more usual condition of the plant as it grows with me, although some years the plantlets attain a larger size than there shown. Mr. Cooper's plant first opened its flower on the evening of October 15 last, and was exhibited at the evening meeting of the Holmesdale Natural History Club at Reigate on October 16; it continued to open its flower every succeeding evening, and more or less completely closing it during each day until November 1 inclusive, after which date Mr. Cooper informs me "the petals did not close again, but were spread wide open and laid back upon the plant." The flower was bright pink and pleasantly Clove-scented. The following is a description of the plant:—

Tufted plantlets ½—1 inch, rarely 1½ inch high, obcordate or obovoid, with a slight notch at the top, a little compressed, glabrous, light glaucous green (but not with a glaucous meal), dotted with darker green on the upper part: the dots are arranged in a more or less definite pattern, as shown in the figures. Ovary slightly exserted from the notch. Calyx 4-lobed, lobes broad, unequal, rounded at the apex. Corolla ¾ inch in diameter, bright pink, expanding in the evening and closing during the day for several successive days; petals ⅝ inch long, ½—¾ line broad, thirty to forty in number, sub-uniseriate, united into a very short tube below (not into a long tube, as in M. minutum, the only other known pink flowered

* *Mesembryanthemum ficiforme*, Haworth, in Salm-Dyck *Observationes Botanicæ in Horto Dykensi Notatæ*, 1820, p. 17; and in Haworth *Revisiones Plantarum Succulentarum*, 1821, p. 83.

species of this section of the genus). Stamens rather few, short, included, anthers pale yellow. Fruit unknown. Flowers agreeably Clove-scented at night.

I believe this plant exists in other collections under the name M. nuciforme, Haw., but it certainly is not that species. *N. E. Brown, Herbarium, Kew.*

HOME CORRESPONDENCE.

"Gardeners' Chronicle" Prizes.—It is satisfactory to think that an opportunity has occurred for testing the knowledge of young British gardeners, and it is to be hoped that the competition will prove that they are not so far behind their Continental compeers in horticultural knowlege as they are supposed to be. I agree with "Radix" in a recent issue in saying that "Root structure and formation is probably seldom an attractive subject to young men." It certainly is not to those who after their day's work is over take no further interest in the subject; but to those who are striving to gain a knowledge of the physiology of plants, which is so important to every gardener, the subject is a most interesting one. The prizes will act as a stimulant not merely for the pecuniary reward, but for the honour of the distinction; and those who do not gain the laurels need not be discouraged, for if they have tried their best they will have gained a vast amount of information which they will find of the greatest value in after years. As a young gardener within the specified ages, and an intending competitor, I was pleased to see the Editor of the *Gardeners' Chronicle* was not willing to extend the limit for age, as "Radix" proposed, as I think it would be most unfair to the younger and "coming" men. *Belvoir.*

—— The scheme propounded in last week's issue of the *Gardeners' Chronicle* for adding horticulture to the list of subjects of the Science and Art Department examinations is admirable, desirable and practical. Concerning the same I should like to make a suggestion. It is that some eminent authority should write a primer on horticulture, for the use of those who desired to make a study of the subject and pass an examination in it—a primer which should take its place along with other science primers, such as those on agriculture, chemistry, botany, &c. Such a primer would not only be used by those who wished to pass an examination in horticulture, but would be of immense service to all whom the subject of horticulture might concern; and in view of the probable increase of small holdings and allotments, a sound knowledge of the cultivation of fruits and vegetables cannot be too widely diffused. *Hortus.*

[There is no lack of books. The articles on the Life-History of Plants in Cassell's *Popular Gardening*, contain the most recent information on the subject. ED.].

The Weather in Devonshire.—Here in Devonshire we are credited by our Northern friends with having a climate uninvaded by severe frost and deep snow. The latter I admit, though only five years ago railway traffic was suspended here for a time. But frost and cold winds we get our share of. We have just experienced a week of a bitter strong Nor'-easter, which has played havoc with any vegetables exposed to its influence. Of frost there were only four nights in February on which we did not register any, but every night since March came in varying from 14° to 1° of frost, and only once during these past two months has the thermometer risen to 49°. Vegetables, such as Broccoli, Borecole, Kale, Spinach, Parsley, &c., are getting very scarce indeed. Owing to the dry summer Broccoli generally had only attained to a very small size, and have been cut by very many and used up for greens, as if left they would only produce very small buttons. Those having extra batches of Sea-kale and Asparagus for forcing will find them very useful. On the other hand, Apricots which commenced to open their blooms on March 3 last year, and were in bloom on the 10th, are only just opening their first blooms. Peaches and Nectarines, which opened on March 18, appear as if it would be April before they are in full bloom. All other fruits appear equally retarded by the influence of the cold weather—a fact which leads us to hope that a second fruitful season is in store for us. This is a portion of the brighter side, to which may be added the pulverising effects on the soil, destruction of insects, &c. The pasture land around presents a brown appearance, almost like that produced by the scorching sun of summer. Plovers, winnels, &c., flock inland, and have been driven to make closer acquaintance than usual, even dropping down in the garden close to the workmen. *D. C. Powell.*

The Winter in the Midlands.—What has become of the Gulf Stream—that beneficent volume of thermal water which has for so many years reached our shores and toned down the severity of a climate which, from the position of our islands, should resemble that of Labrador? I can find nothing like the amount of cold in my records of the weather for the last thirty years such as we have experienced in February and the first nine days of March. Frost was registered on twenty-five nights in the former month—the 12th, 13th, and 14th were the only exceptions; and the average temperature of the month was 32°; and snow has rested on the ground for two months; renewed very heavy falls occurred on the first three days of March, and the drifts have impeded traffic. Severe frost has occurred on each day in March up to the date of my letter; on the 7th I registered 12° or 20° of frost in the air, and 4° on grass—28° of frost. As I write the wind is cuttingly cold, the sky clear, with every indication of continued frost. What occurs to me as remarkable is that change of wind has not altered temperature; from whichever point of the compass it has blown frost or snow have accompanied it. Vegetation is at a standstill, and birds are perishing from starvation. I can hardly venture to allude to rabbits—the subject is too painful. *W. Ingram, Belvoir, March 9.*

The Weather and the Birds.—To-day, March 10, some workmen engaged in draining a piece of marshy pasture were attended by a flock of fieldfares. The birds were perfectly fearless of the men and scrambled for the worms turned up in the soil; one of them was picked up exhausted and starving. There is literally no food, the hedges having been long since stripped of berries. The fieldfare is well known to be one of the most shy of our migratory birds. *T. F. Rivers, Sawbridgeworth.*

A Hardy Winter Flower.—The spring flower which has with us stood best this abnormally trying winter weather is the Snowflake (Leucojum vernum). I cannot see that it has been the least affected. Cyclamen coum stood out bravely for a long time, but when the wind was added to the severe frost many of the flowers began to purple. Winter Aconite, which will stand most weather, was badly cut. *George F. Wilson, Heatherbank, Weybridge Heath.*

Eupomatia laurina.—This plant flowered in Mr. Arthur Henderson's nursery, Pine-apple Place, in 1855, when it was exhibited at the Horticultural Society's rooms, 21, Regent Street; a plant was also sent to Kew. It has been known for more than seventy years, and is described in Dr. Brown's appendix to Captain Flinder's voyage under the name of laurina. Therefore, why has it been changed from that to Bennettii? for I think the former is much more appropriate. It is useless as a decorative plant, but valuable as a botanical curiosity. *J. G. N.*

[There are two species of this very interesting genus. ED.].

Cape Bulbs.—The question of Cape bulbs was not started for nothing; if it only led up to Prof. Foster's amusing letter we shall all be the gainers. As a description of the sorrows of a typical English gardener that communication might well become classical; but, for all that, I am constrained to say that Dr. Foster is romancing in his remarks about the climate of the Isle of Wight in spring-time, and I doubt if he has estimated aright how Cape bulbs are now faring. Has he forgotten what he was pleased to call, some two or three years ago, the gentle zephyrs of the island? The same are blowing now, and have been blowing for some weeks with a terrible vengeance. I wish he had been with me yesterday, and had seen the snowdrifts on the northern slopes of our favourite downs, he never could have written then about mild showers and genial warmth; it would be too cruel even to mention such things. We are still in the depth of winter, but my bulbs are quite safe, nevertheless. I took the coverings off from them, as I said before, in the month of February, because I was quite sure that, let the winter be prolonged to its farthest extent, there was no time left for foliage to appear and to be cut off by its blasts. I can just see the little green points under the ground, but not one of them has ventured above it, and in that lies their security. Ixias and Sparaxis can stand 8° or 9° of frost with impunity when they are planted sufficiently deep; and when gentle showers really come, and balmy days return, they will soon make themselves visible. I cannot yet believe, with all due deference to the Cambridge Professor, that it is impossible for these things to do well with him in the open border. If he lived in an anti-Iridaceous part of the world it would be different, but I remember how Cambridge was flooded with sunshine when I last saw it in the glorious month of May, and the garden at Shelford (although it has no soil) responded to it with alacrity. Mr. Rawson's case is entirely different. He does live under weeping skies, and where drip is perpetually going on. Ferns are at home with him, but not Irises, and certainly not Cape bulbs. I can well understand a great part of what he has said, and his reasons for saying it, but why he should consult me I cannot tell. He was one of my best and earliest instructors, and to this day I grow Narcissus monophyllus, and other things, according to his directions. I thought he was a believer in sand, but there is sand and sand. He must have got hold of the wrong sort in the Lake District. *H. Ewbank.*

Green Vegetables.—Although the winter has not been very severe as regards sharp frosts, I do not remember a time when green vegetables have been more scarce, the continuous cold having told on all the Brassica tribe, the leaves of which look as if they had been cooked, and are now hanging either in a rotten state or dried up by the searching winds, which are so trying to vegetation after the tissues of plants have been injured. Not only are gardens bare, but fields are just as barren looking, and farmers with flocks of sheep and lambs have great difficulty to find them food, as there is not a blade of living grass, and Turnips have made no tops up to the present. As the roots are sound and good, these must come in time, and fortunate will they be who have a good field or two to pick from when growth does set in, as the greens will be valuable, and are sure to fetch a high price. To meet the great scarcity there is nothing for it now but to sow and grow such things as are known to turn in quickly, and among these is Spinach, which, got in on a warm sheltered border, in deep rich soil, will soon yield leaves fit for use. The earliest Turnip with which I am acquainted is the Milan, and this turns in quite a fortnight before such old standard sorts as the Snowball or Six-weeks, and forms very handsome bulbs, that are sweet and tender when cooked. As Turnips, that are early sown are apt to run to seed, it is useless putting in a great breadth, and it is better for a time to sow a row or two weekly to come on in succession. A good way of getting a few early roots is to dig out a deep wide trench, and fill it with hot manure, and, after covering this with 6 inches or so of soil, to sow on the top. Carrots also do well treated in the same way, the best sort for the purpose being the French Horn, which quickly makes short, thick, stumpy roots of nice colour and flavour. The soil most suitable for this and other early Carrots is a light, sharp, sandy loam, which should not have any fresh manure before sowing the seed, as, unless the manure is of a very mild character it spoils the skins of the roots. Soot acts in a contrary way, and makes them bright and clear, and it is a good plan, therefore, to give the ground a dressing of it before being dug, that the soot may be mixed in and prevent the working of wireworm, which are fatal to Carrots. As these are pretty hardy, they may be sown outdoors at once, the most suitable situation being a border sloping south, where the seed may be put in shallow drills, drawn 8 inches or 10 inches apart. As nursery beds of young Cabbage plants have shared the fate of other things, it will be necessary to provide a fresh supply of these, and the most speedy way of getting a batch of strong healthy young plants is to sow on a gentle hotbed under glass, and afterwards prick out in any cold frame. This should be done in light rich soil, having a good proportion of leaf-mould, as then the plants lift with large balls, and go out without feeling much check. One of the best, if not the very best, kinds to turn in early is Ellam's, which is a small, close-hearted kind, and which may be planted

in rows 18 inches apart, and the plants a foot or 15 inches asunder. To have Cabbages succulent and tender, the ground in which they are grown must be rich, and should, therefore, be heavily manured and deeply dug before planting, and this should be done in shallow drills, as the hoeing and filling of these when the land is stirred for the killing of weeds, steadies the stems of the plants by earthing them up. Cauliflowers are even more scarce than young Cabbage; but there is not much loss in being without these during the winter, as plants that are raised in spring, if taken care of and pushed on, turn in almost as soon. The best to sow and raise now is the Erfurt Dwarf Mammoth, which is an exceedingly fine variety that is very dwarf, and produces large white heads that are well protected, and of a delicate flavour when cooked. As a great many plants may be raised in a small space, a pan or shallow box does well to sow the seed in, and this should be scattered thinly on light rich soil, and just covered, when, if subjected to a gentle moist heat, the plants will soon be up, and should then be placed near the glass to keep them from drawing. Although it may be a little more trouble, and take more time, to pot singly than to prick out, the plants will quite pay for it, as, after the potting, they may be transferred to the open, with balls intact, and go right on growing without feeling a check. This being so, it is better to put each plant in a 3-inch pot, using very rotten dung and loam for the potting, and to give them a start they should have a little warmth, and planted out as soon as they have been hardened off enough to bear the exposure. Dwarf Beans and Scarlet Runners may also be considerably forwarded by being treated in a similar way, and the first-named turned out under the foot of a south wall or fence, where they can be covered or protected by night, and the Runners may have a board placed along on the shady side of the row, and then sheltered if the weather is cold, by placing a few evergreen branches in front. Managed in this way, we got some very early last year, and the same lot kept in full bearing till far on in the autumn. The Beans were sown three in a pot in light leaf-mould, and keep growing on in a warm frame till a week or so before they were turned out in the open, during the latter part of which time they had more air to harden. *J. S.*

Eucharis amazonica Planted Out.—Before bringing my remarks on the above subject to a close I should like to ask Mr. Ward how he can save his blooms underneath the stages when he waters the plants overhead? I should imagine the water would dribble down on them and mark them. Also do not the hot-water pipes hurt them, even if it does not injure foliage? Of course it is evident now that there is no withholding of water in question, as they get it second-hand from the plants above. I quite agree with him that it is a good plan for hiding unsightly places, but that is the highest recommendation his system deserves. *A. Macdonald, The Gardens, Royal Asylum, Cheadle.*

Eucharis amazonica at The Highlands, Minchinhampton.—At this place there are growing in the stove-house several pans of this plant, which are perfect masses of bloom. The gardener to Mrs. Frith (Mr. Wilkinson) informed me that he took charge of the gardens two and a half years since. The Eucharis were in a very unhealthy state, and the foliage quite yellow. He set about to remedy the evil as soon as possible by turning them out of their pots and washing each bulb carefully in warm soapy water to cleanse them from any parasite that might be upon the outside. Mr. Wilkinson does not practise growing the Eucharis in the ordinary garden pot, but in shallow pans about 15 inches across and 8 inches in depth. After crocking them in the usual way he places about eighteen bulbs in each pan, and plants them in nothing but old fibrous turf. I counted thirty spikes of bloom on one pan, and others equally as good. *W. Driver, Iron Mills, Nailsworth.*

Eucharis Mite.—Mr. Culverwell's remedy (see p. 311, March 6), which he has found so far effectual in destroying this troublesome pest, would, I think, be read with hope by many, as it gives a more cheerful aspect to the future of the Eucharis, and other bulbous plants, than Mr. Editor's "grave note," "burn the bulbs" badly affected. Undoubtedly Mr. Editor's advice is sound, and is perhaps, after all, the only remedy when the plants are badly affected, but it requires judgment in carrying out. Several gardeners whom I know have had a thorough clean out, and a fresh start; they now find the mite in their new lots, and in other bulbs they little suspected. The quicklime soon makes short work with the mite, but the difficulty with me is how to get at more than how to kill it. I have had bulbs for forty-eight hours in lime-water as strong as I could make it, and on cutting them open found the mite alive and at work. I have tried Fir-tree oil also, and lots of other things, with the same result. *T. Keetley, Darley Abbey.* [The mites are microscopic creatures, and not visible to the naked eye. We repeat our advice about burning all affected bulbs. We shall shortly publish an article showing the influence of fungus-growth on these bulbs. ED.]

Camellia Trees.—Judging from the description given by J. Pope, in the *Gardeners' Chronicle*, p. 311, Mr. Lyndon's Camellia is certainly a fine tree, but there must be larger specimens to be met with in some of the gardens of Devon and Cornwall. In Messrs. Lucombe, Pince & Co.'s great Camellia-house at Exeter are grand examples. This house is reputed to be one of the largest, if not the largest Camellia-house in the kingdom. It is a span-roofed building, about 200 feet in length by 27 feet in width, and the height of the ridge is over 20 feet. The side walls are 12 feet high, and are covered almost from end to end with Camellias, which are trained and neatly fastened to the walls in a very effective manner. The centre bed extends the whole length of the house. Here are many large Camellias, and seven of them I have this day measured as follows:—

1. Alba plena, 15 feet wide by 16 feet high; girth of trunk near base, 29 inches.
2. Alba plena, 21 feet wide by 16 feet high; girth of trunk near base, 25 inches.
3. Alba plena, 18 feet wide by 16 feet high; girth of trunk near base, 29 inches.
4. Imbricata, 21 feet wide by 16 feet high; girth of trunk near base, 26 inches. This specimen is now clustered with quite 1000 blooms.
5. Chandleri, 18 feet wide by 17 feet high; girth of trunk near base, 29 inches.
6. Florida, 15 feet wide by 17 feet high; girth of trunk near base, 18 inches.
7. Prince Albert, 15 feet wide by 17 feet high; girth of trunk near base, 19 inches.

To give some idea of the plants on the walls there is a plant of Imbricata which covers a space of 25 feet by 12 feet most perfectly. *N., March 8.*

Hardy Broccoli.—After having experienced such a winter as the past, and the first month of spring showing a continuation of equally severe weather, the present time is favourable for ascertaining the hardiness of different varieties of Broccoli. Those which are to produce mid-winter and early spring supply should be hardy varieties. Snow's Winter White, even here in the South, has succumbed to the severe weather. This variety does not maintain its old reputation of the finest and most reliable winter Broccoli, that is, if left to take its chance out-of-doors. Sutton's Winter Mammoth is decidedly more hardy, and produces fine large heads under good cultivation; it is fit for use about the same time as Snow's would be, if not destroyed by frost. Mammoth sown on March 13 gave a good supply from the beginning of December to the middle of February. To succeed this, and sown on the same date, the best we have is Penzance Early White, which is now turning in most opportunely. Sutton's Perfection and Veitch's Spring White will continue the supply after Penzance—two varieties for which a more than ordinary degree of hardiness can be claimed. Lastly, we confidently rely on two varieties for late spring use, viz., Veitch's Model and Sutton's Late Queen; either variety is certain to continue the supply until early Cauliflower heads are plentiful. Purple sprouting Broccoli has been of the greatest service during the past month, especially as the ordinary green vegetables have been somewhat scarce owing to the unfavourable autumn for transplanting. When the surface soil is in workable condition a top-dressing of guano or soot and wood-ashes sprinkled between the rows of late varieties of Broccoli would be of great service to the plants. It should be lightly pricked-in with a fork. In our case Snow's Broccoli, which succumbed to the frost, was sown on May 15, and finally planted out on August 8. It would be interesting to know whether this variety in other parts of the country has shared a similar fate. *G. H. Richards, Somerley.*

Habrothamnus elegans.—Although a very old greenhouse plant this Habrothamnus is not so frequently met with as its merits deserve, its great use being for planting out in a border, to clothe a wall or pillar, or depend from the roof of a conservatory—purposes for which it is specially adapted, for besides having fine foliage and possessing just the habit suitable for such work, owing to the gracefully pendulous growth of its branches, it flowers in the freest manner possible, as every shoot becomes terminated with heavy racemes of bloom. To get the plants to continue affording a regular succession, or to be full and gay during the winter, all that is necessary is to prune or shorten back the young wood from which the blossoms have fallen, and keep the border a little dry for a time, when, after watering, the plants will break quickly, and soon be in flower again. The soil most suitable for planting the Habrothamnus in is good fresh fibry loam and peat in about equal parts, and both should be used somewhat rough, and have free drainage below. This may be afforded by a layer of broken bricks or crocks covered with sods, which will be the means of keeping them clear and open for years. *J. S.*

Propagation of Aspidistra lurida.—At p. 181 your correspondent, "J. S.," gives instructions for the propagation of this useful plant, which will no doubt prove successful if they are duly followed up it being by no means a difficult subject to increase. But it strikes me the practice advised is a somewhat rough-and-ready mode, if not reckless as regard economy. If the most that it may be possible to make of the stock is not required, the latter consideration may be of very little importance; but even if this be so, there is, I think, a better mode of handling even such an accommodating subject as this. My own practice has been founded on the paramount necessity of making the most of the stock in hand, and consists in washing out instead of shaking out, certainly never "cutting the ball or mass of roots through" in the haphazard manner advised by your correspondent. I take my plants to a tub of water, and immerse the balls for some time till they are quite soaked through, after which the operation of clearing the soil away from the roots is easily and speedily performed, without unnecessary injury to the roots or to the crowns, which is a point of greater importance. This accomplished, it is easy to perceive what is best to be done in regard to cutting up the crowns or rhizomes, and to select with nicety those which are best, as well as the right point at which to sever from the blind part posterior to them. Those which show the most decided tendency to variegation are put by themselves, and potted either singly or two or more together according to circumstances and the purposes in view, while the greener ones, which are hardly less useful for many purposes of decoration, are also potted by themselves, singly or doubly as may be deemed most desirable. Having indicated some of the advantages of this method of handling this easily managed plant I have only to add that, owing to the destruction of the roots being minimised and the foliage consequently undisturbed in the same ratio, the plants make an earlier start to re-establish themselves; also—and this is perhaps the most important point of all in what may by many of your readers be regarded as a not very important subject—that in the process of potting the crowns can be more easily placed in such a position in relation to each other as to ensure a proper balance of the foliage in each pot: a consummation not always attained by the rough-and-ready mode practised by your correspondent. *W. S.*

COLONIAL NOTES.

CYCNIUM TUBATUM.

HARVEY, in his *Genera of South African Plants*, under Cycnium, order Scrophulariaceæ, notes five or six species, flowers large and handsome. In his *Thesaurus Capensis*, vol. i., two Cycniums are figured, C. Sandersoni and C. tubatum, t. 50. I wish to draw attention to the latter. Crossing a grassy hillside a week ago I observed standing up alone a spike, 3 feet high, of large white flowers, which turned out to be Cycnium tubatum, or a variety of it. It is a very handsome and curious plant, since it has no true roots, but is parasitic on the roots of a coarse-growing Composite; once also I found it in a plantation

attached to the roots of a Blue Gum. What I will call the roots of the Cycnium, for want of a better name, are roundish, scaly bodies, varying in size from that of a Pea to that of a hazel-nut. Stem 2 to 3 feet high, erect, leafless, scales in pairs. Flowers ten to twelve in number, in opposite pairs, 4 inches across, snowy white, throat pale yellow. Anthers four, sub-equal, filaments hairy. In Harvey's plate the anthers are didynamous, and the filaments smooth. The stigma is large, club-shaped, and deflexed. Seed I have never seen. The whole plant has a very stately look, reminding one of a conventional Fleur-de-lis. When bruised, the snow-white corolla turns ink-black. This fine thing cannot, I think, be in cultivation. Harvey remarks that, being a root parasite, it is not cultivable, at least in the present state of horticultural science. I think the man who could succeed in flowering it would make a sensation in the horticultural world. It flowers in December on hills north of Maritzburg at an elevation of 3000 feet. Dried specimens were sent home many years ago by the late Mr. Sanderson. *R. W. Adlam, Pietermaritzburg, Natal.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MARCH 17, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea Level.	BAROMETER. Departure from Average of 16 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
Mar.	In.	In.	°	°	°	°	°	°			In.
11	30.20	+0.28	37.5	23.0	14.5	30.3	−10.4	28.0	89	E. : E.N.E.	0.00
12	30.13	+0.22	35.0	25.5	9.5	30.1	−10.7	24.4	77	E.N.E.	0.00
13	30.17	+0.27	35.2	25.6	9.6	30.2	−10.8	25.1	79	E.N.E.	0.00
14	30.04	+0.16	34.7	28.0	6.7	30.9	−10.3	29.0	95	E. : E.N.E.	0.00
15	29.82	−0.05	36.5	28.5	8.0	32.4	−9.0	25.4	74	E.N.E. : N.N.E.	0.00
16	29.65	−0.21	35.5	24.5	11.0	30.1	−11.4	28.3	92	N.N.W. : N.NW.	0.00
17	29.74	−0.11	40.2	20.1	20.1	30.0	−11.6	24.6	78	E.N.E.	0.00
Mean	29.96	+0.08	36.4	25.0	11.4	30.6	−10.6	26.4	83	E.N.E.	0.00

March 11.—Very fine day.
— 12.—Dull cold day; a little fine snow fell in morning.
— 13.—Dull; a litte fine snow fell in afternoon.
— 14.—Very dull day.
— 15.—Dull day; slight fall of snow between 7.30 P.M. and 8.30 P.M.
— 16.—Dull day; fog from 3 P.M. to 4 30 P.M. Fine night.
— 17.—Dense fog in early morning. Fine bright day and night.

LONDON: *Atmospheric Pressure.*—During the week ending March 13, the reading of the barometer at the level of the sea increased from 30.06 inches at the beginning of the week to 30.41 inches by 1 P.M. on the 9th, decreased to 30.29 inches by 3 P.M. on the 12th, increased to 30.36 inches by 9 A.M. on the 13th, and was 30.33 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.37 inches, being 0.74 inch higher than last week, and 0.26 inch higher than the average of the week.

Temperature.—The highest temperature in the shade in the week was 39°.6, on the 9th; on the 12th the highest was 35°. The mean of the seven high day temperatures was 36°.7.

The lowest temperature was 21°.8, on the 7th; on the 10th the lowest was 27°.2. The mean of the seven low night temperatures was 24°.3.

The greatest range of temperature in one day was 16°.3, on the 9th; the smallest, on the 10th, was 8°.3. The mean of the seven readings was 12°.4.

The mean temperatures were, on the 7th, 28°.8; on the 8th, 30°.6; on the 9th, 31°.4; on the 10th, 30°.2; on the 11th, 30°.3; on the 12th, 30°.1; on the 13th, 30°.2; and these were all below their averages by 11°.7, 9°.9, 9°.1, 10°.4, 10°.4, 10°.7, 10°.8 respectively.

The mean temperature of the week was 30°.2, being 1°.4 lower than last week, and 10°.4 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 97°.5, on the 9th. The mean of the seven readings was 88°.7.

The lowest reading of a minimum thermometer placed on grass was 17°.2, on the 7th. The mean of the seven readings was 22°.1.

Rain.—No rain fell during the week.

ENGLAND: *Temperature.*—During the week ending March 13, the highest temperatures were 45° at Truro, 45°.5 at Plymouth, 42°.5 at Bristol; the highest at Bradford was 35°.8, at Brighton 37°, at Sheffield, Newcastle, and Plymouth 39°. The general mean was 40°.3.

The lowest temperatures were 13°.4 at Wolverhampton, 14° at Sheffield, 14°.9 at Nottingham; the lowest at Liverpool 25°.3, at Plymouth 24.°, at Brighton 23°.3. The general mean was 19°.5.

The greatest ranges were 26°.9 at Wolverhampton, 26°.2 at Nottingham, 25° at Sheffield; the least ranges were 13°.7 at Brighton, 15° at Liverpool, 17°.8 at Blackheath. The general mean was 20°.8.

The mean of the seven high day temperatures was highest at Truro, 43°.1, at Plymouth 40°.7, at Bristol and Cambridge 39°.2; and was lowest at Bradford, 35°.1, at Brighton 35°.8, at Sheffield 36°.3. The general mean was 37°.8.

The mean of the seven low night temperatures was highest at Truro, 30°.4, at Plymouth 29°.1, at Brighton 26°.1; and was lowest at Wolverhampton, 21°.6, at Sheffield 21°.9, at Bradford 23°. The general mean was 25°.1.

The mean daily range was greatest at Cambridge, 15°.4, at Wolverhampton 15°.2, at Bristol 15°.1; and was least at Brighton, 9°.7, at Liverpool 10°.7, at Newcastle 11°.4. The general mean was 12°.7

The mean temperature was highest at Truro, 35°.9, at Plymouth 34°.1, at Liverpool 31°.4; and was lowest at Bradford, 28°.2, at Sheffield 28°.3, at Wolverhampton 28°.6. The general mean was 38°.7.

Rain.—The largest falls were 0.20 inch at Newcastle, and 0.09 inch at Hull, ; the smallest falls were 0.01 inch at Nottingham and Liverpool. No rain fell at Truro, Plymouth, Brighton, Bristol, Blackheath, Cambridge, Wolverhampton, Sheffield, Leeds, or Preston.

SCOTLAND: *Temperature.*—During the week ending March 13 the highest temperature was 43°.5, at Paisley; at Greenock the highest was 40°. The general mean was 41°.3.

The lowest temperature in the week was 12°.5, at Perth; at Greenock the lowest temperature was 23°. The general mean was 18°.9.

The mean temperature was highest at Aberdeen, 33°; and lowest at Perth, 28°.8. The general mean was 31°.4.

Rain.—The largest fall was 0.25 inch, at Aberdeen; the smallest fall was 0.01 inch, at Leith. The general mean was 0.05 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

WATERCRESS.—Can you, or any of your subscribers, inform me, through your paper, the mode of preventing—and also of curing—the brown and green scum that attacks Watercress in beds in the open? *H. B.* [Will some grower kindly oblige with a reply? ED.]

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that our Registered Telegraphic Address is* "GARDICHRON, LONDON." *Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

ANNUALS FOR A TOWN GARDEN: *Amateur.* Antirrhinum and Wallflower, if sown early; Bartonia aurea, Calendula (Marigold), all the varieties; Asters, Chrysanthemum carinatum and coronatum; Clarkia pulchella and its several varieties; Collomia coccinea, Coreopsis Drummondi and C. tinctoria; Delphiniums, Dianthus Heddewigii and varieties of it; Eschscholtzia californica, Godetias in variety, Sweet Peas, Linaria cymbalaria, Linum grandiflorum, Lobelia ramosa, Ten-week Stocks, Mimulus in variety, Nemophila insignis and others, Poppies in variety; Reseda odorata, Sanvitalia procumbens, Tropæolum aduncum, T. Lobbianum, Lophospermum scandens, Cucumis in variety, Eccremocarpus scabra, the last five being climbers.

BOOK: *G. Freeland.* Apply at the office of the *Journal of Horticulture*, 171, Fleet Street, E.C.

CINERARIAS: *W. W. Johnson.* The plants from which the blooms were gathered being of a bushy, much branching habit, are, of course, good decorative objects, but the individual blooms are not of very great merit judged by the florists' canons of the present.

CARNATIONS IN COMPETING COLLECTIONS OF HERBACEOUS PLANTS: *A. G.* We should suppose that one variety of Carnation would be permissible, and that several would disqualify. The plant is distinctly "herbaceous."

DENDROBIUM CRASSINODE (white var.): *H. M. H.* There are but few of this charming variety about in gardens. Mr. Salter, gardener to J. Southgate, Esq., Streatham, showed the plant at the last meeting of the Roal Horticultural Society, where it was much admired.

FLOWERS OF ORCHIDS: *John Williams.* The two flowers of Cattleya amethystoglossa are merely varieties—pretty, certainly; the C. Trianæ varieties are choice forms, well developed, as is also Cypripedium villosum aureum.

FUNGUS ON LAUREL LEAVES: *E. M. O.* Phoma laurella.

NAMES OF PLANTS: *W. H. M.* Abobra viridiflora is a Cucurbitaceous plant, perennial, with finely divided leaves, green flowers, and small egg-shaped scarlet fruits over an inch in length. It thrives in a warm border out-of-doors in summer; the seeds should be sown in a little heat early in April, and the young plants placed out-of-doors when warm weather comes. A few pea-sticks may be set about the plants for them to grow over, or if planted against a wall they may be trained to a trellis. In a favourable situation—that is, in full sunlight, with its roots in rich moist soil—this plant grows quickly, and forms a nice specimen, fruiting freely and colouring well. The roots only are perennial, being fleshy tubers; they may be taken out of the ground and kept along with Dahlia roots in winter. The plant is common in most parts of South America. Sicyosperma gracile is an annual herbaceous Cucurbit from Texas, of which we know nothing as regards its cultivation in England; most likely it will thrive if treated as recommended for the Abobra. Centrosema Plumieri is better known as Clitorea, and is a West Indian perennial climber with pinnate leaves, Pea-shaped flowers springing from the axils of the leaves on the young shoots. It requires warm treatment and plenty of room to climb. Sow the seeds at once, and when the young plants are strong enough plant them in a border, or large pot, at the base of a pillar, or against the side of the house, so that it can climb. It belongs to the same family as the Kennedyas, Mucunas, Dolichos, and Erythrina. Gronovia Humboldtiana is a climbing annual with the habit and appearance of the common Bryony, but flowers like the genus Loasa, to which it is closely affined. It requires warm greenhouse treatment, a rich soil, and something to climb upon—a few small pea-sticks answer very well. Leaves heart-shaped and five-lobed; flowers small but numerous, yellow. It is a native of Central America.—*R. C., Kingston.* 1, Athyrium macrocarpum; 2, Lastrea Sieboldii; 3, Doodia caudata; 4, Asplenium reclinatum.—*W. Cubush.* Cineraria platanifolia.—*A. W. Z.* Croton Weismanni.—*A. B. H.* Myrsiphyllum asparagoides.—*E. G.* 1, Acacia armata; 2, A. Riceana.—*E. C.* Epidendrum oncidioides.—*W. W.* Coelogyne flaccida; Dendrobium longicornu.—*A. Ballard.* The seeds and tubers are those of a species of Bomarea, but we cannot tell which. The tubers are worthless, being incapable of producing shoots; in this respect they resemble the individual tubers of Dahlias, Asparagus, &c. By sowing the seeds in heat, and growing the young plants in a greenhouse, potting them in a light loamy soil, and watering moderately, flowering specimens ought to be had in about two years. Our correspondent must be mistaken in saying that each plant developes only one shoot, as we know of no Bomarea that limits itself to one stem, as many as a dozen being usual on healthy plants. He is also mistaken in calling his plant the "Lion's-paw,"—so far, at least, as we know, that name belonging to an Alchemilla, but popular names are almost invariably misleading.—*Freeman.* Calanthe vestita rubro-oculata. The other is a monstrous flower, on which we will report next week.

ODONTOGLOSSUM VEXILLARIUM: *A. W. Z.* The base of the growth is rotted by the lodgment of water at that point, aggravated by too low a temperature. Up to a certain point the progress of growth was satisfactory.

PEACH BLOSSOMS FALLING OFF: *W. D.* You give no particulars as to the treatment pursued with the Peach trees from which the blooms fall, therefore how can we indicate the cause? Keeping the roots of trees too dry during the autumn and early winter months is a prolific cause of the mishap from which your trees suffer. The roots of Peach trees on open walls are abundantly moistened by rain and snow, but this complaint is seldom heard of in respect to those.

SULPHATE OF AMMONIA: *X.* One hundredweight to the acre will be beneficial, but you will get better results if mixed with superphosphates to the amount of 2 cwt. per acre and 3 cwt. of kainit.

TREE FERN: *Constant Subscriber.* The substance you

found in the soil is a detached portion of a root of the plant. It is quite lifeless and harmless.

*** All communications intended for publication should be addressed to the "*Editor*." Such communications should be *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

T. L. B. ROBERTSON, 11, Alloway Street, Ayr—Garden and Flower Seeds, &c.
WILLIAM WATT, Cupar and Perth, N.B.—Farm Seeds.
WEBB & SONS, Wordsley, Stourbridge — Special Manures.
WM. PAUL & SON, Crossflat Nursery, Paisley, N.B.—Florists' Flowers.
V. LEMOINE, Rue de l'Etang, Nancy—General Catalogue.

COMMUNICATIONS RECEIVED:—Dickson & Sons.—J. W. Thyne & Co.—J. T. B.—R. J. L.—C. van Geert.—J. W.—Max Teichtlin, Baden.—W. T. T. D.—G. S.—B. Stein.—J. R. J.—J. D.—F. S.—H. E.—Canon E.—W. R. McN.—A. G.—W. S.—E. G.—H. Britten—R. D.—W. O.—H. W. W.—W. C.—E. Y. M.—A. T.—J. F.—D. E.—W. H. D.—J. H.—W. J. M.

Markets.

COVENT GARDEN, March 18.

THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.

MARKET without alteration. A few Strawberries reaching us, but trade for them is dull. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0	12 0	Ferns, in variety, per 100	4 0	18 0
Arum Lilies, dozen	9 0	12 0	Foliage Plants, various, each	2 0	10 0
Azaleas, per doz.	24 0	42 0	Genistas, per dozen	10	15 0
Begonias, per dozen	6 0	12 0	Hyacinths, per doz.	6 0	9 0
Bouvardias, doz	12 0	18 0	Lilies in clumps, or pots, per dozen	18 0	30 0
Cinerarias, per doz.	10 0	12 0	Marguerite Daisy, per dozen	8 0	12 0
Cyclamen, 12 pots	12 0	24 0	Myrtles, per dozen	6 0	12 0
Cyperus, per dozen	4 0	12 0	Palms in var., each	2 6	21 0
Daffodils, per dozen	9 0	12 0	Pelargoniums, scarlet, per dozen	6 0	9 0
Dracæna terminalis, per dozen	30 0	60 0	Primulas, single, 12 pots	4 0	6 0
— viridis, per doz.	12 0	24 0	Solanums, per dozen	8 0	12 0
Ericas, various, per dozen	12 0	24 0	Spiræa, per dozen	12 0	15 0
Euonymus, in var., per dozen	6 0	18 0	Tulips, 12 pots	6 0	9 0
Evergreens, in var., per dozen	6 0	24 0			
Ficus elastica, each	1 6	7 0			

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0	1 6	Lily-of-the-Valley, 12 sprays	0 9	1 6
Anemone, French, 12 bunches	3 0	6 0	Marguerites, 12 bun.	6 0	12 0
Arum Lilies, 12 blms.	4 0	8 0	Mignonnette, 12 bun.	4 0	9 0
Azaleas, 12 sprays	0 6	1 0	Pelargoniums, per 12 trusses	1 0	1 6
Bouvardias, per bun.	0 6	1 0	— scarlet, 12 trusses	0 9	1 0
Camellias, 12 blms.	2 0	6 0	Primulas, double, per bunch	1 0	1 6
Carnations, 12 blms.	1 0	3 0	— single, per bunch	0 4	0 6
Chrysanth., 12 blms.	2 0	4 0	Roses (indoor), doz.	3 0	9 0
— 12 bunches	9 0	18 0	— Tea, per dozen	2 0	3 6
Cyclamens, doz. blms.	0 4	0 6	— red, French, doz.	2 0	4 0
Daffodils, per bunch	0 6	1 6	Snowdrops, 12 bun.	1 6	3 0
Epiphyllums, 12 blms.	0 6	1 0	Tropæolums, 12 bun.	2 0	3 0
Eucharis, per dozen	4 0	6 0	Tuberoses, 12 blms.	2 0	3 0
Gardenias, 12 blooms	6 0	18 0	Tulips, doz. blooms	0 9	1 0
Hyacinths, Rom., 12 sprays	0 6	1 0	Violets, 12 bunches	1 0	2 6
Lapageria, red, 12 blooms	1 0	2 0	— Czar, Fr., bunch	1 6	2 6
Lilac, French, bunch	2 0	7 0	— Parme, French, per bunch	4 0	6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mustard and Cress, do.	4	..
Asparagus, Eng., 100	0	..	Onions, per bushel	5 0	..
— French, bundle	18 0	25 0	Parsley, dozen bunch	2 0	3 0
Beans, Kidney, lb.	4 0	..	Parsnips, per dozen	1 0	..
Beet, red, per dozen	1 0	2 0	Potatos, per cwt.	4 0	5 0
Broccoli Sprts., bush.	6 0	..	,, kidney, per cwt	4 0	5 0
Carrots, per bunch	0 6	..	Salsafy, per bundle	0 9	..
Cauliflowers, per doz.	3 0	4 0	Savoys, per dozen	3 0	5 0
Celeriac, per root	0 4	..	Scorzonera, p. bundle	1 0	..
Celery, per bundle	1 6	2 0	Seakale, punnet	2 6	..
Coleworts, doz. bunch	8 0	..	Shallots, per pound	0 3	0 0
Cucumbers, each	1 0	1 6	Spinach, per bushel	4 0	6 0
Endive, per dozen	1 0	2 0	Sprouts, per pound	0 9	..
Herbs, per bunch	0 4	..	Sprue Asparagus, per bundle	1 0	..
Leeks, per bunch	0 6	..	Tomatos, per lb.	1 6	2 6
Lettuce, per dozen	1 0	1 6	Turnips, bunch	0 6	..
Mint, green, bunch	1 0	..			
Mushrooms, punnet	1 0	1 6			

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy, and prices about the same.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0	4 0	Lemons, per case	8 0	10 0
— Canadian, barrl.	10	14 0	Pears, per dozen	12 0	15 0
Grapes, per lb.	3 0	8 0	Pine-apples, Eng., lb.	1 0	..
Kent Cobs, 100 lb.	40 0	..	— St. Michael, each	2 6	8 0

SEEDS.

LONDON: *March* 17.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., write that the amount of business doing is greatly restricted by the wintry weather. Values for all varieties, in the meantime, remain steady at the low figures current and characteristic of this season. There is no cessation in the export of red Clover to the United States; the article continues firm here. White Clover and Alsike well maintain late rates. Spring Tares in fair demand at hardening prices. There is a decidedly improved demand for blue boiling Peas and Haricot Beans, owing to the continued frost. Feeding Linseed is steady. In Hemp and Canary seed there is no change to be noted.

CORN.

MARK LANE: *March* 15.—To-day Russian Wheats showed an advance of 1*s.* and most other imported descriptions, as well as English, 6*d.* to 1*s.* on the week. Flour met a quiet demand at 6*d.* per sack over the rates of Monday last, and on like comparison Oats were 6*d.* dearer. Barley, Beans, and Maize were without alteration, and sold less freely. Peas were in light supply, and the turn dearer.

March 17.—There was not much done in either Wheat or flour to test quotations to-day. Barley was dull; Beans steady and unchanged. Oats met little inquiry, and were the turn lower. Peas were in light supply, and the tendency was against buyers.

Average prices of corn for the week ending March 13: —Wheat, 29*s.* 9*d.*; Barley, 28*s.* 6*d.*; Oats, 19*s.* 1*d.* For the corresponding period last year:—Wheat, 31*s.* 4*d.*; Barley, 31*s.* 3*d.*; Oats, 20*s.* 9*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *March* 17.—Moderate supplies of vegetables were on offer; trade good, prices fair. Quotations:—Apples, 3*s.* 6*d.* to 7*s.* per sieve; Savoys, 8*s.* to 14*s.* per tally; Parsnips, 1*s.* to 1*s.* 6*d.* per score; Beetroot, 6*d.* to 9*d.* per dozen; bunch Greens, 6*s.* to 9*s.* per dozen bunches; do. Carrots, 2*s.* to 3*s.* do.; do. Turnips, 3*s.* to 4*s.* do.; do. Parsley, 1*s.* to 2*s.* 6*d.* do.; Celery, 8*s.* to 12*s.* per dozen bundles; Spinach, 2*s.* 6*d.* to 4*s.* per sieve; Sprouting Broccoli, 3*s.* to 4*s.* do.; Brussels Sprouts, 4*s.* to 6*s.* do.; Onions, 4*s.* 6*d.* to 6*s.* 6*d.* per cwt.; Carrots, 20*s.* to 45*s.* per ton; white Turnips, 30*s.* to 70*s.* do.; Swede do., 15*s.* to 25*s.* do.; Mangels, 17*s.* 6*d.* to 22*s.* 6*d.* do.

STRATFORD: *March* 16.—Supplies have been good during the past week, and a fair trade has been done at the following prices:—Savoys, 10*s.* to 12*s.* per tally; Greens, bunch, 3*s.* 6*d.* to 6*s.* per dozen; Broccoli, 4*s.* 6*d.* to 5*s.* per tally; Mangels, 21*s.* to 23*s.* per ton; Swedes, 23*s.* to 24*s.* do.; Turnips, 45*s.* to 55*s.* do.; Onions, 80*s.* to 100*s.* do.; do. pickling, 70*s.* do.; Carrots, cattle feeding, 20*s.* to 25*s.* do.; do. household, 35*s.* to 45*s.* do.; Apples, 2*s.* 6*d.* to 4*s.* per bushel; Celery, 10*d.* per roll; Horse-radish, 1*s.* to 1*s.* 3*d.* per bundle; Parsnips, 9*d.* per dozen; Rhubarb, 2*s.* to 2*s.* 6*d.* do.

POTATOS.

BOROUGH AND SPITALFIELDS: *March* 16.—Supplies were fully adequate to the demand, which was very slack. Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 95*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *March* 17.—Trade was slow, except for good samples, at the following prices: —Champions, 45*s.* to 60*s.*; Victorias, 55*s.* to 70*s.*; Regents, 60*s.* to 80*s.*; and Magnums, 50*s.* to 75*s.* per ton.

STRATFORD: *March* 16.—Quotations.—Magnums, 65*s.* to 70*s.*; Regents, 45*s.* to 55*s.*; and Early Rose (seed), 110*s.* per ton.

Imports.—The imports into London last week consisted of 47 bags Boulogne, 1000 sacks St. Nazaire, 40 packages 54 cases Malta.

HAY.

WHITECHAPEL: *March* 16 — Supplies were large, with a good inquiry for hay, but very dull trade for Clover and straw. Quotations:—Clover, prime, 88*s.* to 104*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 90*s.*; inferior, 50*s.* to 65*s.*; and straw, 26*s.* to 35*s.* per load.

March 18.—There was a fair supply on sale. The trade was good, at previous prices.

CUMBERLAND (Regent's Park): *March* 16.—Supplies were moderate, but equal to the demand. Quotations:—Clover, best, 90*s.* to 105*s.*; second, 75*s.* to 85*s.*; hay, best, 80*s.* to 90*s.*; seconds, 70*s.* to 80*s.*; and straw, 28*s.* to 36*s.* per load.

STRATFORD: *March* 16.—Clover, 80*s.* to 100*s.*; hay, 70*s.* to 80*s.*; and straw, 30*s.* to 35*s.* per load.

Government Stock.—Consols closed on Monday at 100⅜ to 100⅜ for delivery, and 100$\frac{5}{16}$ to 100$\frac{7}{16}$ for the account. Wednesday's final quotations were 100⅜ to 100⅜ for delivery, and 100$\frac{5}{16}$ to 100$\frac{7}{16}$ for the account. The closing prices of Thursday were, 100⅜ to 100⅜ for delivery, and $\frac{7}{16}$ to 100 $\frac{9}{16}$ for the account.

SHANKS'S PATENT
LAWN MOWER
THE ONLY LAWN MOWER FITTED WITH
DOUBLE EDGED SOLE PLATE
ENABLING THE CUTTING PARTS
TO LAST TWICE THOSE OF
OTHER
MACHINES



Easily worked
Making the Lawn like Velvet
Does not get out of order

PRICES.
To CUT 10 INCHES WIDE, £3 10 0 | To CUT 19 INCHES WIDE, £8 0 0
To CUT 12 INCHES WIDE, 4 10 0 | To CUT 22 INCHES WIDE, 8 10 0
To CUT 14 INCHES WIDE, 5 10 0 | To CUT 24 INCHES WIDE, 9 0 0
To CUT 16 INCHES WIDE, 6 10 0

HORSE AND PONY MACHINES
ILLUSTRATED LISTS OF
THESE UNRIVALLED MACHINES POST FREE
GARDEN ROLLERS
OF ALL SIZES
ALEX. SHANKS & SON
DENS IRON WORKS ARBROATH
& 27 LEADENHALL STREET, LONDON, E.C.
A large Stock of Machines of all sizes always kept
— AT 27 LEADENHALL STREET —
— WHERE REPAIRS CAN ALSO BE EXECUTED —
SMALL LAWN MOWERS
6 INCH 25/- 7 INCH 35/- 9 INCH 45/-

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(SEVEN PRIZE MEDALS.
Established, 1752.)
GOLD MEDAL DRESS FABRICS
are GUARANTEED the very best made, from the same Yarns as those supplied to Her Royal Highness the Princess of Wales; and are manufactured entirely by us, on our own premises, direct from the sheep's back to that of the wearer—features, we believe, which no other advertisers can claim. 1000 people engaged in their production. Warranted to wear and always look well.


(Direct from Our Own Mills.)

New and Seasonable Makes.
Our CROSS-WARP SERGES, 10½*d.* to 3*s.* per yard, are practically unbearable either way of the Cloth. Our GOLD MEDAL Cashmeres, 1*s.* 9*d.* to 4*s.* per yd.; Merinos, 2*s.* to 3*s.* 6*d.* per yard; Ottomans, 1*s.* to 3*s.* per yard; Costume Cloths, 8¾*d.* to 4*s.* 9*d.* per yard; Cords, 6*d.* to 1*s.* 6*d.* per yard. All the above are plain and coloured. Ocean, Canvas and Basket Cloths, plain and figured, at 10½*d.* per yard. Nuns' Veilings, plain and figured, 8½*d.* to 10½*d.* per yard; Soleils, plain and figured, 1*s.* 4*d.* to 3*s.* per yard. Purchases of £1 carriage paid to any Railway Station in Great Britain. Any Quantity Cut at Wholesale Prices.
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Spinners and Manufacturers,
THE MILLS, DARLINGTON.
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"SUMMER CLOUD" SHADING,

For Greenhouses, Conservatories, Skylights, and all Glass Structures, that require Shading Material.

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See that the Packets have the above Trade Mark, without which none are Genuine.

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AND
SHAD THAMES, S.E., LONDON.

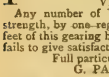
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Full particulars and testimonials obtained of
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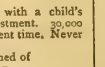
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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense,





as do "grown" Edgings, consequently being much cheaper.
GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
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Is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb., 10s.; 28 lb., 20s.; carriage paid to London or any railway station in Kent. 2¾ lb., 2s. 6d.; 4½ lb., 4s.; 6 lb., 5s.; 6¾ lb., 5s. 6d.; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8s. 6d.; 28 lb., 16s.
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COTTON WOOL and WADDING for Florists and Nurserymen.
THE TRADE SUPPLIED.

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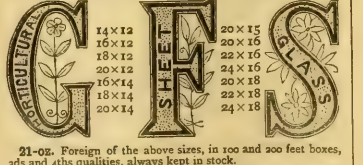
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EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½d. per yard; 4 yards wide, 3d. per yard; or 2 yards wide, 10s. per 100; 4 yards wide, 20s. per 100 yards. New TWINE NETTING, 1 yard wide, 2d. per yard; 2 yards wide, 4d. per yard; 4 yards wide, 8d. per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7d. per yard run.
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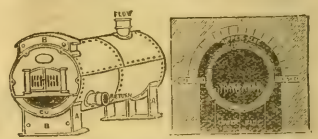


14×12	20×15
16×12	20×16
18×12	22×16
20×12	24×16
16×14	20×18
18×14	22×18
20×14	24×18

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Warranted to Protect Bloom from Frost, Winds, Hail, and Fruit from Birds, Wasps, &c.
Pattern and Prices Free per Post.
Address—S. A. SANDS,
20, CLUMBER STREET, NOTTINGHAM.

The Original and only Genuine Trentham Riveted Boiler.
Recently Improved and Reduced in Price.
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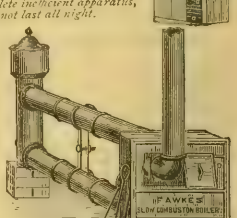
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HIGH and LOW PRESSURE and HOT-AIR HEATING APPARATUS ERECTED and GUARANTEED.
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Fawkes' Slow Combustion HEATING APPARATUS.
Most efficient and cheapest in existence.
Requires no sunk stokehole; will last all night without attention; will burn house cinders; costs nothing for fuel; is a tenant's fixture; any one can fix it; a domestic servant can stoke it. Price of Boiler to heat:—
55 feet 4-inch Pipe .. £2 10s.
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Complete Apparatus, with 2 rows of 4-inch Pipe, from £4 12s. 6d.
The most complete apparatus manufactured. Numbers in use all over the country. Full particulars and prices of every sized Apparatus post-free The only slow combustion apparatus of the kind.
Beware of incomplete inefficient apparatus, which will not last all night.





Specimen Testimonial.
"I have given your Slow Combustion Boiler a good trial during last winter, and it has done its work in a most satisfactory manner. Your Boilers want but little attention, and consume almost anything."—D. MUNRO, *Gardener, The Chestnuts, Ealing Ham Hill, Surrey.*

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HOT-WATER PIPES
LATEST IMPROVEMENTS.
The Best and Cheapest System *fixed complete* is
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THE MOST INEXPERIENCED CAN FIX THEM.
SOUNDNESS OF JOINT A CERTAINTY.
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Makers of Garden Rollers, Vases, Fountains, Seats, &c.

THE "GARDENERS' CHRONICLE"

PRIZES FOR YOUNG GARDENERS.

Form of Application.

From

Full Name and Address of Competitor here.

It is my intention to compete for the Prizes as announced in the "GARDENERS' CHRONICLE" of February 27, 1886, p. 272.

My present employer is—

Full Name and Address of Employer here.

And whose Certificate of my Age, &c., is attached.

Signature of Competitor

Date,

I hereby certify that

is in my employ as Gardener, and to the best of my knowledge and belief his age is years.

Signature of Employer.

Date,

Intending Competitors must cut out and fill in the above Form, which should be forwarded to

The Editor,
GARDENERS' CHRONICLE,
41, WELLINGTON STREET, STRAND, W.C.,
ON or BEFORE MARCH 30 INST.

The Conditions under which the Prizes are offered are annexed.

G. C.
March 20, 1886.

WE NOW OFFER for COMPETITION by Young Gardeners (British subjects) Prizes, subject to the appended conditions, for the best Essay on

ROOTS AND THEIR WORK:

comprising a discussion of their varied forms, their structure, their uses to the plant, the manner in which they accomplish their work, and the bearing of these facts on the methods of cultivation and propagation of plants grown for various purposes.

CONDITIONS.

1. Candidates proposing to compete must make application on the Form annexed, and which must be cut out and forwarded to the Editor, on or before March 30 inst., after which date no application can be entertained.

2. The Prizes will consist of £10 to the most successful candidate, of £5 to the second, and of £2 to the third, in order of merit.

3. In estimating the merit of the papers, special importance will be given to the evidences of original observation and research, and relatively little value will be attached to mere compilations from books or papers. Reference must in all cases be made to the publication from which any quotation or statement of fact is taken.

4. The Essays must be legibly written on foolscap paper, and on one side of the paper only. They may be illustrated by original sketches at the option of the candidate.

5. The writer of the Essay should not attach his name or address to his paper, but should adopt a motto, or other device, by means of which it can be recognised. The real name and address of the candidate should be enclosed within a sealed envelope, bearing outside the same motto or device as is attached to the Essay.

6. The Essays should be sent in to the Editor, 41, Wellington Street, Covent Garden, W.C., on or before May 8 next.

7. The awards will be made by the Editor, assisted by practical gardeners connected with the staff of the paper, and the results will, if possible, be announced at the provincial meeting of the Royal Horticultural Society, at Liverpool, at the end of June.

8. The Editor reserves the right of withholding all or either of the prizes, if in his judgment the papers do not present sufficient merit.

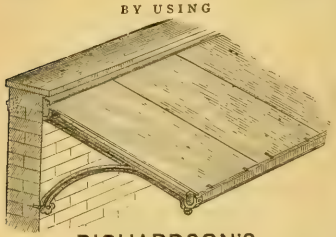
9. The Editor does not undertake to publish, in the *Gardeners' Chronicle* or otherwise, any of the Essays that may be sent to him, but reserves the right to do so at his discretion.

10. Essays which do not obtain an award will be returned to the writers on application, and on the receipt of stamps to cover postage.

Some general remarks on the subject will be found on page 240, Feb. 20.

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BY USING



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WALL-TREE PROTECTOR.

The Cheapest Made, and Thoroughly Strong.

2 ft. wide, 1s. 10d. per ft. run ; 3 ft. wide, 2s. 6d. per ft.

Carriage paid for Orders over £5.

PRICE LIST FREE.

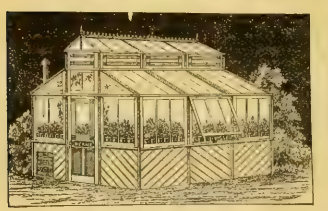
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(*Design Registered, No.* 14,865.)



10 ft. long, 8 ft. wide, 10 ft. 6 in. high.

Price complete, with staging, coloured glass, gutter, and Loughborough Hot-water Apparatus. Erected complete within 15 miles of London Bridge, or delivered carriage free to any station in England.

£25.

LARGER SIZES, complete as above,

12 ft. by 8 ft. 15 ft. by 9 ft. 20 ft. by 10 ft. 25 ft. by 12 ft.

£28. £35 10s. £44 10s. £66.

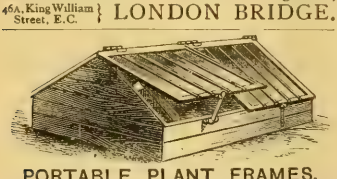
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Surveys made and Plans and Estimates Free.

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The above are without exception the most useful kind of Frame for Plant Growing, and every one with a garden should possess one. The sashes turn right over one on the other, and the boxes are put together with wedges, and can be taken apart in a few minutes. Sizes and prices, carriage paid to any station in England, ready glazed and painted:—

6 feet long, 4 feet wide, packing cases free		£2	15 0
12 feet long, 4 feet wide,	,, ,, ,,	4	15 0
6 feet long, 5 feet wide,	,, ,, ,,	3	15 0
12 feet long, 5 feet wide,	,, ,, ,,	6	10 0

The glass is nailed and puttied in.

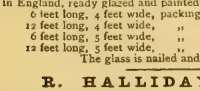
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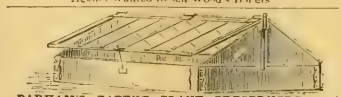
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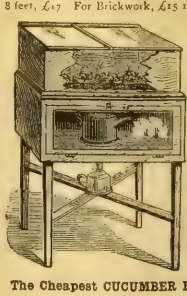
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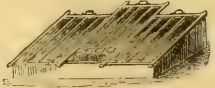
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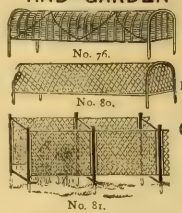
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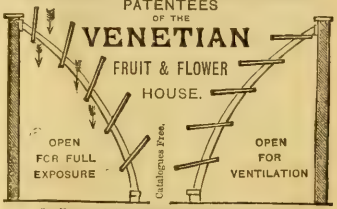
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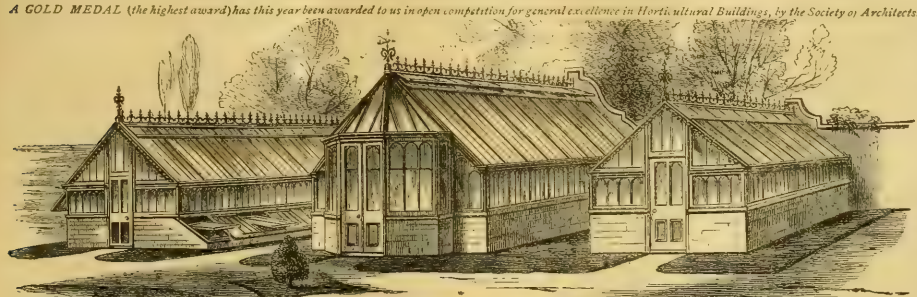
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WANTED, a good practical SINGLE-HANDED WORKING GARDENER, married, without a family, to live in Gate Lodge—Wife to attend to Gate. Wages 25*s*. per week, with excellent Furnished Cottage and Coals. Good character for sobriety and trustworthiness indispensable.—S. H. JOHNSON, Esq., West Ham Hall, Forest Gate, E.

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WANTED, a WORKING FOREMAN, for a large Cemetery. Must have a good general knowledge, and be smart in the management of men. No glass at present. No Sunday work. Wages 30*s*.—Address, with recent testimonials (copies), the REGISTRAR, Southern Cemetery, Manchester.

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Gardeners.

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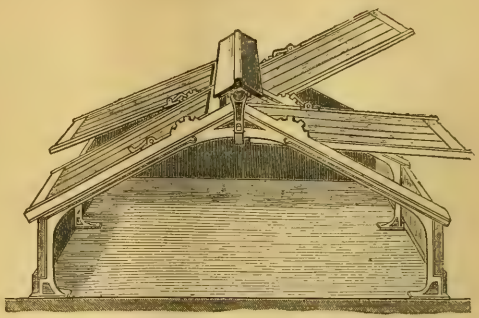
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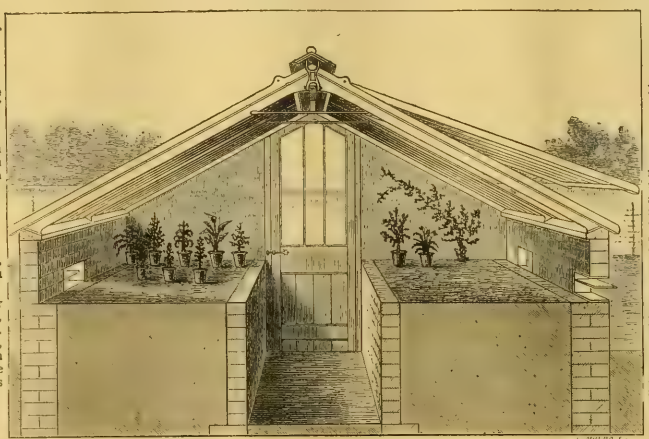
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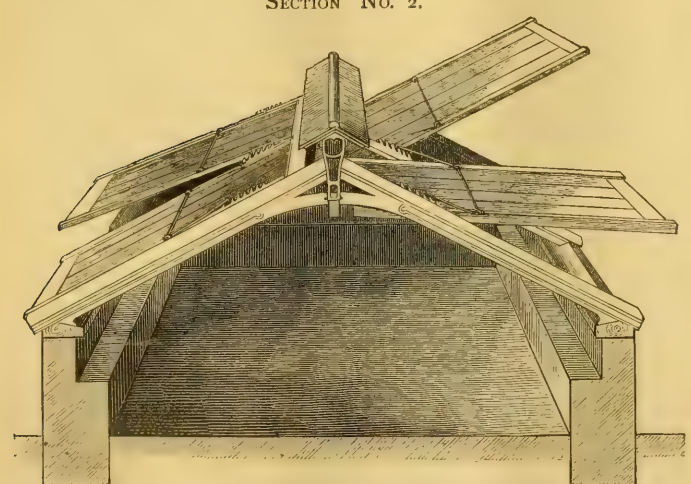
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MESSRS. GREGORY AND EVANS, Longlands Nursery, Sidcup, and 285, 286, 287, 288, Flower Market, Covent Garden, W.C., REQUIRE CONSIGNMENTS of CHOICE CUT FLOWERS. Messrs. G. & E., having a ready Sale for same, can ensure good Market Prices. Account sent daily.
REGISTERED TELEGRAPH ADDRESS—"COMMISSION, SIDCUP."

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH AND BARNHAM.
ACCOUNT SALES sent daily, and
CHEQUES forwarded weekly.
BANKERS and TRADE REFERENCES.
BASKETS and LABELS supplied.

WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers' and Trade references.

Floral Commission Agency.
A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of Choice CUT FLOWERS in any quantity. A. H. & Co., giving personal attention to all consignments, are thus enabled to obtain the highest market prices. All Cheques forwarded weekly. Bankers and good Trade references. Boxes and Labels supplied.

Profitable Sale of Cut Flowers.
CONSIGNMENTS carefully Disposed of. Address, Commission Department—
HOOPER AND CO., Covent Garden, London, W.C.
Good Flowers are always Wanted. Inferior qualities are useless.

WANTED, Large PLANTS of Araucaria Cunninghamii, A. Bidwillii, Dracæna terminalis, Seaforthia elegans, Cyathea medullaris, Ptychosperma Alexandræ, Gleichenias flabellata, rupestris, and dicarpa; Areca sapida, A. Baueri, &c. Any one having plants of any of the above or others that have grown too large for their Conservatories can EXCHANGE them for OTHER PLANTS, BULBS, or SEEDS, at
Mr. WILLIAM BULL'S Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

WANTED, New, Rare, and Distinct NARCISSUS or DAFFODILS. Send sample bloom, say quantity of Bulbs that can be supplied next Autumn, and price, to THOS. S. WARE, Hale Farm Nurseries, Tottenham, London.

WANTED, a few tall specimen Feathery PALMS—Arecas, Seaforthias, Kentias—for Cash or EXCHANGE. Fully describe to
WILLIAM ICETON, Granard Gardens, Putney Park Lane, S.W.

WANTED, JERUSALEM ARTICHOKES. Send Sample and Price to
SQUELCH AND BARHAM, Salesmen, Covent Garden, W.C.
FRENCH BEANS are selling freely.

Rhododendron Stocks.
PAUL AND SON have a few of usual good quality to offer to the Trade.
The "Old" Nurseries, Cheshunt, N.

SEEDS.—RICHARD SMITH & CO., Worcester, beg to draw attention to the Low Prices of individual articles (Peas especially), and the liberality of the Collections at Fixed Prices as set forth in their Illustrated SEED LIST, which will be sent free on application. All Seeds, &c., are of the *best possible* quality.

White Cut Flowers.
EUCHARIS MASTERSII and SANDERII.
These useful new free-flowering Eucharis can be offered, in good Bulbs, by the dozen or hundred, by
Mr. WILLIAM BULL, Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

INVINCIBLE CARMINE SWEET PEA (Laxton).
The most beautiful colour of all Sweet Peas. The most free blooming. The finest for Market or Cutting. Sealed Packets, 6d. each. Trade price on application.
HOOPER AND CO., Covent Garden, W.C.

CEDRUS DEODARA.—Just arrived; guaranteed perfectly fresh Seed. Price, according to quantity, on application to
HY. CLARKE AND SONS, Wholesale Seed Merchants, 39, King Street, Covent Garden, W.C.

HOLLY for HEDGES (now is the time to transplant), 12 to 15 inches, 25s.; 15 to 18 inches, 35s.; 18 to 24 inches, 50s. per 100 Forest LIST, containing heights and prices of well-grown Quick, Ash, Larch, Spruce, Pines, Oaks, Underwood, &c., free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

PINUS STROBUS, 5 to 7 feet; PINUS EXCELSA, 3 to 4 feet; PINUS AUSTRIACA, 3 to 4½ feet; PINUS CEMBRA, 3 feet: SCOTCH PINE, 3 to 5 feet; SPRUCE FIR, 2 to 3 feet; LARCH, 2 to 4 feet; ABIES DOUGLASII, 5 to 10 feet; CUPRESSUS LAWSONIANA, 5 to 7 feet; CEDRUS ATLANTICA, 3 to 7 feet; THUIAS, &c.—Apply, THOS. WOODFORD, Atherstone.

Just Published.
OUR NEW ORCHID LIST, No. 79.
With List of Mr. Ed. Wallace's Importations.
A small Importation of Rare Cape Bulbs. Special LIST. Our Spring LIST of Bulbs (No. 78) for immediate Planting. NEW PLANT AND BULB COMPANY, Colchester.

PAUL'S, WALTHAM CROSS.—SEEDS, ROSES, EVERGREENS, TREES, SHRUBS, CLIMBING PLANTS, FRUIT TREES, GRAPE VINES, CAMELLIAS, BULBS, &c., of the best quality, and low in price. See Priced Descriptive CATALOGUES, free by post.
WM. PAUL AND SON, Paul's Nurseries, Waltham Cross.

CHOICE FLOWER SEEDS for 1886. ONE FARTHING A PACKET!
AGENTS WANTED EVERYWHERE. Specimen Parce of Eighty-four different Packets post-free, 1s. 9d.
LLOYD BOOTH, Flower Seed Merchant, Loudwater, High Wycombe.

Pride of the Market
PEA.—A good stock; growth 1885; sample and price on application.
ANTHONY WATERER, Knap Hill Nursery, Surrey.

LOVEL'S STRAWBERRY PLANTS.
Price, 2s. 6d. per 100, 10s. per 500, 17s. 6d. per 1000.
LIST of Varieties Free. Sample of Plants, 3d.
W. LOVEL AND SON, Strawberry Growers, Driffield.

STRAWBERRIES.—We can now supply fine Plants in 5 and 6-inch pots, for immediate Fruiting, at 24s. per 100; in small pots, 12s. per 100; prepared Plants from ground, 4s. per 100, 20s. per 1000. All the best Kent kinds.
H. CANNELL AND SONS, Swanley, Kent.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots.
F. R. KINGHORN, Nurseryman, Richmond, Surrey.

HARRISON'S EXHIBITION MARROW PEA, a vastly improved Ne Plus Ultra. Per quart, 2s. 6d., post-free. A few bushels to spare to the Trade; price on application.
HARRISON AND SONS, Seed Growers, Leicester.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots, 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.
RICHARD SMITH AND CO., Worcester.

ASPARAGUS (true Giant).—Special Offer to clear ground :—2-yr., 20s.; 3-yr., 30s.; 4-yr., 40s. per 1000.
NEW POTATO (Bird's Doctor Bob), 4s. per stone.
Trade prices on application.
JAMES BIRD, Nurseryman, Downham.

Seed Potatos.
H. AND F. SHARPE will be pleased to make Special Offers of their choice selected stocks of SEED POTATOS, comprising all the best kinds in cultivation. Purchasers of a quantity treated liberally.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Important Sale of a First-class Collection of CARNATIONS, PICOTEES, PINKS, CLOVES, PÆONIES, PHLOX, PYRETHRUM, a choice assortment of 400 Standard and other ROSES, selected FRUIT TREES, hardy SHRUBS, AMERICAN PLANTS, Imported and other SEEDS, DAHLIAS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY, March 30, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues now ready at the Rooms, and of the Auctioneers, 67 and 68, Cheapside, E.C.

Tuesday Next.

ORCHIDS IN FLOWER.—IMPORTANT SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C, on TUESDAY NEXT, March 30, at half-past 12 o'Clock precisely, over 300 lots of ORCHIDS in FLOWER and BUD, from various collections. Amongst them will be found numerous very fine plants, including the following:—

Odontoglossum Alexandræ, many fine varieties, some plants with fifty-five flowers.
" odoratum, true.
" Rossii majus, several extra fine varieties.
" species, new
" hybrid varieties
" nævium majus, very rare.
Dendrobium nobile pulcherrimum. [teum.
Oncidium cuculatum gigan-
Cattleya bicolor Measureisana, splendid plant and variety, very rare.
Masdevallia Veitchii grandiflora,
Cœlogyne cristata, grand mass, 3 to 4 feet across.
" cristata (Chatsworth), several varieties.
Phalænopsis amabilis, fine specimens.
Masdevallia Harryana Dawsoni, true.
Cattleya Warneri.

Many Cattleyas, Dendrobiums, and others

On view morning of Sale, and Catalogues had.

Wednesday Next.

2000 splendid Bulbs of LILIUM AURATUM, and other fine LILIES; also numerous beautiful and distinct varieties of IRIS from Japan, in unusually good condition; 1000 EUCHARIS CANDIDA, 1000 FREESIA REFRACTA ALBA, fine Bulbs of LILIUM NEILGHERRENSE, and other Indian LILIES; AZALEAS, PALMS, 800 Standard and other ROSES from an English Nursery; 300 CARNATIONS and PICOTEES, PÆONIES, HARDY PLANTS and BULBS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, March 31, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Ascot.

HIGHLY IMPORTANT three days' SALE of WELL-GROWN and THRIVING YOUNG NURSERY STOCK.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. John Standish & Co. to SELL by AUCTION, on the Premises, The Royal Nurseries, Ascot, Berks, on WEDNESDAY, March 31, and two following days, at 12 o'Clock precisely each day, several acres of remarkably well-grown NURSERY STOCK, in capital condition for removal, including 30,000 Larch and 10,000 Scotch Firs, 5000 Pinus Laricio, 5000 P. austriaca, 10,000 Retinospora of sorts, 2500 Retinospora Lawsoni, 2300 Yews, 9000 oval-leaved and evergreen Privet, 1200 Aucubas, 2000 Laurels, 2000 variegated Hollies, 7000 Rhododendron ponticum, 1000 named Rhododendrons, 10,000 Manetti Stocks, 5500 Standard, Half-standard, and Dwarf Roses, 2000 Red and Black Currants, 2000 Standard and Pyramidal Fruit Trees; also a large assortment of Greenhouse Plants, Palms of sorts, Pot Roses, Azaleas, large Camellias, Gardenias, &c.

The stock may now be viewed. Catalogues may be had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Friday Next.

A grand Importation of CATTLEYA MOSSIÆ in splendid condition and full leaf; ODONTOGLOSSUM ALEXANDRÆ of the best type, ONCIDIUM PAPILIO MAJUS, ODONTOGLOSSUM GRANDE (fine masses and large bulbs), LYCASTE SKINNERI, &c., from Messrs. Shuttleworth, Carder & Co.; also DISA GRANDIFLORA and SATYRIUM CARNEUM, ODONTOGLOSSUM PESCATOREI, O. HASTILABIUM, and O. CORONARIUM; EUCHARIS CANDIDA, fine Bulbs of LILIUM NEILGHERRENSE, &c., from The New Plant and Bulb Company; and an assortment of ESTABLISHED ORCHIDS, including Dendrobium cucullatum, Angræcum glomeratum, many Cattleyas, Odontoglossums, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, April 2, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday, April 9.

VALUABLE COLLECTION of ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from T. W. Boord, Esq., M.P., who is leaving Ockenden House, Cuckfield, to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY, April 9, the choice COLLECTION of ESTABLISHED ORCHIDS, the whole in excellent condition and consisting for the most part of fine varieties comprising Cattleyas, Cypripedium Dominianum, C. lævigatum, and others, Dendrobium Ainsworthii, D. moniliforme, D. Farmeri, D. Dearei, &c., Lycaste Skinneri, fine varieties, including L. alba; Oncidiums and Odontoglossums in variety, Phalænopsis Schilleriana and P. amabilis, Sobralia macrantha, Epidendrum prismatocarpum, Peristeria elata, and numerous others.

Surbiton.

UNRESERVED CLEARANCE SALE, the L. & S. W. Railway requiring immediate possession of the Property.

MESSRS. PROTHEROE AND MORRIS are instructed by Mrs. Rose to SELL by AUCTION, on the Premises, The Oakhill Nursery, Glenbuck Road, Surbiton, adjacent to the Surbiton Station, on TUESDAY, April 13, the Nursery being required immediately by the Railway Company, the whole of the well grown NURSERY STOCK, GREENHOUSE and STOVE PLANTS, BEDDING PLANTS, CARNATIONS, PICOTEES, PINKS, 4000 Maidenhair FERNS, UTENSILS, &c.

Full particulars will appear next week.

Monday Next.—(Sale No. 7128.)

7000 grand Bulbs of LILIUM AURATUM, 400 L. SPECIOSUM ALBUM, 300 L. SPECIOSUM ROSEUM, 400 L. LONGIFLORUM, 200 L. THUNBERGIANUM, 300 L. KRAMERI, and other Bulbs from Japan, in the finest possible condition; also Home-grown LILIUMS, TUBEROSES, TIGRIDIAS, CEDRUS DEODARA, &c.

MR. J. C. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY NEXT, March 29, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next—(Sale No. 7129.)

ROSES, FRUIT TREES, SHRUBS, BORDER PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, March 31, at half-past 12 o'Clock precisely, First-class Standard and Dwarf ROSES, including all the leading varieties; Pyramid and Dwarf-trained FRUIT TREES, SHRUBS, and CONIFERS, CLIMBERS; a fine collection of hardy BORDER PLANTS, GLADIOLI, LILIUMS, &c.

On view morning of Sale, and Catalogues had.

Thursday Next—(Sale No. 7130)

CATTLEYA MENDELII, grand importation.

LÆLIA ANCEPS, White (SCHRODERIANA, SANDERIANA, STELLA, and WILLIAMSIANA), in grand masses, among them a gigantic specimen measuring some feet in circumference, and one of the largest ORCHIDS ever imported.

ODONTOGLOSSUM PESCATOREI, very fine importation; O. PHALÆNOPSIS, ADA AURANTIACA, CATTLEYA SKINNERI, in fine masses; LYCASTE SKINNERI.

Also three extra fine plants of L. SKINNERI ALBA, true; and many other fine importations. The Cattleya Mendelii are in specially fine order, and grand masses among them.

MR. STEVENS will SELL the above by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, April 1, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE by AUCTION of ORCHIDS in FLOWER will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 15, and he will be obliged if gentlemen desirous of entering plants for this Sale will please send particulars of same as soon as possible.

The First Portion of the Valuable Collection of ESTABLISHED ORCHIDS formed by H. Lovatt, Esq., of Low Hill, Wolverhampton.

MR. J. C. STEVENS has received instructions from H. Lovatt, Esq., to SELL by Auction, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, April 28 and 29, at half-past 12 o'Clock precisely each day, the first portion of his choice COLLECTION of ESTABLISHED ORCHIDS, comprising amongst other fine things:—

Cattleya Trianæ alba (true)
" Mendelii, with thirteen breaks (grand var.)
" Skinneri alba
" Morganæ (very fine var.)
Dendrobium Ainsworthii
" Schroderi
" suavissimum (extra fine)
" nobile extra var.
" Goldieanum
Lælia anceps Dawsoni (true)
" elegans (fine plant)
" Brysiana
" xanthoglossa
" purpurata (extra fine plants with sheaths)
Masdevallia Veitchii (fine plants)
" Harryana
" " (Bull's Blood, true)
" Lindeni
" chimæra
" Backhousiana
Cymbidium Lowii (two extra fine plants)
Cattleya maxima decora
" Wagneri
" Crawshayana
" amethystoglossa, with 12 bulbs
" labiata
" " (autumn flowering)
Odontoglossum vexillarium
" Andersonianum
" Chestertoni
" Œrstedii
" Alexandræ, in var.
Pilumna nobilis (very fine plants)
Vanda suavis Veitchianum
" tricolor Dodgsoni
" " Patersoni
" Sanderiana
Aërides Lobbi
Cypripedium caudatum roseum
" Veitchii
" Spicerianum
Oncidium macranthum
" Lanceanum, grand var.
Cœlogyne eburnea, &c., &c.

On view mornings of Sale, and Catalogues had.

Slinfold, near Horsham, Sussex.

One of the best planted FRUIT FARMS in the kingdom, with modern Residence, known as Ranfold Grange, of pleasing elevation, occupying a most singular beauty on the Billinghurst Road, 4 miles from Horsham, one hour's rail from London, containing 89 acres and 36 perches, of which about 67 acres are planted with several thousand Pyramid and Bush Pear Trees, grafted on Pear and Quince Stocks of the choicest varieties; also a few thousand Apples and Plums, all selected, and planted eight years and less ago by the owner, an experienced pomologist. Also GASKIN'S DAIRY FARM, adjoining, and 58 acres and 12 perches of rich Grass Land.

MESSRS. DRIVER AND CO. are instructed by Major Walter, who is retiring, to SELL the above valuable FREEHOLD PROPERTIES by AUCTION, at the Mart, Tokenhouse Yard, Lothbury, London, E.C., on TUESDAY, April 20, at 2 o'Clock precisely, in Two Lots (unless previously disposed of by private contract).

Particulars of Messrs. EARLE, SONS AND CO., Solicitors, 54, Brown Street, Manchester; of Mr. ALEXANDER WILSON, Solicitor, 4, Cook Street, Liverpool; of Messrs. J. R. BRIDGFORD AND SONS, Land Agents, 28, Cross Street, Manchester; and of Messrs. DRIVER AND CO., Surveyors, Land Agents, and Auctioneers, 4, Whitehall, London.

MR. TYDEMAN will SELL by AUCTION, at the Exotic Nurseries, Waltham Cross, Herts,

a portion of Mr. TUDGEY'S valuable and well-known COLLECTION OF SPECIMEN STOVE AND GREENHOUSE PLANTS,

including well-grown Specimens of Azalea indica, Cape Ericas, Aphelexis, Phœnocomas, Dracophyllums, Stephanotis, Allamandas, Clerodendrons, Francisceas, Specimen Palms, Anthuriums, Crotons, &c.

Also a quantity of Hardwood HEATHS and PALMS, in 4-inch and 6-inch pots.

And One EXHIBITION PLANT VAN, in good repair.

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

The "Percival" Collection of Orchids.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN). Limited, wish to announce that the REVISED CATALOGUE of this fine COLLECTION of ORCHIDS is now ready, and will be sent post-free on application.

The Collection still includes magnificent specimens of all the leading varieties of ORCHIDS. Inspection invited.

The Vineyard, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

London, W.

Re Boller, Deceased.

By order of the Executors.—Important to Florists.

TO BE SOLD, the well-known Property, The WOODFIELD NURSERY, Harrow Road, W., noted for the growth of Succulents. There are numerous Greenhouses. Terms moderate.

Apply, for full particulars, to Messrs. PROTHEROE AND MOORIS, 67 and 68, Cheapside, E.C.

TO BE SOLD, a genuine NURSERY, SEED, and JOBBING BUSINESS. The Lease, Goodwill, with or without Stock, &c. Situated on Main Road in good class neighbourhood; 2½ Acres, Glass-houses, Show-house, good Dwelling-house and Seed-shop. The first reasonable offer will be accepted.

Further particulars of Executors of the late Mr. PARKER, Norbury Nursery, South Streatham, S.W.

FOR SALE, a NURSERY, Old-established, well stocked. Six large Hothouses, heated Pits, Potting Sheds, &c. Stables and Cottage on the ground. Close to High Street, Peckham. Ready for immediate occupation. For terms and cards to view.

Apply to PARTRIDGE, Dashwood, South Penge Park, S.E.

Barnes.

Facing Public Road and the Common.

TO BE LET, or FREEHOLD to be SOLD, an ORNAMENTAL COTTAGE RESIDENCE, with large and convenient Stabling, Seed Room, &c., and 2 acre or upwards of Land, having a Well therein, and long open frontages for Glass.

Apply to A. H. FREND, Architect, 3 Gray's Inn Square, W.C.

To Nurserymen and Florists.

TO BE LET, in Barry Road, East Dulwich, GREENHOUSES, VINERY, LAND, with small Dwelling House and Stabling

For particulars, enquire W., 204, Peckham Rye, S.E.

OSMAN AND CO., Windsor Street, Bishopsgate, London, E.

The Cheapest House in the World for all HORTICULTURAL SUNDRIES. The Trade should refer to our new Catalogue before ordering. Any firm not having received a copy, please write for one.

To Landed Proprietors, &c.

A. McINTYKE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

Beccles Burial Board.

NOTICE IS HEREBY GIVEN that the Burial Board of the Parish of Beccles INVITE TENDERS, and same will be opened on or after the 6th day of April, 1886, to enter into contracts for LAYING OUT and PLANTING the LAND lately purchased by the Board adjoining and intended to be added to the present parish Burial-ground in the London Road, Beccles, and for certain alterations in the old ground, in accordance with the plans prepared for the Board by Reginald Upcher, Esq., and in accordance with the Specification prepared by the Board, which Plan and Specification, together with a Draft of the Contract, can be seen at the office of the Clerk of the Board at Beccles.

And (as a SEPARATE TENDER) for FENCING the LAND so purchased by the Board, in accordance with the Specification and Drawings prepared for the Board by Mr. Arthur Pills, together with a Draft of the Contract, can be seen at the office of the Clerk of the Board at Beccles.

Each Contractor must be prepared (if required) to find a Surety, to be named in the Tender, and to be approved by the Board, who will join with the Contractor in the Contract.

Tenders, sealed, and marked outside "TENDER for LAYING OUT," or "TENDER for FENCE" (as the case may be), must be sent to the Clerk of the Board not later than the 5th day of April, 1886.—By order,

F. S. RIX, Clerk of the said Board.

FOR SALE, 50 Large CAMELLIAS, 40 Pots of EUCHARIS AMAZONICA, also Bulbs; 40 Pots of EUCHARIS CANDIDA, also GARDENIAS, AZALEA, CUCUMBER, TOMATO, and STRAWBERRY PLANTS.

G. WALKLING, College Park Nursery, Lewisham, S.E.

SURPLUS STOCK.—QUICK, strong and other sizes. ASH, 2 to 4 feet. Scotch FIR, fine, 3½ to 4 feet, SPRUCE FIR, 2 to 3 feet, extra transplanted. SYCAMORE, OAK, TREE BOX, &c. ROSE, choice H.P. and Teas, assorted, 3s. per dozen, 20s. per 100.

W. GROVE, St. Owen's Nursery, Hereford.

PELARGONIUMS.—Strong, short-jointed plants with three and four shoots, in 3½-inch pots, full of roots, 32s. per 100, £14 per 1000. The above are really good plants of the best market varieties, including Duchess of Bedford, Kingstone Beauty, Triomphe de St. Maud, &c.

We also offer SEED POTATOS, Old Ashleaf and Mona's Pride, at 8s. per cwt.

A. SIMPSON AND SONS, Heworth Nurseries, York.

NEW BLACKBERRY, "THE WILSON EARLY."



A Large Consignment has now arrived from America of this fine-fruited Blackberry.

The Canes are in excellent condition, and ready for PRESENT PLANTING.

The demand in this country for the Common Wild variety is already enormous in some districts, the gathering and selling of which forms a large industry in the autumn, and we can strongly recommend THIS GREATLY IMPROVED SEEDLING for extensive planting. It can be grown in any soil, and cannot fail to be a profitable investment, coming into fruit in the autumn after all other soft fruits are done.

The Berries of the WILSON EARLY are much larger and more handsome than the common one, and consequently will prove far superior for Preserves and the Table. It is very productive and early, and grown largely by MARKET GARDENERS IN AMERICA FOR THE NEW YORK MARKETS.

PRICES OF CANES, AS FAR AS UNSOLD:
6s. per 100; 45s. per 1000; in 5000 Lots, at 40s. per 1000.

WATKINS & SIMPSON,
SEED AND BULB MERCHANTS,
EXETER STREET, STRAND, LONDON, W.C.

SPECIAL NOTICE.

B. S. WILLIAMS' SPRING EXHIBITION
Of Prize Flowering Dutch Bulbs, Cyclamen, Amaryllis, Himantophyllums, Orchids, &c., &c.,
Will be Open for Inspection from March 26 to April 10,
from 9 A.M. to 6 P.M. daily.
ADMISSION FREE
TO PATRONS OF THE ESTABLISHMENT AND THOSE INTERESTED IN HORTICULTURE.
VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, LONDON, N.

THE HARDY GOLDEN-RAYED LILY
(LILIUM AURATUM).

Magnificent Bulbs of this charming Hardy Lily are obtainable at the following low prices, direct from the Importers.

Immense Bulbs, as plump and sound as English-grown Roots.

Price 5s., 8s., 10s., 15s., 20s., and 25s. per dozen. Carriage Free.

The Finest Samples of L. auratum that have yet reached England.

TRADE PRICE ON APPLICATION.

CARTERS' { Seedsmen by Royal Warrants to H.M. the QUEEN and H.R.H. the PRINCE of WALES. } 237-8, HIGH HOLBORN, LONDON, W.C.

HYACINTHS, TULIPS, AZALEAS,
And other Spring Flowers.

WM. CUTBUSH & SON
(LIMITED),

Beg to announce that their ANNUAL EXHIBITION of the above will be held at the Highgate Nurseries, from Monday, March 29 to Saturday, April 10.

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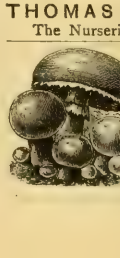
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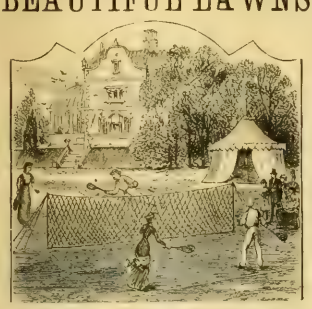
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THE

Gardeners' Chronicle.

SATURDAY, MARCH 27, 1886.

NEW WORK FOR HORTICULTURAL SOCIETIES.

THAT these societies have done good work in the past, and are still doing it, few or none conversant with their past history and present doings will deny. Not a few of the older ones began by diffusing knowledge and collecting fresh horticultural material, which, in so far as it was novel, also provided object-lessons for further teaching. As gardening journals were established, and commercial enterprise undertook and carried forward the work of collecting plants, horticultural societies dropped their earlier functions and devoted themselves more to the mere marshalling and rewarding objects of merit. Few modern societies have, in fact, ever attempted anything beyond this, while the older ones that still cling to some teaching functions find it altogether impossible to compete successfully with, or even run creditably abreast of our able and efficient Press. Neither should they attempt it. Such efforts at the present day are useless squandering of capital, and a mere waste of force. As the new work to which we would summon existing horticultural societies, or call new ones into existence to perform, is not on the old teaching lines, it need not interfere with their present functions and duties. Most of them collect the major portions of the sinews of war by organising horticultural exhibitions. They might still go on holding shows and awarding prizes, and, if possible, render these gatherings yet more attractive, as well as practically useful. In addition to all this each society should endeavour to exert a more potent and constant influence for good in its own neighbourhood. As at present constituted the local influence of not a few societies is well nigh *nil*, that of many more is transient and intermittent. One or more great shows are held during the year, the exhibits often gathered from the most distant parts of the kingdom, and then the society sinks into a comatose state till another year; still, even such spasmodic efforts are fraught with benefit to horticulture. The great shows furnish a powerful stimulus, and provide models of excellence, towards which the provincial horticulturist may strive; and whether he succeed in matching them or not, he gains immensely by the efforts he makes to do so. But suppose each society attempted to become a permanent source of light and leading to its locality, as has so often been urged in these columns! There are many ways in which this might be done, two of the most obvious being the extension of membership, and of their spheres of labour.

Too many horticultural societies manifest a tendency towards contraction rather than expansion. Rates of subscription, considerations of social status, and other influences render them exclusive, and they not seldom sink into something akin to coteries and cliques. The constitution of horticultural societies should be so broad, the conditions of membership so easy, and the

privileges so numerous as to induce all classes and conditions that possess gardens or are interested in the prosperity of horticulture, to become members.

The rates of subscription might vary, while the general privileges of all might be very much alike. All the officers of the society should also be elected by the members, who should be frequently consulted in regard to the work and character of the society. In provincial societies especially, the old-fashioned threefold division of such societies will be found to be most useful —that of cottagers, amateurs, and gentlemen's gardeners and nurserymen either as one class or two. Such societies, however, have often failed to enlist the cottager class to the extent they might have done, through depriving that class of all share in the management of the society. In view of the cottagers having a much larger portion of land at their disposal in the future than they have had in the past, it is more than ever important that they should be enrolled as members of horticultural societies.

HINTS FOR IMPROVEMENT.

This brings us to our second point, the vital one of greatly extending the sphere or scope of the labours of such societies. The holding of one or more show annually, and the awarding of prizes for the best products at the same, may probably be looked upon as the least important of the labours of such societies. First and foremost among their duties would be the visiting of the gardens and allotments of the members, and the awarding of prizes for excellence of culture, cleanliness and amount and profitableness of produce; brief reports of the prize gardens might also be printed on slips and circulated among the members. In these special note would be made of modes of culture, varieties of fruit or vegetables that yield the best results, or command the best prices. By such simple means much might be done to bring the whole gardening practice and produce of each neighbourhood up to the highest level of any case of isolated excellence that it might contain. In addition to this special prizes might be given as between the gardens or products of contiguous societies or districts. Allotments cultivated as gardens could compete with the same. The exclusion of allottees from competing with the holders of cottage gardens often proves a source of disappointment and discouragement to rural cultivators.

Special encouragement should also be given by these provincial societies to the occupiers of small holdings. In one of the first gardening catechisms I learnt it was stated that agriculture and arboriculture were part of horticulture. This is quite true, and the truth possesses great practical significance at the present time, when so many present and prospective small holders of land need instruction as to the best means of getting the most out of it in the least time at the smallest cost.

It would hardly be straining a point were these provincial horticultural societies to do their best for the holders of the 3 acres of land and a cow. Information concerning the most prolific and profitable corn and root crops, fruit trees, bushes, and vegetables, should be sown broadcast, either by means of slips, village lectures, or other means. The best means of establishing cow clubs, with information about the most profitable cows, goats, sheep, or other stock and poultry for small holdings, with the most economical means of feeding should be made known. Reliable information on the selling of the produce of garden allotments and small farms, and the sort of produce most in demand in given counties and localities should be given. In a word, all that relates to the holding, cropping, and marketing of the produce of small holdings, by whatever name they may be called, should receive the earnest attention, fostering care, and valuable assistance of local horticultural societies. By thus extending the sphere of their labours they would not only do more to advance horticulture, but render valuable assistance towards the solution of one of the most difficult problems of the day, viz., the linking of more labourers to the land, and thus if not of doubling at least of vastly increasing alike the bulk and the value of its produce.

ROYAL AQUARIUM, WESTMINSTER. — The first of the series of four horticultural exhibitions announced for the season takes place on Tuesday and Wednesday next, and will consist of spring flowers and market plants.

New Garden Plants.

CATTLEYA LAWRENCEANA, *Rchb. f.*

WHAT a pleasure to see Sir Trevor Lawrence's blooming beauty fresh at hand. It was kindly sent me on March 10 by Messrs. John Laing & Co., Forest Hill, S.E., London—two magnificent flowers. The general tint is that of Cattleya superba, and thus the flowers are what I had expected them to be, promising, no doubt, some improvement in longer established plants. I have, however, to add two odd peculiarities, unnoticed in the fine dried flowers. The tube of the lip is incurved. The small column is not straight, but also incurved, with abrupt broad wings on each side. No doubt a great display of such fine flowers may be expected. *H. G. Rchb. f.*

POLYBOTRYA LECHLERIANA, *Mettenius, Filices Lechlerianæ*, fasc. i., p. 4, t. 1.

Caudex decumbent, at length creeping. Fronds with a thick stipes, green, and channelled in front, rounded, and purplish behind, thickly clothed towards the base with dull brown entangled lanceolate scales, the rachis also similarly channelled, with the upper side hairy; the lamina ample, broadly ovate, quadripinnate, smooth, herbaceous in texture. Pinnæ wholly sterile or fertile, or partially fertile, the sterile over 2 feet long, tripinnate, oblong-lanceolate acuminate, their pinnules a foot or more long, almost sessile, oblong-acute, cut into blunt oblong pinnatifid pinnulets, or secondary pinnules, the secondary pinnules divided about half way down into close subfalcate lobes; the fertile pinnæ contracted, similar to the sterile ones in outline, tripinnate, the pinnules and pinnulets distinct, and having the spore-cases collected into roundish or short oblong clusters or masses, three or four of the former seated on each side the rachis, so that the latter appears beaded. The fructification before the bursting of the spore-cases black, subsequently brown. Veins solitary in the ultimate lobes of the sterile part (obsolete in the fertile), extending nearly to the point, forked in the few larger basal lobes.—Hab. Peru; Ecuador.

This fine creeping Acrostichoid Fern was at first taken for Cyathea microphylla, the fronds in the younger stages of development, when this name was adopted, being very finely cut in a somewhat similar manner to those of that species. True, the decumbent base of its caudex was not very suggestive of a Tree Fern, but, as in Cyathea dealbata, for example, it was thought that this anomaly might right itself in due time. When at last the fructification was developed, it was at once seen that an error of identification, based on immature specimens, had been made. In what may be called the semi-developed stages of the plant, the pinnules and pinnulets (sterile, of course) appear to be much more finely cut than they are at a later stage, and thus fronds materially differing in aspect may and often do appear together upon the same plant. In a specimen now before us, consisting of a frond 2 feet long, the lobes are so narrow, and stand so distinct, that the fronds appear as minutely divided as those of Asplenium tenuifolium, for example, the pinnæ in this case being from 8 to 9 inches long. In a younger frond, about 1 foot long, with the pinnæ not more than 3 inches long the pinnules are divided into still narrower, distinct, linear, sub-falcate lobes, and the aspect of the frond is one of minute subdivision. In a more advanced condition we have the pinnæ longer, and the pinnules take on a more leafy aspect from the pinnulets being less open and more solid-looking—oblong, with close-set lobes without conspicuous open spaces. In fronds of this latter character, which are very handsome on the plant, the surface has a peculiar ridge-and-furrow arrangement similar to that which is seen in the growing plants of Pleocnemia Leuzeana—the pinnæ are deflected at their apices below the level of the rachides, and the pinnules are also deflected on the pinnæ in a similar way, so that there are two distinct series of ridges with corresponding furrows shown on the upper surface of the frond (fig. 79, *a*, *b*, *c*). In the fully matured or fertile state of the plant, some of the pinnæ become wholly, and others partially fertile (fig. 79 *d*). This state shows still another condition of the leafy or sterile parts, the pinnulets or tertiary divisions being about half an inch long, and pinnatifid half-way to the midrib, while the final lobes or segments, which are narrow linear subfalcate, and about three on each side, are placed sufficiently near together to appear close-set, and in this way the open, finely-divided character seen in the earlier fronds is quite lost.

The fertile pinnæ, which have none of the leafy surface developed, of course present a perfectly distinct appearance from the foregoing, and when fully matured, but before the spore-cases burst, they are strikingly effective from the shining black colour of these organs, and the beaded arrangement produced by their being collected into small roundish masses on the edges of the green rachis. Either a whole pinna or a larger or smaller portion of a pinna is thus transformed from the broad sterile leafy state, to the contracted, fertile, spore-bearing condition; and occasionally small isolated portions of the frond become thus changed.

In Messrs. Veitch's plant, from which our notes and figures (figs. 79, 80, pp. 400, 401) are derived, the caudex is stout, 2—3 inches in thickness, dark coloured, at first decumbent and then taking an upward direction, with the fronds at distant intervals. These are spreading, with a stout stipes of from 12 to 18 inches long, nearly as thick as one's little finger, green and channelled in front, rounded and purplish behind, slightly asperous, and thickly clothed towards the base, with dull reddish-brown, lanceolate, entangled and crumpled scales; the rachis is also flattened and furrowed on the upper side, as are the secondary and tertiary rachides, which are also hairy, especially on the upper side. Up to a certain point in the evolution of the plant the fronds are wholly sterile, the mature ones being quadripinnate, broadly ovate, and of a firm herbaceous texture, with a smooth surface. When the fronds reach the fructifying age or stage either some of the pinnæ are entirely sterile and some entirely fertile, or they are each made up of sterile and fertile portions. We have not seen any fronds which were entirely fertile. The sterile pinnæ in the example before us is 2 feet long, tripinnate, broadest at the base, and narrowing thence towards the acuminate apex, oblong-lanceolate acuminate, the pinnules a foot long or more, almost sessile, oblong-acute, cut into blunt oblong pinnatifid pinnulets, about half an inch long, of which the lower ones are sessile, with a narrow attachment, and the upper ones become gradually more and more decurrent, the uppermost being reduced to simple linear lobes; the secondary pinnulets are divided about half-way to the costa into close linear subfalcate segments, each having a solitary vein extending nearly to the acute point, the few basal lobes, which are sometimes larger, having the vein forked. In the contracted fertile pinnæ and the fertile parts of the dimorphous pinnæ, there is no leafy development whatever, but the green rachis is narrower than in the sterile parts, the ultimate leafy divisions being replaced by roundish masses of black spore-cases, some three or four on each side the rachis, with an oblong terminal one, the sides of the costa being converted into the fruit-bearing receptacle.

Messrs. Veitch introduced their plant from Peru, through their collector, Mr. Davis. Lechler found it in shady places at St. Gavan, Peru, his specimens, described by Mettenius, bearing the number 2156. The sterile frond, figured by Mettenius in the plate above referred to, represents one of the less developed states here described. The plant was gathered by Dr. Spruce (No. 4744) on Mount Guayrapurime, near Tarapota in Eastern Peru; and by Professor Jameson in Ecuador, Dr. Spruce's being a sterile, and Dr. Jameson's a portion of a fertile frond. It is also figured in Hooker's *Second Century of Ferns*, t. 97, where the scandent habit of the plant is indicated, and the beaded arrangement of the fructification on the contracted fertile fronds is distinctly shown.

When exhibited by Messrs. Veitch & Sons at one of the meetings at South Kensington, this charming Fern received a richly deserved First-class Certificate; and Fern growers who have space, say, for example, on bold indoor rockwork, or on the walls of an intermediate house, would find it to be a most striking and effective Fern. *T. Moore, Chelsea.*

DRACÆNA DON PEDRO PASTOR.—This is a new Dracæna introduced, by the Compagnie Continentale, and figured in the *Illustration Horticole*, t. 585. It is of good habit. The leaves are stalked, the elliptic acute blades of a rich green, variously striped with yellow. It was raised from Dracæna Robinsoniana fertilised with the pollen of D. stricta.

Trees and Shrubs.

Abies nobilis.

Referring to the notes on Abies nobilis *versus* magnifica, which have appeared in the *Gardeners' Chronicle* since November 21, 1885, I need scarcely say that they have both edified and interested me. I note the expressed doubt as to the true Abies magnifica being in cultivation in Britain; but in addition to the evidence to the fact supplied by Prof. Sargent (Jan. 2, p. 20, current volume), though late, I may be allowed to state what I know about it, and to make a few remarks on the general discussion. As a matter of fact, some of the material on which the late Andrew Murray based his diagnosis of the species (magnifica) were young plants, then (1862) growing in the nursery of Messrs. Hugh Low & Sons, Clapton. It is certainly possible that one and all of those plants may now be dead; but I should hardly think it probable.

From 1873 to 1879 I annually received from seed merchants in California, a quantity of seed, as I believe, of typical A. magnifica, but labelled A. amabilis. I have called it typical, because, in addition to the distinctive character of the seed, I invariably found in the parcel or parcels a sufficient number of scales, bracts, and leaves, to determine the species by. I had at one time a large quantity of such material, some of which were carefully and satisfactorily compared with Mr. Murray's type specimen and published character of A. magnifica. Large numbers of plants were raised from those seeds, and, in justice to the Messrs. Barron of Borrowash, Derbyshire, I must state, that they were distributed widely from the Elvaston Nursery under the correct name of magnifica. I watched the development of many of those plants, until they attained to 2½ feet and 3½ feet in height. They may all be dead now, but it is not at all probable.

I may state that those plants in habit and vegetative characters were specifically related, or similar to all the plants that I had critically examined in other gardens and nurseries, which were called A. nobilis robusta. M. Carrière's description of A. nobilis robusta, cited by you in *Gardeners' Chronicle* of November 21, 1885, p. 652, probably covers those plants I raised from Californian seed; and yet my experience does not agree with his. He says, speaking broadly of Abies magnifica, Hort. (for he seems to think it different from A. magnifica, Murray):—"These plants seem to be very variable, so that from the same seeds several very distinct varieties may easily be picked out. These, perhaps, soon lose their exceptional characters. Nevertheless, A. nobilis robusta is much more easy to raise than A. nobilis, is much preferable to the latter, and is likely to replace it." Replace it, indeed! I have not found A. magnifica easier to raise than A. nobilis; neither have I managed to detect in the individuals peculiarities more strongly marked than exist between Frenchmen and Englishmen. On the contrary, I have found the individuals of A. magnifica in Britain, under whatever name grown, constitute as distinctly uniform a group of Firs as any known to me. Nevertheless, it must be admitted that between magnifica and nobilis there is most evident relationship; and this relationship would seem to be doubly assured, and the comparatively slight botanical severance of the two species bridged over, by the go-between specimen from the Cranston Nursery, fig. 147, p. 657, vol. xxiv. But the variation in the case of the Cranston Nursery plant seems to have been from A. magnifica rather than from A. nobilis. "Branches formally verticillate, uniform; young bark purplish-brown; buds (as compared with those of A. nobilis) not developed till late in the spring"—in these respects agreeing with the plants which I have raised of A. magnifica (true). The leaves of the specimen (fig. 147) "combined the characters of both A. nobilis and of A. magnifica." But with the beautiful illustration before me I have little hesitation in opining that the leaves of A. magnifica are therein more decidedly pourtrayed than those of A. nobilis. The cone, too, as compared with that of A. nobilis, is, "but for the projecting bract, much more like that of magnifica (true)." The bracts are said to be "larger, broader, and more deeply notched at the edges than in ordinary nobilis. In spite of their greater breadth the bracts are farther apart, so that they leave uncovered spiral spaces, while in nobilis the scales are generally, but not always, completely concealed."

Readers of the above are, I think, entitled to a further explanation. The cone (fig. 147) speaks to the very opposite. The exposed portions of the bracts indicate that they are smaller, much narrower, and considerably less deeply notched "at the edges than in ordinary nobilis" (fig. 146). And I venture to remark that the exposed portions of these bracts clearly represent the elliptic blade and cusp of the magnified fig. 148 run wild, or only enlarged, and do not conform nearly so well in shape with either the cuneate-cuspidate or the cuneate broadly lanceolate bracts of illustrated nobilis (figs. 146 and details). For these reasons, embracing as they do the chief botanical characters on which the species of Abies are founded, the Cranston Nursery plant is, in my opinion, probably more closely related to A. magnifica than to A. nobilis. Should this plant prove to be one and the same with that which fruited in 1877 or 1878, branches and cone scales of which were sent me for identification by Mr. W. Partridge, it would, indeed, add much to its interest, and demonstrate the wayward and therefore unreliable character of bracts. [We learn from Mr. Heale that the specimens mentioned came from different trees. Ed.]

The chief interest centres in the beautiful fertile branch from the Cranston Nursery (fig. 147, p. 657), inasmuch as, in its bracts, the cone differs considerably from both A. nobilis and A. magnifica, yet seems to be nearly, if not quite, intermediate between the respective types of these species. It is doubtless an extreme form of the variety of magnifica, with generally "long exsert" bracts, which is now known to grow on Mount Shasta, Northern California, This view is taken by Professor Sargent, who has seen the variety in habitat. Having seen and considered the specimens brought home from Mount Shasta by Sir J. D. Hooker, I have no doubt of their close relationship to the Cranston Nursery specimens. It is remarkable that the Mount Shasta form, so far as seems to be known, differs from the typical magnifica only in its exsert and otherwise slightly modified bracts. Neither Professor Sargent, nor his late colleague, Dr. Engelmann, has published, so far as I am aware, anything to the effect that it differs from the type in either port, bark, foliage, flowers, shape of cone, scales, or seed. But it must be noted that Professor Sargent, as admitted by himself, has never seen leaves of A. magnifica, even those of young plants, that were in the least grooved on the face. The leaves of the Cranston Nursery plant, at least those on the lower infertile branches, are said to be grooved at or near their bases. I have myself seen about a dozen different seedlings of typical magnifica, the leaves of which showed an inclination that way, where bent near the base; but it was so slight and so very exceptional that I thought it of small importance beyond more completeiy demonstrating, that whenever the leaf of Abies is attenuated and flattened, wholly or in part, it is either slightly grooved or shallowly channelled; more especially at or towards the base on the upper face.

Although the cone and magnified details represented by fig. 148, p. 661, are said to be typical magnifica, and were, I am aware, so considered by Mr. Murray himself; yet the bract is very different indeed from that of the type as it appears in the *Synonymy of Various Conifers*, part I., p. 28, fig. 42 (I enclose a tracing). The bract of the latter is decidedly lanceolate, and "shorter than the very wide scale," thereby agreeing with Dr. Engelmann's description of it in the *Botany of California*. But Dr. Engelmann, I think, never would have described the magnified bract of fig. 148 as "lanceolate." It is more spathulate-cuspidate than lanceolate. Yet, strange to say, it is now very well known that the latter is much more typical than the former (type) of the great bulk of the individuals known as the Red Fir of the central and southern sierras of California. Type specimens are most useful, but when a species is based on a single cone, as in this instance, it is liable to cause trouble and confusion by reason of its limited character. Such specimens are seldom sufficiently comprehensive; they speak for themselves, but not necessarily for others. Mr. Murray's type of magnifica has, as we shall shortly see, caused almost endless confusion. It is much the same with the bracts of A. nobilis as it is with A. magnifica. Fig. 146, p. 653 represents a cone which is usually produced by young and vigorous trees in this country. Its bracts, to judge from the portion exposed, are cuneate, and broadly lanceolate above, the blades being much frayed or lacerated. The bract of the detached scale is rather different, and may be described in the words used by Dr. Engelmann for the species (*Bot. California*) as "cuneate-cuspidate."

I have not observed, neither am I aware that others have observed, a degree of variation equivalent to this in other characters, even those of foliage, of this very good species. Even the most distinct of the Californian Firs—the one farthest removed structurally and botanically from its congeners—A. bracteata, is not strictly methodical in its ways, and not above breaking away from its accrdited specific bounds. But curiously enough the variation which it exhibits is, as far as I can gather, confined to its echinate cones. The Messrs. Veitch have very considerately introduced into their excellent manual what appears to be a good figure of a cone of this species. It differs from all the cones, and all the figures of cones, that I have seen of this species in being seemingly sessile on the branch, and in the leaf-like cusp of its bract being strictly linear and incurved. All others seen by me, including one which I paid a dollar for in San Francisco, were sub-sessile, and their bracts tapered gradually from the lateral lobes or blade to their tips, and were recurved. Such variation from the type as this cone exhibits ought surely to have its equivalent in at least the foliage, but we know of no such variation. The figure of the cone of this species in Mr. A. Murray's *Notes upon Californian Trees*, part I., is also a remarkable departure from the type in being cylindric instead of ovate.

Notwithstanding the instances which we have been considering of variation in the bracts—variation from their respective types which, so far as known, has no complement in the other characters usually considered of specific value—coniferists have always relied and, it seems, do still rely on the bract, more than on any other character, in determining a species. This, too, notwithstanding that such misplaced trust has on several occasions contributed to confound, as synonyms, very distinct species. The synonymy of the species and varieties of Fir we have been considering, as wel as that of others native of North-Western America, is more than aught else a brief record of learned gentlemen having staked their reputation on the bract as the specific character.

Professor Parlatore, seeing in the bract and scale of A. magnifica a resemblance to A. amabilis, referred it to the latter, and in this he was followed by the Californian botanists; but practical men in Britain being more favoured in having living plants, as well as herbarium specimens, of both forms, naturally demurred, but could afford to wait and watch this matter of professors in error slowly right itself. Notwithstanding the very marked difference between the leaves of magnifica and amabilis Professor Parlatore seems to have had no compunction in treating them as one. For a similar reason he also referred the Mount Shasta form of A. magnifica, with projecting bracts, to A. nobilis; and in this was followed many years subsequently by Dr. Engelmann. The leaves and other vegetative characters of the variety, as a matter of course, were made to follow the bract; but to have been thoroughly consistent the Professor should have referred them to amabilis along with the leaves of typical magnifica. The difficulty about the Mount Shasta variety was not got over until Dr. Engelmann had the opportunity of seeing the plants in habitat when, notwithstanding the presence in the cones of generally long exsert bracts, he reversed his former decision by referring it to A. magnifica, Murray. No matter how long and exsert the bracts, he could no longer mistake the port (of young plants at least), foliage, general build of cone, and shape of scales and seeds.

Another point has been raised respecting the direction ultimately taken by the bracts of the Cranston Nursery specimen, fig. 147. The direction of the tips of the bracts, incurved or recurved, as a subsidiary specific character, would seem to be materially weakened in value by the variation already referred to in the cones of A. bracteata; also by the cones of A. Nordmanniana, figured in this journal a few weeks ago (p. 145), which showed about half the number of their bracts erect or incurved, and the other recurved.

There is only one other point bearing on this discussion—already too long—which I would like to mention, viz., the direction of the longer spiral spaces on the respective cones of A. nobilis, fig. 146, p. 653, and the Cranston Nursery specimen, fig. 147, p. 657. In the former it will be observed they are from left to right; in the latter (in both cones) from

right to left. Do the cones of magnifica invariably exhibit this, and do those of nobilis the opposite? Who, having the opportunity of deciding the question, will be good enough to report? *G. Syme.*

A FUNGOUS DISEASE OF EUCHARIS.

SOME time since my brother, Mr. T. B. Grove, Windley Nursery, Sutton Coldfield, sent me some bulbs of Eucharis amazonica, which were affected by a fungous disease. On a few of the most rotten bulb-scales I detected a number of what has been called "the Eucharis mite," but it was evident to me that the disease in this case was not caused by the mites; rather it was in the rotting scales that the mites found a congenial field for their development, and there would flourish and increase.

On microscopical investigation of a fragment of the inner tissue of the scales there could be seen, floating in the liquid in which it had been crushed, a small number of minute round cells, which were motionless and might be mistaken, on a superficial examination under a low power, for a micrococcus (fig. 74). But a little irregularity, like a bud, projecting from the side of one or two of these cells, suggested that I had before me a species of Saccharomyces or Yeast.

The examination of the inner surface of one of the scales, with a magnifying power of about 100 diameters, showed here and there tiny hemispherical heaps, almost invisible to the naked eye, of a brilliant carmine colour. One of these, with a portion of the surrounding tissue, being separated and crushed in water, the field of the microscope was seen, under a magnifying power of about 500, to swarm with little aggregations of colourless cells.

Each of these was similar to the solitary ones I had seen before, but now they were evidently connected with one another in that form which arises, as in the case of yeast, from their growth by gemmation or budding (fig. 75). The particular species before me was then seen to be Saccharomyces glutinis, Cohn, the "yeast of gluten."

A description and figure of this species will be found in my *Synopsis of the Bacteria and Yeast Fungi*, p. 63. It is rather common on various starch-containing substances, such as are the Eucharis bulbs. On these it appears as "small, rose-coloured, slimy spots," which by degrees unite together so as to form conspicuous patches. In this, as in many other cases of these lowly organised fungi, the colouring matter is not contained in the growing and living cells, but is produced by their influence on surrounding matter, or it may be is excreted by them, and thus the substance in which they are growing becomes coloured, often very intensely, while the organisms themselves are colourless. This, however, is not universal, for in other species the colouring matter is found in the cells themselves.

Before describing the fungus I will state the appearance of the affected bulbs; for the Eucharis seems, according to the letters which have appeared in the *Gardeners' Chronicle*, to be subject to be attacked in more than one way, and it may well be that the fungus which caused the disease in this case does not form the cause of everything that passes as the "Eucharis disease."

The disease can be first noticed on the bulb by the appearance of small blood-red, brightly-coloured spots on the outside of the outer scales. If a bulb thus marked be cut open, or the outer scales stripped off, it will be found that the inner surface of the scales, more or less according to the progress of the disease, is marked beneath the epidermis by broad stains of a red or brownish-red colour, which gradually penetrate deeper and deeper, and at last show themselves on the outer surface of the scales (fig. 76). The disease fastens, as is usual, on the weakest parts; thus, if a bulb, from which every trace of the affected parts has been removed, be replanted, the cut surfaces will soon begin to show a brilliant carmine-red, which rapidly spreads and deepens, until the scale decays into a soft loathsome brown mass.

If the bulb retains sufficient strength to throw up leaves, these will sooner or later become affected. Sometimes small red spots appear here and there on the blades (fig. 77, p. 397); sometimes a red mark travels gradually up to the leaf-stalk, just beneath the epidermis (fig. 78, p. 397).

I will now describe the fungus which causes these appearances. In the specimen of the yeast derived from the Eucharis bulbs the cells were mostly round, and varied from 3 to 5 micromills in diameter. Only occasionally could one be seen of an oval or oblong shape. They were, as has been said, mostly single; this arises from the fact that, as soon as a bud has attained the size of 3 micromills, it separates from the mother-cells. But in some cases the daughter-cells remained attached to the mother-cells to the number of three or four, thus forming small colonies exactly like those which we are accustomed to see in ordinary yeast.

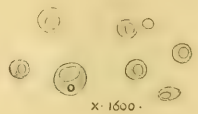


FIG. 74.—CELLS OF SACCHAROMYCES GLUTINIS AT REST.

The growth of the buds takes place in this wise. First, a very small rounded swelling is seen on some part of the outer wall of the mother-cell. This rapidly enlarges, remaining usually spherical, but sometimes appearing to be rather pear-shaped, until it is nearly as large as its parent. But before it reaches this size it may itself produce a swelling, which grows in a similar way. More rarely a single cell may give rise to two daughter-cells simultaneously. The cells then

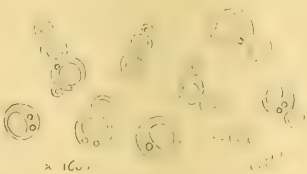


FIG. 75.—CELLS OF SACCHAROMYCES GLUTINIS BUDDING

fall apart, and repeat the process. This is the whole life-history, so far as it is at present known.

Almost every cell contains a conspicuous vacuole, or "empty space," nearly as large as itself in many cases, and always situated excentrically. Of course if seen in front view it may appear to be central. This vacuole, however, is not really empty. It is filled, just as similar cavities in higher plants, by cell sap, a liquid which differs but little from pure water,



FIG. 76.—BULB OF EUCHARIS ATTACKED BY FUNGUS: THE SHADED PARTS ARE RED OR BROWN IN COLOUR.

and contains small quantities of various substances in solution. A few cells have no vacuole at all; I have never seen more than one in a cell, although other writers describe and figure two or three together. The remainder of the cell is occupied by clear hyaline protoplasm, which lines the thin colourless cell-wall on all sides, but more thickly on one than on the other. This is what causes the excentric position of the vacuole. In the thicker part of the protoplasm there are usually one or two bodies of denser substance, condensed protoplasm in fact, which resemble what is called a nucleus in the cells of higher plants. These nucleoid bodies are perfectly spherical and conspicuous from their high refractive power; they measure about half a micromill in diameter, and are to be seen in almost all cells that are actively engaged in budding, but less frequently in others.

As soon as a daughter-cell reaches about half the diameter of its parent a vacuole becomes visible in it, and soon afterwards a nucleoid body also. The nucleoid bodies are always situated in the thicker part of the protoplasmic layer and closely bordering on the vacuole. But I could see no constant relation between them and the point where a bud appeared. Sometimes the bud appeared on the side where the nucleoid bodies were, sometimes on the opposite side; sometimes there were two nucleoid bodies visible at the commencement of the budding, sometimes only one. In one case I saw three of them in one cell without any trace of the formation of a bud. It is possible, however, that they have something to do with the gemmation, as I saw appearances which led me doubtfully to believe that when there were two of them in one cell, one of these bodies passed into the daughter-cell. This account will be found to agree with that recorded by Trelease in his "Observations on several Zoogleæ and related Forms," in the *Studies from the Biological Laboratory of the John Hopkins' University*, vol. iii., No. 4. His specimens were found on corn-starch paste, and he also observed on a slice of boiled Potato a white variety of the same, differing in no respect except in want of colour.

The fungus lives, apparently, at the expense of the starch grains, which are stored up in the Eucharis bulbs. These are found to be very much less numerous in the parts of the scales where the Saccharomyces has committed its ravages, than in the parts which are as yet untouched. It permeates the whole of the cells, except, perhaps, those of the epidermis, and colours every tissue with which it comes into contact while living and growing, first carmine-red or rose-red, and then brown.

When we consider the minuteness of the fungus (for to see the details just described requires a magnifying power of at least 1000 diameters), we shall perceive that it will be difficult to take precautions against its ravages where it has once taken hold. I am inclined to think that the best of all means will be such as tend to strengthen the vital powers of the bulbs. A strong bulb would throw off the disease where a weak one would succumb. Every particle of soil that has once been in contact with a diseased bulb must be removed, and not used again for a like purpose. Every diseased fragment should be carefully burnt. The treatment employed by my brother has been to cut away with a knife every part that could be seen to be affected, and soak the bulbs for a night in sulphide of potassium. Those that were least affected have since then thrown up tolerably healthy leaves, and appear to be in a fair way to recover. I can now add that, since the above was written, the bulbs have been grown freely in a stove, and the disease seems to have disappeared entirely.

It will be seen that the conclusions I have come to differ somewhat from those announced by others who have studied the disease, and, as I have said, it is possible that more causes than one are at work. If any readers who suffer from this disease will send me affected bulbs, I shall be pleased to examine them and report the result. *W. B. Grove, B.A., St. Vincent Street, Birmingham.*

THE ABNORMAL LATENESS OF THE SEASON.

SNOWDROPS in April form one of the most unusual legacies of the late season; nor are the Snowdrops only a month or six weeks later, but many of them are also weaker than usual. Snowdrops generally seem sufficiently hardy to bear any amount of cold, though they hardly know what to make of the alternate freezings and thawings which have held them *in statu quo* for nearly two months. We are all accustomed to see Snowdrops appear immediately after the most severe frosts—so soon as the thaw comes—as if by magic; but the experience of this year shows that they positively shrink from being frozen again on the instant, for in several cases during this prolonged winter even the Snowdrops were frozen into blackness through the oft-repeated freezings.

Narcissus, Daffodils, Tulips, Hyacinths, and other bulbs have also suffered through the long-continued severity of the weather, or have been greatly retarded by it. It has seemed to have hit white, blue, and purple Crocuses very hard indeed, while all

golden or yellow varieties have bravely withstood the cold. Nor have bulbs alone been the only sufferers. Autumn sown annuals, great breadths of Myosotis dissitiflora, Aubrietias, Arabis, and even Primroses, Violets, and Daisies, have been crippled and kept back a full month or two in blooming. Masses of the old purple and scarlet Clove Carnations are also almost wholly cleared off. Purple Primroses—always the first to bloom—not seldom flowering in February, always in March—are still sealed up, while their leaves lie flat on the ground. Borders of Marie Louise and other Violets, full of bloom in November, are now surfaced with blackened leaves with never an expanded bloom to sweeten the air. But for the late Snowdrops and golden Crocuses, the garden would be bleak and bare indeed.

The Laurustinus, that has been struggling to come out since last October, has not yet succeeded in opening its welcome white blossoms; nor have the common Holly-leaved Berberis, nor early Ribes added their golden or scarlet colours to the shubberies; nor the Pyrus japonica enlivened our walls. The Golden Jasminum nudicaule has also been unable to open its blooms this winter, and presents a forest of frozen buds that will never open, instead of the tender leaves that are generally seen at this season of the year. *D. T. F.*

Orchid Notes and Gleanings.

AN ORCHID GROWING ON AN ORCHID.

Amongst the various articles which have from time to time been suggested as suitable for growing Orchids upon, it has probably never occurred to anyone to recommend that one Orchid should be deliberately planted on the stem of another. Such a suggestion would probably be considered as emanating either from some practical joker, or some probable candidate for a lunatic asylum. Such a condition of things, however, occasionally exists in Nature, and one such instance it is the business of this paragraph to record. On a species of Dichæa sent home the other day from Jamaica two specimens of a small Pleurothallis had comfortably settled themselves down for life; but some unfortunate mortal with botanical inclinations rudely interrupted their domestic arrangements, and after glueing them to a sheet of paper consigned all three to the herbarium shelves. The genus Dichæa is exclusively Tropical American, and closely allied to Maxillaria, though very different in habit. It more nearly resembles a small Vanda, the leaves being compactly arranged in two rows—an arrangement which suggested to Lindley the generic name. A specimen of Dichæa muricata, from the same locality, has two small Tillandsias upon it—a fact which suggests that the genus Dichæa is somewhat accommodating in this respect. Of course, in the case of epiphytes such examples are purely accidental; but with true parasites the case is far different. Several cases of double parasitism are on record. The Mistleto (Viscum album) has been found growing upon the closely-allied Loranthus europæus, while an Australian Viscum exhibits a similar preference for various species of Loranthus. In the *Handbook of the New Zealand Flora*, a solitary instance of Tupeia antarctica parasitic on Loranthus micranthus is recorded. Tupeia is a monotypic genus of Loranthaceæ, and is limited to New Zealand. Recently another example has been recorded in the *Transactions of the New Zealand Institute*, by Mr. T. Kirk, as follows:—"When recently botanising with my friend, Mr. J. D. Enyst, on the mountains above the Broken River, at an altitude of 3000 feet, we had the pleasure of discovering a noble specimen of Fagus Solandri, whose widely-spreading arms supported a most abundant and luxuriant growth of Loranthus decussatus, some of the branches being from 8 to 9 feet in length; in many cases bearing specimens of Tupeia antarctica several feet in circumference. In some cases two or more specimens were growing on the same branch; but these were invariably small, and, in the larger specimens, the portion of the supporting branch beyond the point of attachment of the Tupeia was dead or dying, showing that the Tupeia had absorbed a large portion of the nutritive juices necessary for the full supply of the foster parasite. From twenty to thirty plants of Tupeia were parasitic on the Loranthus on this single Fagus. No other instances were observed during explorations extending over many miles." *R. A. Rolfe.*

Dendrobium Leechianum ×.

It is necessary in the naming of hybrid Orchids raised in our gardens at home to be careful of the parentage, and before naming a supposed new variety to ascertain whether it has not been already raised by some one else. The first hybrid of this section was raised by Mr. Mitchell, gardener to Dr. Ainsworth,



Fig. 77.—Young leaf of Eucharis attacked by fungus; spots carmine-red.



Fig. 78.—Leafstalk of Eucharis with red streaks of fungus.

of Broughton, near Manchester, from D. aureum (heterocarpum) and D. nobile. The seed was sown in March, 1867, and the first flowers opened February 1, 1874. An excellent woodcut is given in the *Gardeners' Chronicle*, April 4, 1874. I have flowers of D. Leechianum from Mr. W. Thomson's plant, and, comparing them with the woodcut of Ainsworthii ×, there is but little difference in the size or formation of the flowers. The variety roseum was obtained in the same batch of seedlings. Next we have D. splendidissimum, raised in Messrs. Veitch's nursery from the same cross, and described by Dr. Reichenbach as distinct from D. Ainsworthii ×. Certainly, but not distinct from the rose-coloured form. Now we have D. Leechianum ×, raised, I believe, by my friend Mr. Swan, late of Fallowfield, near Manchester. This variety has been well grown by Mr. Thomson at Clovenfords. I examined them carefully with Mr. Sander, and we came to the conclusion that this is the finest form. Mr. Thomson has both parents in his possession, viz., a fine form of nobile and the Ceylon variety of D. aureum (heterocarpum). This variety is remarkable for the deep yellow colour of the sepals and pepals, and short, rather slender bulbs, covered with a white sheath. The flowers of the above three varieties may slightly vary, but certainly not sufficiently to make specific distinctions. What a confusion, too, D. heterocarpum has got into! It was certainly first named by Dr. Lindley (*Gen. et Sp. Orchid.*, p. 78) D. aureum. Then in 1839 Lindley describes D. aureum var. pallidum, of which there is a coloured plate with the flowers nearly white in *Bot. Reg.*, 1839, t. 20. This was found in Ceylon by Mr. Macrae growing upon trees near Nuera Ellia, flowering in January. It flowered with Messrs. Loddiges in March, 1839. Next we have the Manilla variety, described by Lindley in *Bot. Reg.*, 1843, t. 17; sent by Mr. Cuming, and flowered by Loddiges in August, 1842: this is pale yellow. In 1853 the name D. aureum is dropped by Sir J. W. Hooker, and D. heterocarpum used in *Bot. Mag.*, t. 4708. This variety is pale yellow, and was sent to Kew from Assam, through Mr. Simons, in 1852; flowered at Kew, January, 1853. And, lastly, D. heterocarpum var. Henshalli, is described by Hooker, and figured in *Bot. Mag.*, t. 4970, from materials supplied by Messrs. Rollisson. Their plants were sent from Java. The middle lobe of the lip of this variety, "has two dark sanguineous spots confined to its base," instead of having the whole disc of a deep golden sanguineous stain; the sepals and petals are pale yellow. The variety D. aureum philippinense, recently introduced from Manilla in quantity, is distinct and well known. Mr. B. S. Williams, in the new edition of the *Orchid Growers' Manual*, has reverted, I think rightly, to Dr. Lindley's original name. The subject-matter of these crosses, and the question what is D. aureum and what is D. heterocarpum, is continually cropping up amongst Orchid growers, so that I thought it well to trace the original plant to its source, and also the subsequent introductions. *J. Douglas.*

Cypripedium Druryi.

This very distinct species is not very common in collections, but it is very distinct from its yellowish colour and the brownish stripe down the centre of the dorsal sepal. It does not seem to retain a healthy constitution in cultivation.

Angræcum Leonis.

This very beautiful species would appear to possess good lasting qualities. We have a plant in flower that opened the first bloom early in January, the remaining bloom appears almost as fresh as ever. The roots of this plant have pushed straight out from the stem, in some cases not even touching the moss in which the plant is placed. The question as to whether peat or moss is preferable for this plant can scarcely as yet be determined. So far as my own observation and experience goes, it would seem to do thoroughly well in crocks and moss. The very roots soon pushing away from the basket, would seem to ndicate that a fair share of water is necessary during a good part of the year. *W. Swan, Howick House, Preston.*

Watering Orchids.

The application of water and the proper drainage of the soil are two of the most important points in Orchid culture—much more so than some people imagine. Every person who grows Orchids should know the state of the drainage of every individual plant under his care, and of the material in which it is potted, so that he may be able to judge of the proper quantity of water to be given during the growing season, and also during the season of repose. This is an all-important study. Water should not be thrown at random over the plants, but each one should be carefully supplied according to its requirements. We do not approve of over-watering the plants; moderation is by far the best principle by which to guide the operation. One cultivator may affirm that he keeps his plants wet, and that under this *régime* they thrive well; possibly they may do so, but that is no reason why another cultivator should

follow this example. In the first place the house in which the wet treatment succeeds may be differently situated as to aspect, or may be larger and better heated, so that more ventilation can be given; besides which there might be many other causes to account for the plants succeeding. It is in such cases that close observation of the situation of the house becomes necessary—whether in sheltered or in exposed situations, or whether the houses get all the sun and the winds. If in an open country, different treatment will be required from that which would be suitable in a sheltered place. *B. S. W., in "Orchid Album."*

Cœlogyne cristata (*Lindl.*) var. maxima.

This belongs to the old set, with orange-coloured keels and fibrillæ. It is superior by one-third to the best individuals of the Chatsworth variety I have seen. Those have the keels running near the apex of the mid-lacinia of the lip, whereas the new variety has those only in the disc. The fibrillæ are very long and do not stand too crowded, as in the Chatsworth and in the old typical plant. It is very recommendable. I had several spikes, and a very good photographic representation, kindly sent me by Mr. F. Sander. *H. G. Rchb. f.*

Florists' Flowers.

THE AURICULA.

Letters I have received from the North state that the plants of the show varieties are very small this year, they having in early winter shrunk up into considerably less than their usual winter size. Our own plants caught an early frost, and in that way speedily lost their outer leaves, and being sent to sleep early they woke up into growth about the end of January, and by keeping the frost from them they have grown on steadily ever since. By the appearance of our own plants, I should suppose they will be finer this year than they have been for the last two seasons. I attribute this to the longer season of rest in the first place, and the more steady growth subsequently. The last two seasons the plants grew too much in January and February, and suffered from the cold east winds in March and April. We have now experienced a change; the thermometer fell to 16° early in the week ending March 20, with east winds; on the 19th and 20th the wind was steadily in the west, with a decided change to fine weather. We can now ventilate the house freely, and the plants need no artificial heat. If there is any trace of greenfly on the plants it will be best to fumigate with tobacco-smoke before the flowers open, as they may be injured by the smoke when the flowers are too far advanced.

Offsets and Seedlings.

The very small offsets which were taken off and rooted in the autumn may now be potted, but do not use very large pots; it may be that thumb-pots will be sufficiently large for most of the plants, certainly few of them will require anything larger than small 60's. The small seedlings are now coming up freely, and as soon as they are large enough let them be potted off into small pots; the plants are exceedingly small, and a dozen can be readily potted into small 60's. They do best in moderately light sandy soil.

The Alpine.

This section out-of-doors does not make any signs of growth at present; but the crowns are sound, and they are likely to start into very rapid growth now that the weather has changed. Those in pots look remarkably healthy, and promise to give grand trusses. They are certainly late, but if placed in sunshine they will be in time for the Primula Conference.

The Polyanthus.

These are also very late in showing their trusses; by this time we have had the plants in full flower, now all we have consists of two rather poor trusses of Buck's George IV., certainly one of the best of them, and an early variety to flower. These are plants that do not brook greenhouse culture; the leaves become drawn, and the trusses small, the flowers not growing to their size, nor developing the rich velvet-crimson or maroon, bordered with cloth of gold. They may either be planted out in a frame, or the plants may be potted and placed there. The lights should be taken off the frame whenever the state of the weather admits of it. The right thing is to protect from frost, winds, and rainfall.

The Carnation.

The last reference to these was made at p. 75, when the plants were deeply covered with the snow in the frames. We allowed the snow to remain until the sharp frost had gone, when it was removed before the thaw came, as there is always a leakage, and we do not like any plants to be soaked with melted snow. We began repotting the plants before the wind changed; it would have been better to have waited until they showed some signs of growth, but if this and other things are kept waiting for a change of weather the result is that too much work gets crowded together, and we do not know which way to turn. If gardeners could do all their work just at the nick of time it wanted doing how happy would they be.

Potting.

The compost for potting had been mixed some six weeks previously, and we were very careful to examine every particle of the loam to destroy wireworms. We have not yet finished repotting, and perhaps the plants potted later will succeed best. We had the soil in the pots frozen hard in the case of those early potted. After repotting it is best to place the plants in cold frames; this is more to protect them from heavy rains, which would be injurious before fresh roots had formed in the new potting soil. Many people cannot afford cold frames for such plants at this season of the year; in that case it is better to place them out-of-doors at once, and let them take their chance. This practice is (or used to be) followed at the Royal Nurseries, Slough; and better grown plants than Mr. Turner's I have never seen. They do not pot very early—in fact, not until the end of March, or, in such a late season as this, early in April.

Tree or Perpetual Flowering Carnations.

The cuttings of these put in during the month of January or early in February should now be well rooted, and if not already potted off into small pots see that it is done at once; the successful cultivator of these plants takes care to grow them on without allowing them to receive any check to their full development. Cuttings may still be put in either in frames, or, what is better, in a forcing house, where there is also a gentle bottom-heat. A small frame placed inside a forcing house is a most useful appliance for striking all sorts of cuttings; failing this a square of glass placed over the cuttings prevents evaporation, and keeps them fresh until roots are formed. The small plants potted off will do very well on a shelf in any light airy house, the nearer the glass the better, and as soon as they are fairly rooted plentiful supplies of fresh air are also necessary. When they are under glass at this season they are very liable to the attacks of greenfly, which must on its first appearance be removed. If it is not convenient to fumigate dip in tobacco or soft-soapy water. *J. Douglas.*

The Apiary.

ITALIAN BEE-KEEPING.

Intelligent foreigners have ever been more or less ingenious in making simple means attain a desired end. The Italians have largely adopted a very simple hive invented by Giotto Ulivi. The Swiss, and many Germans also, use this hive, which, for brevity's sake, we will call the Giotto. This hive is very cheaply made. In Italy a hive of eight frames costs the small sum of 8*d*. Giotto Ulivi says that one very good season he took 3000 lb. of honey from twenty-eight hives—that is, over 100 lb. for each hive—leaving the bees plenty to winter on. A Giotto hive is simply a number of wooden frames, in which the bees hang their combs. In some respects they are similar to English frames, but they have this unusual advantage, that they do not hang or stand in a hive, but they form the hive, and a tile does for a cover. Each frame consists of four pieces of wood, which must be at least 1 inch thick. The top bar and the two sides are each 1½ inch wide, but the bottom bar is only 1 inch wide. The top and bottom bars are fastened to the side bars in such a way that the side bars stand 1 inch from the ground. The bees can, therefore, enter between each bar, which is a great advantage during a great honey flow. Nothing is easier than to stop up some of these holes if robbery is going on. The sides of the hives simply consist of two flat pieces of wood, with a projecting leg to make them stand, and these pieces of wood fit nicely against the frames. Only one thing is necessary to success, and that is that the frames must be made true, and of uniform thickness. The Giotto hive must, of course, stand on something perfectly flat, and a low wall protected from the wind is a very suitable place. In our climate it would be advisable to paint the frames outside and at the sides, but not inside. Bees do not like paint inside, as I said before, when I signed my articles "Agnes." When you want to put a swarm into one of these hives, take as many frames as you think the swarm will require to start with, and put some strips of foundation along the top, These strips need not be more than 1 inch wide; in fact, there is a positive advantage in narrow strips. Place the hive (or frames) where it is to stand, and put the sides in position and then cover. Add frames, one at a time as required. The disadvantage of the Giotto is that propolis is rather abundant, but a knife will easily separate the frames without jarring, if you are careful. Another time I will describe the very simple extractor used by the Italians, called a *smielatore*. *Walter Chitty.*

Forestry.

SEED BEDS AND SEED SOWING.

Towards the end of the month prepare seed-beds, but on no account attempt to get upon the ground intended for this purpose during damp weather, or so long as the soil adheres to the feet, else an unkindly and unprofitable seed-bed will be the result. Dig the soil over roughly, one "spading" deep, and afterwards give a top-dressing of leaf-mould and sharp, clean river sand, this being lightly forked into the soil, not to a great depth, but sufficient to incorporate it with the soil, at the same time breaking up any clods or lumps that may be met with, and finishing by giving a deep raking and removing the collected stones and hard, unbreakable pieces of soil. Mark off the beds 4 feet wide, leaving an alley between each of 18 inches as a convenience for sowing and keeping them free from weeds, the soil from the alleys being thrown on the beds. A light roller should next be run over the beds to promote uniformity of surface, and thereby prevent irregularity in the depth at which the seeds are placed, this also firming the seed-bed, the advantage of which is well known in the more regular germination and greater freedom from weeds. Various methods of seed sowing are practised in different parts of the country, much, however, depending on the size of the seeds, some being hand-sown, others drilled, while others, again, are dibbled in lines, all of which plans are valuable in their own particular way, and productive of good results. For small seeds sowing by the hand is, perhaps, the preferable method, while Acorns, Walnuts, and such large-sized seeds are better to be dibbled singly in line. For convenience of reference and as a guide to sowing we may give the following approximate number of plants of various kinds that may be expected from a bushel of seed of ordinary quality:—Acorns, about 7000 plants; Walnuts, 5000; Spanish Chestnut, 3500; Beech, 10,000; Sycamore, 12,000; Ash, 13,000; Elm, 6000; Birch, about 16,000; Scotch Fir, 9000 to 1 lb. of seed; Larch, 3000; Spruce, 9000; Silver Fir, 900; Austrian Pine, 1900; and Pinus Laricio, 2500 to the pound weight. After being carefully and evenly distributed over the surface of the bed the seeds should be covered by riddling a quantity of previously prepared sandy loam and leaf-mould over them, proportioning the depth of covering to each individual kind of seed. Seldom, however, is proper attention bestowed on suiting the depth and fineness of the soil used in covering to the size of the seed, and to which may be attributed the non-appearance of young plants in many an otherwise well formed seed-bed. To sum up in few words, scarcely any seed should be placed at a greater depth in the ground than about four times its own diameter.

In planting Acorns they should be kept 3 inches

to 4 inches apart, and 5 inches from line to line; which also holds good with the Spanish Chestnut, Hazel, Walnut, and Horse Chestnut. Good loam that has been well broken up will suit their wants well, and in sowing simply place the seeds in position on the bed, and cover with about 2 inches of soil thrown up from the alleys, or taken from the adjoining ground.

During prolonged drought an occasional watering will greatly benefit germination, while protection of the beds by branches or netting will prevent the depredations of small birds. Rats and mice must also be kept at bay, the latter in particular being destructive to Oak and Beech seeds, while the former's pernicious nature makes it a dread enemy to the nurseryman. Trapping and poisoning are the commonly adopted remedies for these nursery pests, but in using poison it is, perhaps, unnecessay to say that the greatest care should be taken, the work being only entrusted to a thoroughly reliable person.

Transplanting, &c.

Specimen Conifers of large size that are not to be planted out permanently should be dug around, and the soil, if poor, substituted by a mixture of leaf-mould and loam, which will act as a stimulant by enhancing strong growth and the formation of an abundance of fibrous rootlets. Large evergreens destined for use in particular positions may be similarly treated, as well as pruned into a desirable shape, which will render the work of final transplanting to be attended with little or no risk. The transplanting of evergreens may still be carried on, especially during dull damp weather; but should a continuance of dry parching winds set in after planting it will be well to resort to a bi-weekly watering, more particularly where the soil is of a dry open nature. In permanently planting out large specimen trees it will be found advantageous to give the surface-soil around each a mulching with decayed manure, which will prevent, to a great extent at least, undue evaporation of moisture, and so preserve the trees in a thriving healthy condition until a fresh start to growth is made in their new quarters. Syringing overhead in the evening is also to be recommended during dry weather, but unless in the case of valuable specimen trees, such precautionary measures need not be adopted, more especially when the trees have been moved directly from the home nursery to their final destination, and with good balls of earth attached. With the genus Pinus we find most trouble, that is when of a large size and planted for immediate effect; but by annually transplanting these whilst in the nursery, the risk of a permanent shift is greatly obviated. The grafting of ornamental trees, such as the Oak, Beech, and Plane, may now be commenced in the nursery, this being a quick and inexpensive method of propagating the more desirable forms of our hard-wood trees.

Layering.

This now commonly adopted method of plant increase is certainly a cheap and quick way of extending game coverts or shrubberies, and for which it is particularly applicable and well worthy of the highest commendation. Rhododendrons, Laurels, common and Portugal, Privet, Mahonia aquifolia, Snowberry, Spiræa Douglasii, and hosts of other shrubs, may be increased in this way. In layering large Laurels or Rhododendrons the longest branches should be half cut through at about 2 feet from the ground, to assist in bending; they are then laid over and fastened in one or two places to the ground with stout hooked pegs, of half a foot in length, that had been previously prepared, and a spadeful of soil placed on top to assist in, as well as hasten the process of rooting. For Privet, Barberry, or any of the smaller growing shrubs, shorter pegs than those above described will answer the purpose equally well—indeed, in some cases we find a good firm sod when properly applied to be quite sufficient for retaining the bent branch in the desired position. Not a few persons recommend layering to be done in autumn, but from a rather extensive experience of both autumn and spring work we feel inclined to uphold the latter, as by it we have had the most marked success, more especially in the extension of game coverts.

Forest work generally should be pushed forward with energy during the present month, so that Oak barking—the next important operation—may be started as soon as the sap begins to run; for as the season of this work is short indeed, advantage must be taken of the first ready trees for an early start, and the work prosecuted with vigour during the short time that is at disposal, which at the utmost is usually twenty-eight days.

Attend to rabbit-proof fencings, tree guards, and woodland fences, for during the cold, cheerless winter days, when food is scarce, animals are far more difficult to keep in bounds than at any other season of the year, and when once they find their way into enclosed grounds it is well nigh an impossibility to keep them out. Hedging should now be well in hand, but all arrears must be brought up at once, before the buds begin to swell. Repair and keep in good condition roads, drives, and walks: attend to the pruning and cleaning of shrubberies, and keep the stock of firewood, faggots, and charcoal rather above than under the quantity that is likely to be called for. *A. D. Webster.*

The Flower Garden.

Lawns should receive a good sweeping and be rolled twice to give them firmness. See that the lawn mowers are in proper working order, if not they should be seen to at once. Stir the surface of all beds containing spring bedding plants, to aërate the soil and to destroy weeds. Plant out bedding Violas and Pansies where they are to remain. These are deep rooters, and will not thrive unless the beds are enriched with well rotted manure and deeply dug. Lift the plants from the store pits with as much soil adhering to the roots as possible.

Carnations and Picotees, &c.

These may also be planted in their permanent quarters. They require a like treatment to the Viola. Beds of the previous year, if left undisturbed, will yield a profusion of flowers; in fact, I think it is a mistake to disturb them the second year, unless a change in arrangements is desired. Give the beds a good top-dressing of well rotted manure, surfaced with a layer of sifted potting-bench soil. Pentstemons and Phloxes may be similarly treated.

Gladiolus

should also be planted in their summer quarters, if they are used for breaking up the flatness of large beds of Pelargoniums or other masses of colour, for which the plants are well adapted. A good plan is to get some pieces of turf about 4 inches square, and place them in proximity to a fire, but so as not to burn them, but only to char them a little, so as to destroy wireworm which may be present, and which is very destructive to the Gladioli. On each of these pieces of turf place a bulb, and stand in a cold pit, giving them a good watering; I find they do much better thus treated than in pots, besides, it economises labour at a busy season. I have often treated my Pelargoniums in this fashion, and find it very economical in several ways.

Seeds of Annuals.

The beginning of April is a good time to sow on a slight hotbed Ten-week Stocks, Asters, Marigolds, Tagetes patula, T. nana, T. flore-plena, Zinnia Haageana, Z. imbricata, Z. flore-plena, Helichrysums, and other everlastings; Larkspurs, and all other half-hardy subjects, necessary for the embellishment of the flower garden.

Plants for Beds.

Bedding Pelargoniums may now be safely turned out into turf pits and other places prepared for hardening off plants, but they must be protected every night, either with straw hurdles, wooden shutters, or glazed sashes. Continue propagating all varieties of bedding plants, if the stock is not already completed; pot off and transplant into boxes rooted cuttings of Lobelia, Ageratum, Verbena, Heliotrope, &c., which will be much better transplanted into cold pits from the earlier propagated batches, than allowed to become matted together in boxes and pot-bound. Watering must be carefully attended to, and it should be done as early in the morning as possible. *W. M. Baillie, Luton Hoo Park.*

Plants and their Culture.

Chrysanthemums.

Those which have not been potted off should be attended to at once; all those which are nicely established after their recent shift should have plenty of air given them on open days. Should it be desirable to further increase any varieties it is not too late, and in all probability they will come in very useful.

Carnations.

Cuttings of the tree section may now be put in for plants for flowering the coming season. Cuttings from the plants which have been forced into bloom will be found to give the best returns in propagating, as they root much more freely than when taken from plants in cold pits; or they may be layered in the pots—a system that I adopt with Souvenir de la Malmaison in general. If green or black-fly shows itself a little smoking should be resorted to at once. *A. Evans, Lythe Hill, Haselmere.*

The Kitchen Garden.

Arrears of Work.

Owing to the long continuance of severe frost many of the cultural operations recommended in a former Calendar will still be in abeyance, and will require immediate attention now that the weather is more favourable. Where the ground has been previously dug and exposed to the action of the frost less labour will be required to reduce the surface to a proper condition for planting. Attention should be given to any crops already planted, and where the plants have become upheaved by frost they should be made firm by having the soil well trodden around them.

Plantations of Broccoli and curled Borecole, and the like, will now be much benefited by having all decayed leaves removed, the plants made firm, and some fresh soil drawn up to the stems. Turnips that have been allowed to stand over with the object of producing "Greens" for spring consumption, will in many instances be found to have been lifted by the action of the frost, and where this is the case it would be best to take up all the sound roots, and replant them in rows thickly together for the production of Sprouts. Swede Turnips, also procured and treated in the same way, will be found useful for producing a supply of wholesome "Greens."

Herbs.

Fresh plantings should be made by taking up a portion of the stock, dividing and replanting it in light, rich soil. Make sowings on beds in the open of Basil, Borage, Marigold, Marjoram, Summer Savory, also of Mallow and Ice-plant for garnishing.

The Main Crop of Carrots.

These should be sown from now onward to the second week in April, sowing in drills 15 inches apart. I find for this sowing nothing to equal James' Intermediate and the Long Surrey varieties. For convenience, the Horn section are better grown by themselves on beds or borders, where young roots can be obtained by successional sowings. During the growing season an occasional light top-dressing of salt and soot in equal proportions may be given with advantage to all crops of Carrots. The main crop of Beetroot should also be sown at the same time.

Warm Frames and Pits: Cucumbers.

If these should now be making vigorous growth, the plants will require frequent pinching back and tying down, removing at once all old and discoloured leaves. Light top-dressings of turfy loam should be given, and repeated as often as the roots show on the surface of the hills. Those in bearing will be greatly assisted by liberal soakings of tepid liquid manure.

Celery.

Plants raised in heat for the first supply should be pricked off into pans or boxes, and placed near the glass in a warm frame, to be afterwards transplanted into cold ones, giving them more space and liberal treatment.

Tomatos and Capsicums.

Those intended for outside planting should receive a shift when ready—the former into 6-inch pots—and be grown on in heat, to make good strong plants from 2 to 3 feet in height by planting time, removing all side shoots as they appear. Sow ridge and other Cucumbers intended for cold frames—also Vegetable Marrows and Gourds. Fill up vacancies of Cabbage and Cauliflower and make additional plantings. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Mar. 29	Sale of 6000 Liliums from Japan, Tuberoses, Gladioli, Seeds, &c., at Stevens' Rooms.
Tuesday,	Mar. 30	Show of Spring and Market Plants, at the Royal Aquarium, Westminster (two days). Sale of Orchids in Flower, at Protheroe & Morris' Rooms.
Wednesday,	Mar. 31	Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms. Sale of Lilies, Plants, Roses, &c., at Protheroe & Morris' Rooms. Sale of Nursery Stock, at the Royal Nurseries, Ascot, by Protheroe & Morris (three days).
Thursday,	April 1	Meeting of the Linnean Society. Show of the Shropshire Horticultural Society. Sale of Importations of Orchids in variety from Mr. Sander, at Stevens' Rooms.
Friday,	April 2	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
Saturday,	April 3	Sale of Roses, Fruit Trees, Shrubs, Border Plants, Bulbs, &c., at Stevens' Rooms.

WE are pleased to find that our endeavours to raise the position of gardening in the eyes of the public and to promote the advancement of the SCIENCE and ART of HORTICULTURE, have met with the approval of all classes of gardeners. We infer this not only by the numerous letters we have received from outsiders, but from those more immediately concerned. By way of illustration we print the following questions, which have been submitted to us, as one result of the discussion that has recently taken place, on the important subject of the "RIPENING OF THE WOOD."

"What causes the ripening of the wood?"

"Is there any rule to ascertain the kinds of plants that require to have their wood ripened before they will flower or fruit?"

"How is wood best ripened?"

It is evident that to reply to these questions fully would necessitate a discussion as to first principles and an amount of space that we are ill able to afford; nevertheless the practical importance of the subject is such that we are justified in thus giving it prominence. This is just one of those too numerous gardening phrases which slip glibly from the point of the tongue or the nib of the pen, and which we are too content to use without ever stopping to consider what we really mean—phrases, moreover, which lower us in the eyes of educated men who are in a position to estimate at its true value the meaning of the phrase in question. Ripening of the wood—what is it? Does it produce the results attributed to it?—if so, how and why? How many practical gardeners are there who can give a reasonable explanation of these matters—one founded on accurate knowledge of the facts of the case? Not many we fear. The general impression, we take it, is that the warmth of autumn promotes consolidation of the tissues of the plant, and thus ripens the wood.

If the weather or other circumstances be unpropitious the wood remains "sappy," to the detriment of any future flower and fruit that may be formed. Of course this is true enough so far as it goes, but it does not go far enough, it only touches one point—that of consolidation—and takes no heed of more important matters. What happens is, briefly, this:—During the spring and summer the leaves and the roots conjointly are at work for the benefit of the plant; they supply it with the food, watery, earthy or aërial, necessary for its existence and its growth. More than this, the leaves particularly, by the aid of the light and heat of the sun, create food for future use, which, after formation in the leaves, is transferred to the cells of the bark and of the young wood, there to be stored up for future use in the following spring, when large supplies of food will be required. At the same time that the food is being formed and stored, the germs of the flower-buds or leaf-buds—or in some cases, as in fruit trees, both—are being manufactured, and the framework or skeleton of the tree is being formed by the deposit of woody matter in the wood cells, thus effecting that consolidation of the tissues of which we hear so much. But this consolidation, important though it may be, especially in the case of a tree grown for its timber, is of secondary importance as compared with the accumulation of starch and other nutritive matters on which the young buds which are to form the shoots and the fruit of the following season are to be fed. The "ripening of the wood," then, speaking in very general terms, consists in the drying up of the tissues by the evaporation of superfluous water, the formation of woody matter in the cells for strengthening purposes, and the formation and storage of nutritive matter for future use. How all these matters are brought about is far from being



FIG. 79 (SEE P. 394.)

fully understood. What is known on the subject may be found in any modern botanical text-book, and has been repeatedly explained in these columns. The practical means of facilitating the process by reducing, as far as may be possible or expedient, the amount of water given, and by exposing the plant to the requisite amount of heat and light, are generally known. The ripening of the wood and the maturation of the seed are very nearly allied processes, and the conditions—especially a sufficient amount of light and heat—requisite for the one are also essential for the other. Practically there are variations in detail according to the nature of the plant, the climate in which it grows naturally, and the requirements we exact from it. Such, in briefest outline, are the phenomena we speak of as "the ripening of the wood;" how complicated and obscure they are in detail the vegetable physiologist knows only too well; how important practically every gardener can testify.

—— LOCAL TAXATION.—In the House of Commons on Tuesday last Mr. T. ROGERS moved the following resolution:—

"That the present system under which in England and Wales the first incidence of local taxation (with some slight exceptions) falls on the occupier and not on the owner of lands and tenements is unjust; that such owners ought in equity to bear at least a moiety of those charges; that the system under which country mansions are rated is unfair; and that the owners of ground rents in towns are liable to no part of those charges, the outlay of which is essential in order that the property may possess any marketable value whatever."

In the course of some remarks he enlarged upon the necessity of a general revision of the system of local taxation, and insisted that owners should be called upon to pay at least a share of the expenses which in reality maintained and improved the value of their property. Mr. PICTON, in seconding the motion, contended that rent ought not to be the criterion of rateable value, and that the present system of local taxation was unjust and engendered discontent, especially among the trading classes.—Sir H. PAGET moved an amendment to the effect that the financial injustice complained of can only be removed by a comprehensive measure, and that an equitable readjustment of taxation as between real and personal property is urgently required. He pointed out that if mansions were to be made liable to local taxation, as suggested, the principle would have to be extended to all kinds of personal property, which he maintained was out of the question, and he went at some length into figures to show that real property already bore more than its fair share of imperial taxation.—Mr. MORE seconded the amendment.—Mr. CHAMBERLAIN said he thought that a sense of justice would be satisfied in placing a portion of the rates on the landlords, and as to the rating of mansions, he pointed out that to rate them at their cost value would lead to the shutting up or pulling down of many historic houses. But he thought an arrangement might be made on the basis of an assessment of 4 per cent. on the selling value. While adhering to the principle that personal property should be made contributable to rates, he maintained that the burdens on land had not increased materially during the last century, and any relief which was given would be felt more by town than country. Ultimately Mr. ROGERS' motion was affirmed by 216 to 176.

—— CERTIFICATES.—The old question as to certificates was discussed again on Tuesday at the Royal Horticultural Society, and only emphasises what we have so often said as to the necessity for modifying and extending the present system. A First-class Certificate as now adjudged is awarded to a plant that is well cultivated and whose merits as a market plant (using the term in a broad sense) are obvious. So far this is right enough. But certificates should be also given of equal value for new or interesting plants which at the time when they are first shown are not, it may be, models of good cultivation, or whose mercantile qualifications are not obvious. The present system is one-sided, and often unjust alike to plant and exhibitor. Take a case in point. An exhibitor showed some time ago, and for the first time, a plant of Cattleya Lawrenceana, a species of great interest from its native country and the circumstances of its introduction. The plant was not in condition, nor up to the standard of the Floral Committee, and in consequence it obtained no award. Now it is shown again by another exhibitor, this time in good condition, and receives by a vote of eight to four a First-class Certificate. We submit that an injustice was done to the first exhibitor, and that a Botanical Certificate should have been awarded to him, and that a First-class Botanical Certificate should in its way rank as highly as a First-class Certificate in its. Any further exhibit of the same plant should have a Cultural Certificate if deemed worthy of it.

—— GRAFTING AND GRAFTING.—M. CARRIÈRE, in the last number of the *Revue Horticole*, figures a graft of Aster formosus on the stem of a Jerusalem Artichoke. As the stock is in this case so speedily perishable it is not a matter for surprise that the

duration of this ill-assorted union was not more than six months.

—— Department of Gardens and Plantations in Jamaica.—The appointment of Mr. Morris to the Assistant-Directorate at Kew leaves a vacancy in the above-named Department. We believe that the Jamaica Government has in view certain changes, to which we allude here, in reference to the openings for young gardeners, who have qualified themselves for important posts by something more than routine education. One of our correspondents in Jamaica, Mr. Hart, was one of those to whom we alluded in an article on the Education of Gardeners as having qualified themselves by preparing for and passing with success the examinations of the Royal Horticultural Society in 1867. In 1875, after passing some time in Messrs. Veitch's establishment, Mr. Hart went to Jamaica in Government employ, and after a few years was made Superintendent of the Cinchona plantations at Gordon Town. Mr. Hart is now, we believe, the senior officer of the Department, and has, we understand, been recommended to the Colonial Minister for promotion. Mr. Hart has, in addition to his professional work, devoted much of his time to botanical research, especially among the Ferns and Cryptogams, and has been a frequent contributor to our columns on matters of botanical and horticultural interest. Lately Mr. Hart has visited Veraguaz, and we hope to be in a position to publish shortly an account of the vegetation of that little-visited region.

—— Peronospora of the Vine.—This fungus is almost as much dreaded in France as the Phylloxera itself; nevertheless, according to Professor Riley, it is easily kept in check by the application of dilute kerosene emulsion with a small quantity of carbolic acid, applied with a spray-producer. Sulphur, which is so useful for the Vine mildew, is of little use for the Peronospora. Another remedy is made as follows:—Take sulphate of copper 18 lb. to 22 gallons of water, and 34 lb. of lime mixed with 7 gallons of water. Mix the two solutions, when a bluish paste will be formed, which may be applied to the leaves with a brush, taking care not to touch the berries.

—— A New White Tea Rose.—This is now being introduced to the notice of English growers by Mr. J. N. May, of Summit, Union County, New Jersey. It is a pure white sport from Catherine Mermet, which it resembles in every other respect but colour, the blooms, of fine texture and substance, lasting longer in a fresh state after being cut than any other known white variety. As to where it originated, no information is forthcoming; but the inference is, that it was with Mr. May, and so greatly is he impressed with its value, that it is reported he has built several new houses to accommodate it. Notwithstanding that it is a sport from Catherine Mermet, it is said to produce fully 20 per cent. more flowers. Should it prove as valuable a Rose as Sunset, also of Transatlantic origin, it will be a great acquisition; and we may reasonably look for a sight of it during the coming summer.

—— The Uses of Horticultural Societies.—We take the following extract from a paper of Mr. L. B. Pierce, of Ohio, on the means of extending the usefulness of local horticultural societies contained in the *Transactions of the American Pomological Society*:—"If you can persuade or teach an Irish washerwoman that a Grape Vine will grow beside her shanty (in the United States) as readily as a Morning Glory (Convolvulus), that a garden that grows Cabbages and Potatos will also grow Cauliflowers and Strawberries, you have taken one step towards the millenium—you have got her and her family a step out of the beaten track, and this single step may lead her sons into lines of life that will crave neither the short-stemmed pipe nor the whisky bottle."

—— Marshall P. Wilder.—The venerable President of the American Pomological Society and of the New England Historic Genealogical Society, has favoured us with a copy of his address to the latter Society, delivered on January 6. Much of it refers naturally to the work of the Society during the year, but there are some general remarks of a striking character on the relations of biography with history. Biography, says the President, is the schoolmaster of all time, past, present and future. We are the pupils of the past, and teachers of the future. Influenced by this idea, the President concludes his address by impressing on his hearers the sacred duty of recording the names and virtues of those men and women who have been benefactors to our race, instancing, in a brilliant peroration, the many Americans who have enriched the world by their patriotism, their example, or their discoveries.

—— Horticultural Club.—A special meeting and *conversazione* was held on Tuesday evening for the twofold purpose of welcoming some of the Dutch florists who had come over to the exhibition of Hyacinths, and also to hear a paper contributed by M. Polman Moöy, of Haarlem, a member of the



Fig. 80.—Polybotrya lechleriana: much reduced. (see p. 394.)

Club, on the Hyacinth. Those who had accepted the invitation and were present, were Messrs. Massenel (Vervaet & Co.), Ghent; M. A. F. Byvoet (Messrs. Byvoet Bros.), Haarlem; and M. E. Herten (Herten & Son), Haarlem. There were present besides—Mr. John Lee, Chairman, who welcomed the guests; Hon. and Rev. J. T. Boscawen, Dr. Hogg, Messrs. H. J. Veitch, Cuthbert Pearson, Cousens, Hore, Girdlestone, Wheatsone, Van Waveren (Hillegom, Holland), &c. M. Mooy's paper was read by the Secretary, as he was unable to be present. It was highly appreciated, and gave many interesting particulars of the history and culture of the Hyacinth; and a unanimous vote of thanks, moved by Mr. Veitch, was desired to be conveyed to him, and the hope expressed that he might be able to come over next year, and read his promised paper on the Tulip. An interesting discussion followed. We hope to publish M. Mooy's paper next week.

—— SOCIÉTÉ NATIONALE D'HORTICULTURE.—The general exhibition in Paris will be held from May 11 to 16, and the Horticultural Congress from May 13 to 15.

—— VICTORIA NURSERIES.—Mr. B. S. WILLIAMS, of Upper Holloway, has issued cards of invitation to inspect his collection of Dutch bulbs, Cyclamens, Amaryllis, Clivias, Orchids, &c., from March 26 to April 10, from 9 A.M. till 6 P.M. daily.

—— THE RIVIERA.—From Antibes we learn that although the weather has been severe, yet that there is a great difference between the vegetation there and in Central and Northern France. At Antibes Oats are bursting their sheath and showing flower, wild Narcissi are in full bloom.

—— HULL AND EAST RIDING CHRYSANTHEMUM SOCIETY.—The annual report and balance-sheet for the past year has been forwarded by the Secretaries. We are pleased to observe a balance at the bankers of over £173, which is very satisfactory, as the Society started out at the commencement of this year's work with less than £100. At the general meeting all the officers were re-elected, Messrs. JAMESON and HAWKSWORTH being the Honorary Secretaries. The show will be held on November 18 and 19 this year.

—— THE PUBLIC PARKS AND GARDENS.—The following is an estimate of the costs of some of the parks and gardens about London which has been paid out of the Consolidated Fund instead of, as Mr. LABOUCHERE maintained ought to be the case, out of the local taxes of the Metropolis. Mr. LABOUCHERE gained a majority on his motion a few days ago:—

Bushey Park.—Total, £2648, including £314 salaries and wages; £219 police and park constables; and £2061 maintenance.

Hampton Court Park.—Total, £1073, including £155 salaries, &c.; £722 maintenance, and £185 works.

Hampton Court Pleasure Gardens.—Total, £2313, including £241 salaries, &c.; £253 constables, £266 works, and £1534 maintenance.

Kew Gardens.—Total, £20,757, including £5514 salaries, &c.; £1518 constables, and £12,255 maintenance.

Richmond Park.—Total, £2810, including £91 salaries, &c.; £283 constables, £349 works, and £2036 maintenance.

Ditto (Department of the Ranger).—Total, £2753, including £711 salaries, &c.; £353 constables, and £1643 maintenance.

The following also were included:—

Battersea Park, £7027; Bethnal Green Museum Grounds, £350; Chelsea Military Asylum Grounds, £203; Greenwich Park, £2341; Kennington Park, £1132; Kensington Gardens, £7019; Regent's Park and Primrose Hill, £9120; St. James', Green and Hyde Parks, £36,653; ditto (Department of the Ranger), £1771; Victoria Park, £7369.

It is unnecessary to point out that Kew, as a great scientific establishment of consequence to the whole world, stands in a very different position to the other parks, which are of local importance only.

—— THE UNITED HORTICULTURAL AND BENEFIT PROVIDENT SOCIETY.—The report and balance-sheet for this year has just been printed and circulated, and it contains also a list of the meetings of the Society for the present year, and also one of its members, now numbering 175, in addition to three life members and eleven honorary members, who subscribe one guinea annually, but derive no benefit from its funds. As a number of copies of the report are printed annually for distribution among those who are non-members of the Society it seems to be a pity that it does not contain a short *resumé* of the advantages offered, and especially to young gardeners. A short, pithily expressed page, setting forth the benefits conferred by the Society would prove of decided advantage, but nothing of this nature is to be found in the report. This is a defect that should be rectified another year.

—— THE LIVERPOOL SHOW.—A special general meeting of the Liverpool Horticultural Association was called lately to consider the possibility of coming to an arrangement with the Royal Horticultural Society concerning admission to the show about to be held. Mr. W. BARDNEY submitted a resolution, that they should accept the terms offered,—to pay £250 for 3500 tickets giving admission to the show. The question was debated at length, but eventually the resolution was carried by an enormous majority, consequently the Liverpool Association will hold no summer show this year.

—— MESSRS. JAMES VEITCH & SONS have issued invitations to inspect their annual exhibition of popular flowers, which will be held at their Chelsea establishment from March to July inclusive:—

March 15 to 31.—Amaryllis, Orchids, Hyacinths, Cyclamens miscellaneous forced flowers.
April 1 to 15.—Orchids, Amaryllis, Imantophyllums, greenhouse plants.
,, 16 to 30.—Roses in pots, Orchids, miscellaneous forced flowers.
May 1 to 15.—Orchids, Azaleas, Roses in pots, greenhouse Rhododendrons.
,, 17 to 31.—Azaleas, Tree Carnations, Gloxinias, Begonias, Orchids.
June 1 to 15.—Orchids, Anthuriums, Pelargoniums, Roses.
,, 16 to 30.—Orchids, miscellaneous flowers, Pelargoniums.
July 1 to 31.—Orchids, Nepenthes, flowering stove plants, hybrid Rhododendrons, Carnations, and Picotees.

A special exhibition of Chrysanthemums will be held in November.

—— THE LINNEAN SOCIETY OF LONDON.—A meeting will be held on Thursday, April 1, at 8 P.M., when the following papers will be read, viz:—"Flora of China," by F. B. FORBES, and W. B. HEMSLEY; "African Freshwater Hydrocharideæ," by Mr. H. N. RIDLEY; and "Vegetation of the Arctic Regions," by M. BUYSMAN.

—— NORTH OF SCOTLAND HORTICULTURAL SOCIETY.—The usual monthly meeting was held in the Christian Institute Buildings, Aberdeen, on the evening of the 19th inst. There was a large attendance, the chair being occupied by Mr. PETER HARPER, Duthie Public Park. Professor JAMES W. H. TRAILL, Professor of Botany in Aberdeen University, read an able and interesting paper on the history of well known culinary vegetables, specifying the different orders and then sketching the history of the different plants comprised under each. None of the plants, he said, were indigenous to Scotland, but they had been introduced by the original settlers—by the Romans and others. At the close of the paper, which was followed with close attention, a cordial vote of thanks was accorded to Professor TRAIL. The Secretary of the Society (Mr. REID) subsequently read a paper sent by Mrs. FARQUHARSON, of Haughton, on "Fern Spores and their Development." The paper, which was illustrated by microscopic slides, was exceedingly well received, and the thanks of the Society ordered to be sent to the writer.

—— THE ORCHID CONFERENCE.—We are requested to state that Messrs. THOMSON & SON, of Clovenfords, N.B., have written to the Royal Horticultural Society, to draw attention to the fact that no notice of their extensive and valuable collection of cut Orchids shown at the Conference in May, 1885, appears in the Conference Report. The Conference Committee regret the inadequate recognition contained in the Report of many rare and beautiful plants and collections, and that of many others there should be no mention. This was due in great measure to the difficulty of doing full justice to so large and varied a collection of plants, and to the necessity of keeping the horticultural part of the Report within moderate dimensions, having regard to the space required for the botanical part.

—— GARDENING APPOINTMENTS.—Mr. J. WEAR, for the past three years Foreman at Witley Court, has been appointed Gardener to H. G. CLOSE, Esq., Condover Hall, Shrewsbury. — Mr. LUKE BARNES has been appointed Gardener to W. D. CREWASON, Esq., Helme Lodge, Kendal. — Mr. JOHN REES, for the past four years Foreman in Lord WIMBORNE'S extensive gardens at Canford Manor, Wimborne, Dorset, has been appointed Head Gardener to Lady LLANOVER, Llanover Court, Abergavenny, Monmouthshire.

Law Notes.

"TO THE EDITOR OF THE 'GARDENERS' CHRONICLE.'

"Dear Sir,—My client, Mr. George Henry Rogers, has instructed me to call your attention to the report of the proceedings between Mr. Coombs and himself at the Worship Street Police Court contained in your paper of the 27th ultimo, and also to your allusions to the case on pp. 304 and 312 in the edition of the 6th inst., which are all incorrect, and the insertion of which is causing considerable damage and annoyance to my client.

"My client was *not* gardener to Mr. Coombs, but was foreman florist in his employ, under an agreement by which he was entitled to a share of the profits as well as a salary.

"The Gardenias were *not* dwarfy and bushey, and just coming into bloom, as described in your report, but were thin and straggly, and a very few only were in bud.

"The Ficus elasticus were *not* large specimen plants, 6 feet in height, laden with young growths, but were stock plants, 9 feet high, and suitable for taking cuttings only.

"The complainant, Mr. Coombs, did *not* express dissatisfaction with my client until after my client had given him a month's notice, intimating his intention to leave, and the complainant, Mr. Coombs, admitted the receipt of this notice in the witness-box.

"Your report should have stated that the branches which were found upon the rubbish-heap were the cuttings from the *Gardenias only*, as my client was in a position to prove that the mould was prepared for the cuttings which he had taken from the Ficus elasticus.

"My client feels that, one side of the case only having been heard, you should not have inserted any statement damaging to him which he was able to refute had he been called upon; but in any case, as his defence was not heard, such report as you did insert should have been *absolutely correct and fair;* and as that already inserted is incorrect in so many important particulars, I must ask you to be good enough to insert this letter in justice to the defendant.

"The paragraphs in your edition of the 6th inst. are also incorrect, as my client has *not* taken any legal proceedings against the proprietors of your paper, nor did the magistrate state that my clients claim to damages would be fully met by awarding the sum of £6. That sum was awarded for the defendant's *costs* on the dismissal of the summons, and £15 was asked for costs, which latter sum does not cover the expense to which Mr. Rogers was put by the proceedings, and as litigation is pending between my client and Mr. Coombs, it is obvious the paragraph complained of, if not contradicted, may seriously damage my client in the future.

I am, dear sir,
"Yours obediently
"H. CLIFFORD GOSNELL,
"Solicitor for Mr. George Henry Rogers,
64, Finsbury Pavement, London, E.C."

The above letter is published at Mr. Gosnell's request. With reference to the statement that our remarks as to proceedings having been taken against us were inaccurate, we think, in justice to ourselves, that we should append the first letter which we received from that gentleman, and which contains the only intimation up to that time that our report was considered to be in any way inaccurate.

"64, Finsbury Pavement, London, E.C.,
"1st March, 1886.

"Sir,—My client, Mr. George Henry Rogers, has just seen me with the report of the proceedings brought against him by Mr. Coombs, which appears in your paper of Saturday last, the 27th ultimo.

"The statements you have thought fit to publish are *almost wholly untrue*, and are so libellous and damaging to my client that I am instructed to ask you to give me the name of your solicitor who will accept service of process in an action which I am instructed to immediately institute.

"Apart from the libellous matter contained in the report it is so obviously unfair in its nature and terms as to lead my client to believe that its insertion has been procured at the instigation of the complainant in the recent proceedings with a view to further damaging him, and when I inform you that an action (which was commenced in the Queen's Bench Division on the 11th day of February last, in which my client seeks to recover damages for slander and assault against Mr. Coombs) is still pending, you will note how important it is to Mr. Rogers that any report of the proceedings to which I have referred should have been fair and accurate.

"Yours obediently,
"H. CLIFFORD GOSNELL.

"The Proprietor of the *Gardeners' Chronicle*,
41, Wellington Street, Strand, W.C."

EXTRAORDINARY TITHE.

In the House of Commons on Wednesday last Mr. R. Norton moved the second reading of the Tithe Rent Charge Extraordinary Amendment Bill. The objects of the Bill were—first, to abolish extraordinary tithe, and to reduce the present payment to a fixed rent-charge; and, secondly, to make it payable by the owner. This was a landlord's question. The clergy were powerless in the matter, as they were not in a position to enforce their claims if they would preserve their influence for good in the parishes. The hon. gentleman sketched the legislation which had been attempted, and stated what had been done since 1833, beginning with the efforts of Lord Althorpe to get rid of the obligation to pay tithe in kind. When Lord John Russell passed the Bill for the commutation of tithe, the land which grew Hops and fruit was expressly excluded, against the judgment of the author of that Bill, and it was now sought to repeal that exclusion. The hon. gentleman gave instances of the hardships occasioned by the incidence of this extraordinary tithe. This Bill would revert to the principle upon which Lord J. Russell intended to deal with this question in 1836—namely, that the charges for tithes should remain a permanent rent-charge on the property. This Bill imposed upon the Land Commissioners the obligation to inquire into the circumstances of each farm in a given district, and then to apportion the charge over the whole farm. The landlords would be made responsible for the payment, as they had bought the land subject to the charge. The expenses of the inquiry would be awarded between the titheowner and the landowner. There was a strong and general desire to have this matter settled, and, in the name of the members representing Kent, he asked the House to read his Bill a second time and refer it with other Bills on the same subject to a Select Committee.

Mr. T. H. Bolton said the extraordinary tithe constituted a serious grievance, not only to the Hop and fruit growers, but also to the population of large places, who wanted to get their fruit and vegetables at reasonable prices. It was unfair to appeal for special consideration for the receivers of extraordinary tithe on the ground that a bargain was made in 1836. The compromise then arrived at was that the charge should cease when the special cultivation ceased, and this had been found to work most injuriously to the industry of fruit and Hop growers, and to the interest of the public. The burden amounted in the aggregate to about £100,000 a year, and no such burden was borne by any other industry. It operated as a protective duty of the worst description, besides it protected the foreigner to the disadvantage of the home grower. The question was how was the grievance to be removed, and the proposal in the Bill under consideration would give a larger rate of compensation to the clergy than their property deserved. His (Mr. Bolton's) proposal was to take the tithe as a terminable charge, determinable at the will of the tenant, and to give the owner a fair market value for it.

The Bill was eventually read a second time, and referred to a select committee. *Standard.*

HOME CORRESPONDENCE.

Nepenthes, or Pitcher Plants.—Where these are grown, either as a collection or selection for the decoration of the stove, they never fail to attract the attention and excite the curiosity of the most careless beholder; they take up very little room, as the most suitable place is under the roof hung up in baskets, pans, or pots, according to circumstances. They give the stoves a very light and graceful appearance when laden with pitchers from each leaf. These should all have attention now. See that the baskets are sound; shift on any that may require it, and top-dress all other plants; the most suitable compost for them is living sphagnum, and only the fibre sifted well out of the best peat, with pieces of charcoal worked in between the roots. Thorough drainage is of much importance, as they delight in large quantities of water at the roots during most of the year, and require to be kept well syringed overhead, to keep down thrips, which is their worst enemy, and should be well looked after round the tops of the pitcher, also along the edge of the leaves, otherwise they soon disfigure the plants. There are several ways for propagating the Nepenthes—one way is by layering the young shoots in sand or fine gravel; another is to take cuttings and place them in a pot of crocks and sphagnum; but the best and quickest plan I have found is to get some fresh cocoanut fibre, or, if this is not at hand, some sawdust will do. Place this where you can command a heat of 90°, insert the cutting after watering thoroughly and making firm, cover them with a glass frame, or handlight, always keeping them damp and close. In this way they will be ready for potting in about six or eight weeks. Any plants that are grown too large, or run out of character (as some are apt to do) should now be cut down. For the above purpose the following varieties will be found to do well and pitcher freely in an ordinary stove and give variety where a collection is not required:—N. Counti, N. Hookeriana, N. coccinea, N. distillatoria, N. Sedeni, N. Chelsoni, N. Rafflesiana, N. phyllamphora, N. intermedia, N. superba, N. distillatoria Lawrenceana, N. Dominiana, N. ampullacea major. *A. Evans, Lythe Hill, Haslemere.*

Grape Growing in Guernsey.—I do not think it is very widely known to what extent Grape growing is carried on in the small island of Guernsey. Taking into consideration the size of the island, which has only an area of about ten square miles, it may interest some readers of the *Gardeners' Chronicle* to know the quantity exported to Covent Garden and other large markets during the past year, which amounted to 60,000 packages, generally speaking in baskets, representing a weight of 600 tons, and valued at £40,000. It will be seen from this that Grapes form one of the principal products of cultivation in the island. The industry is increasing every year, numerous houses are now in course of erection, and mostly on the east side of the island, close to the town and harbour of St. Peter-Port. So if I should awaken the intention of some interested in the Vine and Tomato (which is also very largely grown) to come and pay a visit to Guernsey, they have but to land and they are in the centre of the Vine district; and if they felt a little bit qualmish in crossing the Channel, I am sure they would not recross it with feelings of disappointment, or be sorry for their trip. *H. Britten, Gardener, Castle Carey, Guernsey.*

Cultivated Blackberries.—The cultivation of the Blackberry has been much recommended of late in gardening newspapers, and especially the American Blackberry, Some time last winter two dozen plants were ordered for the garden here, and after a long wait, they turned up late in spring more dead than alive through the frost. Late in summer a few of them did make a very weak shoot about a foot long; others showed no signs of life. Some of your readers may tell us of their success with plants brought from America last spring. Mine cut a sorry figure; for my part I am doubtful whether they will be of any use in this country at all, especially thus far north in Yorkshire. The late Mr. May, of the Hope Nurseries, Bedale, imported the American Blackberry to this country many years ago, and, so far as I know, the praises sent out with the plants, which were good ones, were all that I heard about them in this country. Mine I know flowered weakly, but never fruited, the winter was too soon on them. That was the end of them here, nor did I hear any good of them from any person. *William Culverwell, Thorpe Perrow.*

Anthracite Coal.—For reasons which I need not here state our supply of coke for the hothouses was likely to give us some anxiety, but in the very nick of time, I was induced to try "Anthracite Coal" for heating hothouse boilers, and from the testimonials accompanying it the thing seemed deserving of a trial; and now it gives me great pleasure to recommend it to my brother gardeners as unquestionably the best fuel for heating boilers I have ever tried—as being more cleanly, for there is no smoke; as requiring much less room for storeage, as emitting more heat than coke; and last, but certainly not least, being cheaper, for the calculation we come to is that 15*s.* worth of this coal does as much heating as £1 worth of coke, and in these days of economy this is a consideration. I have said nothing about the stoking, but it is all on the side of the coal, for the fire only requires feeding three times in the twenty-four hours. And how satisfactory it is to go morning after morning in this late severe weather into the houses and find in all of them the temperature at the proper point. Any one troubled with a boiler not equal to its work will do well to try this fuel, and before twelve hours have elapsed he will see a marked change for the better. I have no motive in writing this beyond the recommending of a first-class article at a very reasonable price. *J. Rust, Eridge Castle, Sussex.*

Eucharis amazonica Planted Out.—I have read with much interest the discussion which has appeared from time to time in the *Gardeners' Chronicle* on the above subject, which, I think, cannot be too highly recommended where cut flowers in quantity are in demand. Mr. Macdonald strongly denounces the system, but he admits he has not given it a trial. On taking charge of these gardens in July last I found a small bed (3½ feet by 2½ feet) in the plant stove planted with Eucharis amazonica; in the middle of that month they threw up a fine lot of flowers; again, at the beginning of October they threw up about a dozen spikes, and again a similar amount at Christmas. At the commencement of the present month from twenty to thirty fine spikes of flowers appeared, the flower-stems measuring about 30 inches in height, with five or six large flowers on each. I am quite convinced that the same bulbs did not flower each time, but that is quite immaterial, so long as we get the flowers; but I do not hesitate to say they will flower well twice and even thrice a year under this treatment. I may add, that our treatment of them is very simple. We give them plenty of water when growing and in flower; after flowering we give them a little rest by withholding water, but they are never subjected to the baking process. I quite endorse all Mr. Ward says on the subject, but it may not be convenient at many places to make up a bed for the purpose, but to those who have convenience it would well repay the trouble, and be a profitable expenditure to plant a few out. I agree with Mr. Macdonald that pot plants have the advantage of the planting-out system by being portable, and may be used for house decorating, and can be flowered at any given date with proper treatment; but they are considerably inferior in the production of flowers, both in quantity and quality. *Wallace Adams, Lyme Hall, Stockport.*

—— In reply to Mr. Macdonald's further question on the above subject at p. 375, I may say that the plant-tables here are of cast-iron gratings, through which the Eucharis readily push their spikes of bloom, and also others, to the outer edge of these tables, the foliage of course being close up to them, so that in no case do the blooms come in contact with the hot-water pipes, or otherwise get damaged by the watering of the pot plants on the tables. I can assure him that very little water indeed passes to these borders from the plants overhead, as the leaves conduct the water off the borders to the floor, so that water is practically withheld. It behoves every one to make the best use of all available space, and I ask to what better purpose could this be put to yield a good return?—and even growing under seeming disadvantages, they grow far more freely and yield a larger quantity of finer blooms than those cultivated in pots. And, in conclusion, allow me to tell Mr. Macdonald, notwithstanding his objecting and condemning this system, that it is being largely adopted both by florists and others. *Edward Ward, Hewelt Gardens, Bromsgrove.*

Propagation of Aspidistra lurida.—The mode of propagation of this useful plant recommended by "W. S." is, no doubt, the best in cases where a large increase of plants is desired, but in private gardens, where only a limited number are wanted, it would be absurd to go to the labour and trouble of washing the soil from the roots, as any can see where it is safe to effect a division without doing that, and the check from the washing out would be far greater than could be received by cutting them through. As to this operation being a haphazard one, as is averred by "W. S.," it is, as stated above, the reverse of that, for most of the rhizomes are generally on the surface of the ball, and any one of ordinary dexterity can guide a sharp tool without harming them or the leaves. One great advantage in splitting Aspidistras up in the way referred to is that they are simply reduced in size, and are useable at once as soon as repotted, 32-sized pots being quite large enough for most purposes; and as the plants

require but very little soil they will do and keep healthy in them for years. For halls and room decoration the Aspidistra is quite unrivalled, for not only will it stand the fumes of gas, dust, and the dry atmosphere better than anything else in the plant way, but it will grow far away from the windows, and with little light, and yet look at home. *J. S.*

Reports of Societies.

ROYAL HORTICULTURAL: Tuesday, March 23.

Quite a handsome display of flowering plants and cut flowers rewarded the visitor at this meeting, many things which we should have seen at an earlier date in most years being brought by nurserymen and amateurs, Orchids especially appearing in increased numbers. The main portion of the display was furnished by the actual flowers of the season—Daffodils in great variety, Cyclamens, Hyacinths, and Cinerarias, with a small admixture of less common hardy bulbs. Hyacinths generally were less fine than we have seen them, the dry spring of 1885 experienced in Holland having doubtless exercised a bad effect on the growth of the bulbs; the flowering part of the spikes was shorter and slenderer than we like to see in them. Cyclamens were, as a whole, not so well done, having a drawn look; whilst Cinerarias, which were shown only by one exhibitor, were quite equal to any former display of these plants, taking into consideration the size of the pots in which they were growing. The Narcissus will be seen to more advantage later in the spring, when the weather will permit of better development of the blooms; but what was missed in quality was fully made up for in quantity.

Scientific Committee.

Sir J. D. Hooker in the chair.

Professor A. H. Church drew the attention of the committee to a new insecticide, the outcome of a long series of experiments. The preparation in question is essentially a complete and permanent emulsion, in which has been incorporated a large quantity of such oily liquids (including certain kinds of paraffin oil) as destroy the insect pests of plants. Hitherto the rough methods in use for preparing such emulsions have failed to effect the perfect distribution of the oily matter in the wash, and, in consequence, oily drops of sensible size have spotted and injured the leaves and tender shoots of the plants. The sample exhibited contained two-thirds of its bulk of the above-named oils along with other useful ingredients. On dilution with water no separation of the oils takes place. For very tender and succulent plants half an ounce of the emulsion in a gallon of rain-water forms a syringing wash, which proves fatal to greenfly, red-spider, brown-scale, and even mealy-bug, without inflicting any injury to the flowers or foliage of the plants to which it is applied. The proportion may be increased in the case of more robust plants—even 4 oz. to 1 gallon may in some cases be used, though much weaker solutions are in the great majority of cases perfectly effective. The plants if at all delicate should be syringed with fresh water two hours after the insecticide has been applied. By appropriate chemical methods various substances may be introduced into the emulsion in order to meet special requirements of gardeners and Hop growers. For instance, sulphur, in a free state, and yet in a perfectly soluble form, has been added to some of the preparations, and proves to be an efficient preventive and cure of mildew in Roses. The farmer to whom we are indebted for perfecting this invention, and for devising an ingenious syringing stand or pot-holder for applying it, has entrusted its manufacture to Mr. G. Freeland, of Tunbridge, Kent, of whom further particulars may be obtained. Prof. Church added that he had not hesitated to bring this insecticide before the committee, since he had no interest, save a scientific one, in the invention.

Mr. Elwes drew attention to the importance of the discovery in its application to the Tea plant, which suffers from blight in the dry season; and on the question being raised as to the paraffin affecting the Tea, Professor Church replied that it had been used in greenhouses on scented plants, as Pelargoniums, &c., and though the smell was perceptible for forty-eight hours it is not permanent.

Pleurothallis sp. ?

A curious species with striped sepals was exhibited by M. E. Verveat from Mont St. Amand, Ghent. It was sent to Kew for identification.

Scoliopus Bigelowi.

The interesting Californian species was exhibited, the flowers being of rather paler hue than usual.

Diseased Hawthorn.

Dr. M. T. Masters exhibited branches which had been arrested in growth and formed short stunted spurs. Mr. McLachlan remarked that a Quickset hedge similarly injured was nearly destroyed. It was evidently due to insect agency.

Crocuses and Sparrows.

Mr. McLachlan alluded to the periodical injury these birds do to Crocuses by biting off the contracted portion of the perianth tube. As the nectar is secreted there it was probably due to the discovery of this fact by the birds. Mr. Henslow observed that he had not experienced the fact, though both Crocuses and sparrows were abundant in his garden.

Odontoglossum Rossi.

Mr. O'Brien exhibited sprays of different varieties of this species, one having white petals and the other mauve.

Trimorphism in Narcissus triandrus.

Rev. C. Wolley Dod exhibited specimens showing three different lengths in the pistils—a short, medium, and long-styled form, as in Lythrum Salicaria, the short-styled form occurs in 20 per cent. of flowers examined; the mid-styled form in 10 per cent., while the more usual condition is to be long-styled. In the variety N. t. pulchellus the style is aways longer than the stamens, and the tube of the perianth is also longer than usual. The short-styled form was received from Oporto. In all cases, as observed by Dr. Masters, the flowers appeared to be protandrous. [We shall shortly publish figures of these flowers. Ed.]

Narcissus Henriquesi.

Mr. Dod also showed a specimen of this plant with no tube to the perianth, probably due to the arrest of the receptacular tube. In reply to Mr. Elwes he remarked that the bulbs were scarcely hardy, and die if the plants be allowed to seed, and that they must therefore be raised from seed, when they will flower in the second year.

Camellias and Frost.

The Hon. and Rev. T. Boscawen exhibited single Camellias which had lately blossomed in the open, and leafy branches, showing how the leaves of 1885 were perfectly green and untouched by the frost, while those of 1884 and 1883 were browned to various degrees, but those of 1882 on the same branch were perfectly green. The branch was from a bush that had never received direct sunlight.

Floral Committee.

Present: J. O'Brien, Esq., in the chair; and Messrs. E. Hill, T. Baines, R. Dean, W. Holmes, J. Walker, H. Herbst, H. Bennett, W. Bealby, J. Laing, W. H. Lowe, A. Perry, A. F. Lendy, Dr. M. T. Masters, and B. S. Williams.

Orchids.

Several nurserymen from Ghent were exhibitors of these plants, viz., M. J. Heysè and MM. Vervaet & Cie., the first-named gentleman having a bybrid Cypripedium, with much of the characteristics of C. villosum aureum, excepting in that the dorsal sepal was larger, with numerous distinct brown spots on a green ground, and the upper part broadly bordered with white.

MM. Vervaet & Cie., Mont St. Amand, Ghent, showed a species of Pleurothallis. The flowers, borne on a tall stalk, are green, barred with longitudinal markings of blackish-brown, the flowers being elliptical in form, and the segments almost closed. It is a curiosity. A Vote of Thanks was accorded. The same firm showed Odontoglossum mulus, a well spotted spike of bloom, but not differing much from specimens often seen here; Oncidium fuscatum is rarer, in fact is seldom noted in any collection. The flowers are closely set together on a stout short stalk. The chief feature of the blossom is the large lip, which is of a dirty pink colour, with a patch of brownish-pink in the centre, the entrance to the throat being of a bright crimson. The sepals and petals are brown, and so small as to be inconspicuous. Odontoglossum Pescatorei Vervaetianum is a prettily spotted variety of medium size, but much substance; the unopened flower-buds were conspicuous by their bright red colour.

De B. Crawshay, Esq., Rosefield, Sevenoaks (gr., Mr. Cook), exhibited Odontoglossum Alexandræ, a fine bold flower, almost pure white, there being but two small spots on the lip, and a yellow crest. It obtained a Vote of Thanks. Cattleya Trianæ rosea was shown by him; it is a rather poor form, and pale in colour; the throat has the usual yellow stain. Cattleya Trianæ Crawshayana is a much finer thing, the flower having good substance and form, and the lip is deep purple in colour. Oncidium hystrix, carrying a spike 1½ foot in length, came from the same garden.

A beautiful example of Cattleya Lawrenceana was shown by Mr. Ballantine, gr. to Baron Schroder, The Dell, Egham. It was, perhaps, the finest plant of the species seen at any exhibition, and was in perfect health. The plant bore fifteen of its bright reddish-purple blooms. From the same storehouse of fine Orchids came Dendrobium crassinode-Wardianum, a supposed natural hybrid of this beautiful Birman species. The flower-spike was 3 feet in length, and was clothed for two-thirds of its extent with flowers set in clusters of three at the nodes, which are rather wider apart than in either parent. The colour is white, with the lip, sepals and petals tipped with pale rose-colour, the inner part of the throat being orange; two crimson dots appearing at the base of the lip.

Messrs. J. Veitch & Sons, Chelsea, showed Dendrobium micans×, D. Wardianum, and D. lituiflorum.

Messrs. J. R. Pearson & Sons, The Nurseries, Chilwell, Nottinghamshire, showed a plant of Dendrobium Wardianum, bearing a spike of perfectly developed flowers; and another form of D. Wardianum, in which the tips of the petals were of a rather light purple tint, instead of the rose colour that is commoner; and a showy variety of D. nobile, with the sepals and petals of a suffused rose colour, a tint that is also present in the lower margin of the lip, which is itself of creamy-white, and the tube maroon colour. A Vote of Thanks was accorded this desirable novel form of a useful genus.

Messrs. W. Thomson & Co., Clovenfords, N.B., showed a good form of Dendrobium Leechianum, in which the texture of the flowers and their colouring left nothing to be desired. The specimen was growing in a Teak basket, 15 inches square, and shallow, and was an excellent example of skilful culture.

Messrs. F. Sander & Co., St. Albans Nurseries, showed their variety of Cœlogyne cristata, named major, the flowers being pure white, with a yellow cilia in the throat. It is more robust than C. cristata, and equally as free to flower under cultivation.

Mr. B. S. Williams, The Victoria Nurseries, Upper Holloway, showed Cattleya Lawrenceana, a plant just establishing itself, and bearing three blooms.

Mr. E. Hill, gr. to Lord Tring, Tring Park, showed the curious and rare Lælia flammea, carrying seven pseudobulbs, and one spike of bloom. The combination of the rich tints of orange and crimson makes this a remarkable plant. A Vote of Thanks was accorded. Aërides cylindricum came from the same gardens; it has terete leaves, and pseudobulbs which have the appearance of stems of slender proportions. (See fig. 81.)

Groups.

Narcissi.—Mr. Thomas Ware, Tottenham, had the most extensive collection of Narcissi, which was relieved and contrasted by pans of Chionodoxa Lucilïæ and Scilla in variety, bunches of single-flowered Anemones, Lachenalias, and Muscari. A Silver Banksian Medal was awarded.

Messrs. P. Barr & Sons, Covent Garden, staged also a very large collection of Narcissi, with a similar admixture of other flowers. There was an abundance of flowers, and the group was very effective as a whole. A Silver Banksian Medal was awarded.

Messrs. Collins Bros. & Gabriel, 39, Waterloo Road, London, had the largest collection of Narcissi, which were named in all cases, and which included many of the newest, if not the most attractive, of the species. Mixed up with the Narcissi were Lachenalias, Anemones, Freesia Leichtlini, Scillas, and the like. A Silver Banksian Medal was awarded.

Mr. Smith Dorrien's collection of Narcissi from the open air at Tresco Abbey, Scilly, were especially good, as we have also noticed at the former show in this month—quite equalling in form the best English grown and exceeding them in depth of colour. A Silver Banksian Medal was awarded.

Hyacinths.—Messrs. J. Veitch & Sons showed an excellent group of these, which included many of the newer and older varieties. We noticed in blues, King of the Blues, Sir Henry Berkley, King of the Blacks, Baron Van Thuyll, Prince of Wales, Grand Maître, an excellent light variety, and Czar Peter, also light blue. Amongst white flowers Madame Van der Hoop, Leviathan, La Grandesse, Mont Blanc, Miss Nightingale; and in reds and pinks, Charles Dickens, Vuurbaak, a bright crimson; Distinction, Solfaterre, King of Reds, Countess of Rosebery, Etna, Von Schiller, General Pelissier, Fabiola, and Koh-i-noor. A Silver-gilt Medal was awarded.

Messrs. W. Cutbush & Sons, Highgate, showed over 100 pots of Hyacinths, consisting of many of the sorts above-mentioned. A Silver Banksian Medal was awarded.

Cyclamen.—Mr. H. B. Smith, manager of the Hanwell Nursery Company, showed 150 pots of Cyclamen of all the finest colours, some capital specimens with crimson eyes being noticeable amongst them. The plants were well grown and flowered.

Mr. Wiggins, gr. to W. Clay, Esq., Elm Villa, Kingston-on-Thames, showed a large group grown in 48's and 32's, exceeding the first-named collection in profusion of bloom, compactness of growth and foliage development. A Bronze Banksian Medal was awarded.

Cinerarias.—Mr. J. James, Woodside, Farnham Royal, Slough, had an excellent group of these plants, the flowers and foliage being as good as possible. The colours of this strain seem to attain greater richness of colouring each year. The form leaves surely nothing to be wished for. A Silver Banksian Medal was awarded.

Miscellaneous.

Messrs. J. Veitch & Sons showed Crocus Mont Blanc, a white flowered variety, and the new Hyacinths Blush Perfection, colour indicated by its name; Queen of the Pinks, a flower obtained from King of the Blues, but which is of a pink colour. The flower is single, with a stripe of a deeper tint on each petal; Grand Fleur is a single flower, the spike compact and of a purplish rose hue. Mr. J. Wiggins showed four new Cyclamen, named

Firefly, Hecate, Esmeralda and Coronet. Mr. W. Bealby The Laurels, Roehampton, showed a scarlet-flake Carnation, Madame A. Bernaux. The white-flowered Chrysanthemum, Mr. Charles Carey, was shown by Mr. H. S. Beney, gr. to F. W. Collinson, Esq., Rookfield, Muswell Hill; and a variegated leaved Eupatorium was sent by Mr. Wood, Eastbourne. Messrs. W. Cutbush & Sons exhibited a showy floriferous Azalea mollis, Lord Shaftesbury, the colour is orange, and the form of the truss of bloom compact. It is an acquisition. Mr. R. Dean, Ealing, showed a few hardy Primroses, viz., Brilliant, crimson; Beatrice, mauve; and Novelty, rosy lilac, all possessing a yellow disc. A Vote of Thanks was accorded. A Cultural Commendation was awarded to Messrs. J. Laing & Co., Forest Hill, for Clivia robusta, Mrs. Laing, a flower of splendid quality, and plant of vigorous habit, This is one of the best varieties we have seen.

M. le Comte Kerchove showed a small cut bloom of Lycaste Harrisoniæ alba.

First-Class Certificates.

To Baron Schroder, for Cattleya Lawrenceana; and Dendrobium crassinode Wardianum.

To Messrs. W. Cutbush & Sons, for Azalea mollis, Lord Shaftesbury.

To Messrs. Vervæt & Cie., for Odontoglossum Pescatorei Vervaetiana.

To Messrs. J. Veitch & Sons, for Hyacinths Queen of Pinks and Grand Fleur.

To Messrs. W. Thomson & Son, for Dendrobium Leechianum ×.

Fruit Committee.

Present: T. F. Rivers, Esq., in the chair; and Messrs. A. W. Sutton, W. Warren, J. Willard, G. T. Miles, C. Ross, G. Norman, P. Crowley, Harrison Weir, T. B. Heywood, W. Denning, G. Bunyard, J. Woodbridge, H. D. Blackmore, H. J. Veitch and F. Mason.

Some seedling Potatos were shown by Mr. James Lye, of Fuchsia fame, of which King of the Russets was a good-looking russety skinned variety, smooth-eyed, solid and heavy, of a flattened round form; the other was a blue-eyed, white, smooth-skinned round, of medium size. A seedling Onion, ×. Zittau, and White Spanish, somewhat flattened in shape, but appearing to be a good keeper.

Narcissus Committee.

A meeting of the Narcissus Committee was held in the conservatory of the Royal Horticultural Society, South Kensington, on Tuesday, March 23—Professor Michael Foster, and afterwards Rev. C. Wolley Dod, in the chair. The meeting was well attended, and the following resolutions were passed:—

"That a copy be made of a list of all the names at present assigned to the different forms of Narcissus, for the purpose of reference."

"That the Chairman be requested to bring before the Council of the Royal Horticultural Society the desirability of publishing an official report from the Narcissus Committee."

"That a sub-committee be appointed to examine the various Narcissi exhibited at the meetings of the Royal Horticultural Society, and to report upon any forms of interest and any errors in nomenclature."

"That it is desirable that all the blooms and plants of Narcissus to be submitted to the committee should have been grown in the open air, except in the case of the Corbularia and Triandrus sections, for any other sorts which should not prove hardy."

It was the unanimous wish of this committee that, when possible, a leaf belonging to each specimen submitted should be sent with it.

That means should be taken to procure type specimens, from which drawings could be made of the Italian forms of Tazetta named and described by Parlatore.

The specimens sent for the notice of the committee were then considered:—

1. N. moschatus, from Mr. Godolphin Osborne, at Biarritz, collected by him last year; much smaller than what is usually known under that name, but the true N. moschatus of the Pyrenees.

2 and 3. From Messrs. Collins & Gabriel and Mr. T. S. Ware; believed to be the same as No. 1, but grown under glass.

4. Golden Prince (? = Henry Irving), and

5. Golden King (? = Yellow King); both from Mr. Ware. Deferred, in order that specimens might be sent which had been grown in the open air.

6. A reputed species, sent by Mr. Ware, collected in the neighbourhood of Sarragossa, having a deep yellow trumpet, with open and much fringed corona and greenish perianth. Deferred for specimens from the open air.

7. Mr. Wolley Dod showed a small reflexed flower, with no tube, sent from the neighbourhood of Oporto by Mr. Tate, supposed to be Cyclamineus. Deferred.

8. Another variety from the same source. Deferred.

9. "Achilles," by Mr. Barr, a form of Pseudo-Narcissus, from a Guernsey garden. Name registered.

10. "Panthus," from the Scilly Isles, like a single Telamonius. Deferred.

11. "Scilly White," by Mr. Dorrien Smith, decided to be identical with "White Pearl" of the Dutch gardens; Hermione tereticaulis, of Haworth; and N. ochroleucus of Loiseleur, figured in *Bot. Mag.*, 1298. Wild in South France.

Several other specimens were sent for the purpose of identifying the names, and a collection from M. Dammann, of Naples, was to be reported on at the next meeting, as it did not arrive in time. Mr. Wolley Dod also showed a very interesting variety of dried forms of N. triandrus. *C. R. Scrase Dickins, Hon. Sec.*

ROYAL BOTANIC: March 24.

The first spring show of the year was rather extensive one; the plants exhibited were, on the whole, of a good quality and great variety. Bulbous plants predominated, and of them Hyacinths were the best shown. There were two latter classes of these plants, one for nurserymen and the other for amateurs. In the former division Mr. H. R. Wright, Lee, Kent, was placed 1st, with a collection of fine specimens, being very closely followed by Messrs. H. Williams & Sons, Fortis Green, Finchley. In the amateurs' class, Mr. J. Douglas, Great Gearies, Ilford, occupied the leading position; and Mr. H. Eason, gr. to B. Noakes, Esq., Hope Cottage, Highgate, took 2d. Mr. Douglas' collection contained many fine spikes, and the plants altogether looked well.

Mr. Douglas took the lead in the Tulip class, and was again seconded by Mr. Eason. The same order was the case with Crocuses, but Mr. Eason was placed 3d, the 2d prize being withheld.

For twelve pots of Narcissi Mr. H. R. Wright, Lee, Kent, took 1st, with large pots of well-grown specimens; Messrs. H. Williams & Sons, Finchley, came 2d; and Mr. J. Douglas was placed 3d.

For twelve Amaryllis Mr. Douglas took 1st, with a really fine collection, Empress of India, a fine red variety, with very large flowers, being the most noticeable. John Heale and several others were well shown in this class, and also for the Veitch Memorial Medal for Amaryllis—Mr. Douglas being successful here also, almost the same varieties being shown in both classes.

For hardy Primroses Mr. Douglas was the only competitor, and justly obtained the 1st prize. Primula nivea and P. rosea were exhibited in fine condition in this collection.

Mr. J. James, Woodside, Slough, gained the 1st place for six Chinese Primulas, with fine plants, bearing blooms of good form and colour; Messrs. H. Williams & Sons took the next place, and were followed by Mr. J. Wiggins.

For six pots of Lily of the Valley, Messrs. H. Williams & Sons took the 1st prize with well-grown plants, which were in full flower; 2d, Mr. H. R. Wright, Turner Road, Lee, Kent; and 3d, Mr. J. Douglas.

In the amateurs' class for Cyclamens, Mr. J. Wiggins, gr. to W. Clay, Esq., Elm Villa, Grove Park,

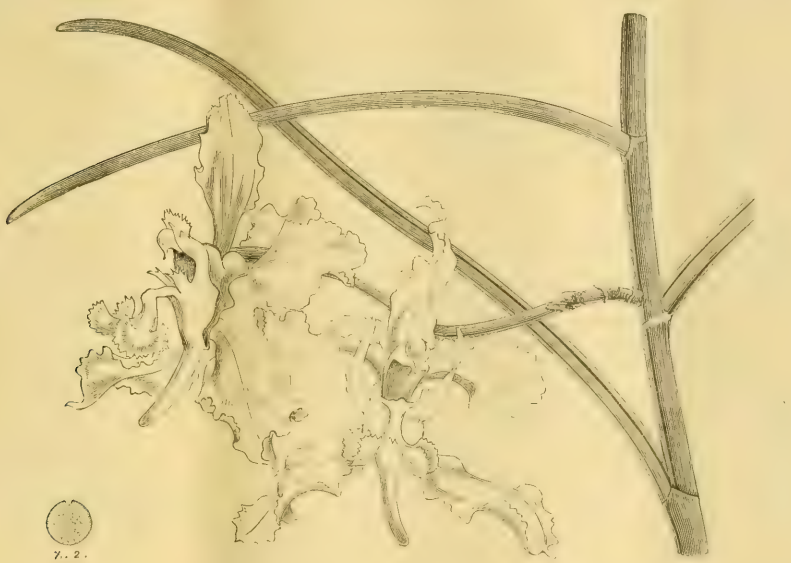


Fig. 81.—Aërides cylindricum. (see p. 404.)

Kingston, staged a good collection, and obtained the 1st prize; Mr. Phillips, gr. to R. Mann, Esq., Langley Broom, Slough, came 2d.

In the open class the St. George's Nursery Company (Mr. H. B. Smith manager), Hanwell, Middlesex, was 1st with a lot of excellent plants, well grown, and full of flower. Mr. Wiggins occupied the 2d place here.

Mr. T. S. Ware, Hale Farm Nurseries, Tottenham, led in the class for bulbous plants with Iris reticulata vars., Muscari vars., Fritillaria, &c.

For nine hardy herbaceous plants Mr. J. Douglas ranked 1st with Fritillarias, Muscari, &c.

There were two classes for greenhouse Azaleas, one for nurserymen, in which Mr. H. James, Castle Nursery, Lower Norwood, took 2d; and the other for amateurs, in which Mr. Eason was 1st, with some nicely trained plants in good condition. Mr. Wheeler, and Mr. R. Butler (gr. to H. H. Gibbs, Esq., St. Dunstan's, Regent's Park), were respectively 2d and 3d.

Deutzias were well shown by Mr. J. Douglas, who was 1st in the class with some large old specimens covered with flowers; Mr. G. Wheeler, with smaller but very good plants, was 2d; being closely followed by Mr. Eason.

Messrs. Paul & Sons, The Old Nurseries, were 1st for six forced Roses, with excellent plants; and Mr. W. Rumsey, Joyning's Nursery, Waltham Cross, was 2d.

MISCELLANEOUS.

Messrs. Collins Bros. & Gabriel showed a collection of Narcissi, Anemones, &c., and were awarded a Bronze Medal. For the same Messrs. Barr & Son and Mr. T. S. Ware obtained a Small Silver Medal.

Mr. B. S. Williams, Upper Holloway, was given a Silver Medal for a collection of bulbous plants, consisting of Hyacinths, Tulips, Narcissi, and Lily of the Valley; and Messrs. J. Veitch & Son, Chelsea, gained a Small Silver Medal for a group of Amaryllis and Hyacinths.

For Cyclamen Large Bronze Medals were awarded to both Mr. J. Wiggins and to the St. George's Nursery Co., both exhibitors staging fair samples.

Messrs. Paul & Sons, Cheshunt, were awarded a Silver Medal, and Mr. W. Rumsey a Large Bronze Medal, for Roses—the latter exhibitor staging both cut blooms and pot plants, whereas the former showed all in pots.

Messrs. W. Cutbush & Sons, Highgate, exhibited a collection of Hyacinths and Azalea mollis, for which a Small Silver Medal was granted.

Cinerarias were sent by Mr. J. James, Slough, and gained a Large Bronze Medal.

A group of Orchids was sent by F. Jacobs, Esq., Stamford Hill, consisting of Odontoglossums, O. crispum being the most plentiful; O. Andersonianum, of a paler colour than usual was included.

The only exhibit of fruit was from Mr. Stephen Castle, of West Lynn, Norfolk, and consisted of three baskets of Grapes—viz., Alicante, Lady Downe's Seedling, and Gros Colmar; these were in a good condition, and very plump.

The following Certificates were awarded:—

BOTANICAL CERTIFICATES.

To Messrs. W. Thomson & Sons, Galashiels, N.B., for Dendrobium Leechianum.

To Messrs. B. S. Williams, for Cattleya Lawrenceana.

To Messrs. Laing & Co., Forest Hill, for Cattleya Lawrenceana.

To MM. E. Vervaet & Co., Armand, Ghent, for Odontoglossum Pescatorei Vervætiana.

FLORAL CERTIFICATES.

To Messrs. J. Laing & Co., for Clivea robusta.

To Mr. J. Douglas, for Narcissus General Gordon, a large yellow flower.

To Messrs. J. Veitch & Sons, Chelsea, S.W., for Amaryllis Plato and A. Lascelles.

To Messrs. W. Cutbush & Son, for Azalea mollis Lord Shaftesbury.

PRESTON AND FULWOOD: March 17.

THERE was a falling off in the Hyacinths and Roses at this show, the latter being most noticeable. The exhibitors were few, but nevertheless a good lot of stuff was brought together. A group of plants was shown by Mr. Rowbotham, the Parks Curator, consisting of Acacia, bearing flowers, and plants with variegated foliage, and several specimens of flowering bulbs. Mr. J. B Dixon had arranged a collection of tricolour Pelargoniums in an advanced state of cultivation. Mr. W. Troughton, nurseryman, who was not a competitor, exhibited a well-arranged collection of plants, of great variety, with a fine Azalea Stella for a centrepiece. The most meritorious part in the display, however, was the young Azaleas, which had been brought to a high pitch of perfection. The judges awarded Special Certificates for a delicate white Azalea among these (Souvenir de M. Vervaine), a red (M. Louis Obert), and Max von Froebel. A First-class Certificate was also given to a very handsome Scolopendrum. It was discovered some years ago, and afterwards came into the possession of Mr. Atherton, after whom it was named as a new variety. It is very large and wavy, and the fronds are crested. Mr. Troughton's collection, which was very artistically arranged, was Highly Commended. Another feature of the show was Mr. J. Atherton's collection of succulents, which embraced many forms of Cactus. Some cut flowers and a fine selection of Roses, in good condition for the season, were shown by Mr. J. Whitehead, and Mr. Frisby, gr. to the Misses Ffarington, exhibited an unusually big clump of Mushrooms, and a skeleton plant.

The larger plants entered for competition in groups of various sizes made a good show. Mr. E. Payne, who took the 1st prize for twenty miscellaneous plants, had a very handsome group arranged, which included Calla æthiopica with fine large spathes; a large Deutzia gracilis, several Palms, and one or two brightly-coloured flowering plants such as Clivea. He also, in this class, was awarded prizes for Azaleas and Roses, the latter, however, being very backward. In the next class, open to gentlemen's gardeners and amateurs, the groups of three foliage plants were very effective, but there was no plant among them possessing more than ordinary merit. There were three competitors, and each had a Cycas revoluta in his group; Mrs. Birchall, who took the 2d prize, showed some handsome Palms, and the Misses Ffarington, who came 3d, included in their collection a brilliant Croton variegatum. In plants grouped for effect, Mr. Timothy Moss came to the fore; his arangement was certainly a masterpiece. An Azalea occupied the background, and in front were grouped bulbs in great variety, along with small Rhododendrons, Orchids, &c., a row of Coleus forming a good border. Mr. Dixon, who took the 2d prize, included in his collection some foliage plants and bulbs, with Ferns, Azaleas, and a Dielytra spectabilis, which was a far better plant than any of the specimen Dielytras that were entered for competition.

The Misses Ffarington, who took the 3d prize, showed some splendid Ferns, and the group, though sober in character, was very good. In the other groups of miscellaneous plants mention might be made of the six plants contributed by the Misses Ffarington, and which were awarded the 1st prize. They included a Clerodendron Balfourii, a Franciscea calycina major, a Clivea, and Ferns, overshadowed by a Kentia Fosteriana. Hyacinths, though not quite so numerous as they have been at previous shows, were all excellent in quality, and were representative of the most distinguished varieties. Mr. E. Payne took the 1st prize offered for twenty-four single Hyacinths, his collection including several handsome spikes. In the class limited to gentlemen's gardeners and amateurs there was an unusually good collection staged by Mr. J. B. Dixon, who carried off the chief prizes offered for both the single and double varieties, the two latter especially. The window plants and bulbs shown by cottagers were of great merit.

The show of Orchids was a considerable improvement on that of last year. The 1st prize-taker was a Cattleya Trianæ, the others being fine examples of Cypripedium and Dendrobium. The bouquets and baskets of flowers were an interesting feature of the show. A few vegetables were entered for competition, but they call for no comment. *Preston Guardian.*

LIVERPOOL HORTICULTURAL ASSOCIATION: March 18 and 19.

OWING to the bad weather which has been experienced during the last month or two, there was not so great a show as usual, but at the same time a good exhibition was held.

The 1st prize for eighteen Hyacinths was carried off by Mrs. John Aikin, with some capital specimens. Messrs. W. Cutbush & Son, Highgate Nurseries, London, exhibited a fine lot (not for competition). The Tulips were not very good, but the Orchids were fine, one of the plants—a Dendrobium—being especially so. A variety of Odontoglossums was exhibited by Mr. Henry Tate, who was awarded a Certificate; and among the other sorts which were especially noticeable for their delicate beauty were Cattleya Trianæ and Dendrobium crassinode, exquisite specimens of which were shown by Mr. Enoch Harvey. There was a brilliant display of Azaleas and Rhododendrons, and the Cinerarias were of exceptional merit. Roses were not very plentiful, and the Narcissi were rather poor; but the Cyclamens and Ferns were quite up to the average. In the bouquet competition Mr. A. Crosbie, gr. to B. Hall, Esq., was awarded the 1st prize in both the open and amateur classes. A large quantity of plants were sent in for exhibition by nurserymen, including Messrs. R. P. Ker & Son, the Liverpool Horticultural Company (John Cowan), Limited, and Messrs. Fisher Son, & Sibray, of Sheffield. A case of skeleton leaves, most artistically arranged by Mr. W. Nicholson, gr. to Mr. A. M. Smith, of Roby, attracted considerable attention. Prizes were offered for the best two bunches of Grapes, and there was a keen competition for the 1st prize. The Grapes were in wonderful condition, this being particularly the case with regard to two bunches of Muscat of Alexandria.

Obituary.

FRANZ ANTOINE.

IT is but a very short time since we were called on to announce the death of Prof. Morren, whose name was specially associated with the Bromeliaceæ, and now it is our sad duty to announce the demise of another worker in the same field, FRANZ ANTOINE, at Vienna, on the 11th inst., in the 72d year of his age. Herr Antoine had been for many years director of the Emperor's garden at the Hofburg, Vienna, and contributed numerous articles to botanical and horticultural literature, as for instance his account of the Coniferæ, a condensation from the works of Lambert, Loudon, and others: a fine series of photographs from the Imperial Winter Garden and Botanical Museum adjoining; and latterly his magnificent series of plates with accompanying text, illustrative of the Bromeliaceæ. M. Antoine was a Knight of various Orders, and associated as honorary member with most of the leading horticultural societies of Europe. Personally M. Antoine was comparatively little known in this country, to which his visits were few and far between. But those who had the privilege of his acquaintance, will long remember the combination he presented of great knowledge with a singularly modest demeanour and a most amiable disposition.

—— We regret to learn of the death, on the 20th inst., of Dr. SPENCER COBBOLD. Dr. Cobbold, after a distinguished career as a resident in Edinburgh, devoted himself to original research in connection with the embryogeny of Orchids. Subsequently he became attached to the Middlesex Hospital and to the Royal Veterinary College, where he lectured on Natural History. But his reputation will chiefly depend upon his researches into the natural history of the parasites which affect animals, on which subject he published a standard book beautifully illustrated. Dr. Cobbold some years ago wrote in this journal on the subject of the diseases of Cucumbers caused by nematoid worms.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, MARCH 24, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea-level.	BAROMETER. Departure from Average of 18 years	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 20 years	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. (Sat. = 100.)	WIND. Average Direction.	RAINFALL
Mar.	In.	In.	°	°	°	°	°				In.
18	29·83	0·00	46	27	18	37	4	1 — 7	63	2	0·00
19	29·81	—0·01	59	37	22	48	4	1 + 6	73	5	0·06
20	29·84	+0·03	54·0	42	12·0	48	5	+ 6	87	2	0·17
21	29·81	+0·01	56·0	47	9	51	7	+ 9	90	9	0·00
22	29·95	+0·16	52·3	42	10·3	47	2	+ 5	36	2	0·00
23	29·98	+0·20	58	47	11	53	1	+11	19	3	0·18
24	29·81	+0·01	60	42	18	51	4	+ 7	31	2	0·02
Mean	29·83	+0·06	55	340	0·4	47	5	+ 5	64	5	0·33

March 18.—Fine; dull day.
— 19.—Dull morning; fine bright afternoon; rain in evening.
— 20.—Fine day; overcast; rain in evening.
— 21.—Dull day.
— 22.—Dull.
— 23.—Drizzling rain from early morning till 9 A.M.; dull morning; fine bright afternoon and night.
— 24.—Fog in early morning; very fine bright day and night.

LONDON: *Atmospheric Pressure.*—During the week ending March 20, the reading of the baro-

meter at the level of the sea decreased from 30.33 inches at the beginning of the week to 29 80 inches by 3 P.M. on the 16th, increased to 30.03 inches by 9 A.M. on the 18th, decreased to 29 96 inches by 9 A.M. on the 19th, and was 30.03 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30 inches, being 0.37 inch lower than last week, and 0. 03 inch lower than the average of the week.

Temperature.—The highest temperature in the shade in the week was 59°.6, on the 19th; on the 14th the highest temperature was 34°.7. The mean of the seven high day temperatures was 42°.4.

The lowest temperature was 20°.1, on the 17th; on the 20th the lowest temperature]was 42°. The mean of the seven low night temperatures was 29°.7.

The greatest range of temperature in one day was 22°.6, on the 19th; the smallest, on the 14th, was 6°.7. The mean of the seven daily ranges was 12°.7.

The mean temperatures were, on the 14th, 30°.9; on the 15th, 32°.4; on the 16th, 30°.1; on the 17th, 30°.; on the 18th, 34°.1; on the 19th, 48°.4; on the 20th, 48°.5; of these the first five were below their averages by 10°.3, 9°, 11°.4, 11°.6, 7°.6, respectively, and the last two were above by 6'.7 and 6'.8 respectively.

The mean temperature of the week was 36° 3, being 6°.1 higher than last week, and 5°.2 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 115°.5, on the 19th. The mean of the seven readings was 80°.9.

The lowest reading of a minimum thermometer placed on grass was 18°, on the 17th. The mean of the seven readings was 27°.6.

Rain.—Rain fell on three days, to the amount of 0.13 inch.

ENGLAND: *Temperature.*—During the week ending March 20, the highest temperatures were 60°.4 at Cambridge, 59°.6 at Blackheath, 59° at Sheffield; the highest at Preston was 45°, at Newcastle 46°, at Hull 47°. The general mean was 53°.

The lowest temperatures were 20° at Truro, 20°.1 at Blackheath, 20°.9 at Wolverhampton; the lowest at Newcastle was 30°, at Liverpool 29.°6, at Preston 29°. The general mean was 25°.9.

The greatest ranges were 39°.5 at Blackheath, 35°.4 at Cambridge, 35° at Truro; the least ranges were 16° at Preston and Newcastle, and 19° at Hull and Bradford. The general mean was 27°.1.

The mean of the seven high day temperatures was highest at Truro, 49°, at Cambridge 46°.4, at Bristol 45°; and was lowest at Bradford, 37°.6, at Wolverhampton 39°.5, at Newcastle 40°.1. The general mean was 42°.2.

The mean of the seven low night temperatures was highest at Liverpool, 35°.2, at Truro and Plymouth 34°; and was lowest at Wolverhampton, 29°.2, at Blackheath 29°.7, at Brighton and Sheffield 30°.8. The general mean was 32°.

The mean daily range was greatest at Truro, 15°, at Bristol 14°.1, at Cambridge 13°.9; and was least at Bradford, 6°.4, at Liverpool 6°.7, at Newcastle 7°.8. The general mean was 10°.2.

The mean temperature was highest at Truro, 40°.4, at Cambridge 38°.4, at Plymouth 38°; and was lowest at Wolverhampton, 33°.2, at Bradford 33°.3, at Sheffield 34°.6. The general mean was 36°.1.

Rain.—The largest falls were 1.30 inch at Truro, 1".29 inch at Sheffield, 1".11 inch at Plymouth; the smallest falls were 0.13 inch at Blackheath, 0".28 inch at Nottingham, 0".29 inch at Cambridge. The general mean was 0".59 inch.

SCOTLAND: *Temperature.*—During the week ending March 20 the highest temperature was 53°.2, at Aberdeen; at Perth the highest was 39°. The general mean was 47°.6.

The lowest temperature in the week was 26°.9, at Edinburgh; at Aberdeen the lowest was 31°. The general mean was 28°.4.

The mean temperature was highest at Paisley, 37°.7; and lowest at Perth, 33°.3. The general mean was 35°.9.

Rain.—The largest fall was 1.67 inch, at Perth; the smallest fall was 0.03 inch, at Leith. The general mean was 1.10 inch.

[JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

SAXIFRAGA GROWING UNDER SHADE.—There was mention made in the *Gardeners' Chronicle* some time about last July of a Saxifrage growing and blooming under the shade of a Copper-leaved Beech. It was in an article describing a nobleman's residence. Perhaps some of your correspondents will remember it, and would kindly furnish me with the page on which the article appeared. *Geo. Finlay.* [Some few years ago an account was given in these pages of a visit to Miss Hope's garden, Wardie Lodge, Edinburgh, in which it is stated that Saxifraga umbrosa (London Pride) was found to be the only plant that would exist there under the shade of large trees. It formed a dense green carpet of foliage, which was kept dwarf and neat by one annual mowing. ED.]

Answers to Correspondents.

*** *Numerous communications of reports of Societies are deferred from the pressure on our space.*

BOOK ON THE CULTIVATION OF ORCHIDS: *L. W. F. B.* There is no more trustworthy work than Williams' *Orchid Manual*, published by Mr. B. S. Williams at the Victoria and Paradise Nurseries, Upper Holloway, London, N.

DOUBLE-FLOWERED CALLA ÆTHIOPICA: *G. K.* These monstrosities are of common occurrence, and may be put down to extra vigour in the plants.

CORRECTIONS: "FLOWERS AND INSECTS."—In the *Gardeners' Chronicle* for March 13 last, p. 331, a misprint occurs which I should like to correct. About half-way down the left-hand column the word printed Passion-flowers should read Prison-flowers—a term sometimes applied to the Aristolochia and Arum, on account of their imprisoning small flies for a time. Also, in the preceding issue, p. 297, line 10 from bottom, the word "these" should read "bees." I should like to explain that the paper itself forms the substance of a lecture delivered by me before the members of the Richmond Athenæum on January 25 last. *R. A. Rolfe.*—In our notice of the Royal Horticultural Society's show at Liverpool in our last week's issue (p. 368), we should have added to the cup of 25 gs. for the best twelve Orchids in flower, "10 gs. in cash."

DENDROBIUM NOBILE: *R. M.* Both pretty varieties.

EUCHARIS MITE: *T. Nelson.* The mite is unmistakably present. Destroy all infected bulbs.

HOT-WATER HEATING WITH COAL-GAS AS HEATING MEDIUM: *G. R. Smith, Jun.* Hood, in his work on *Warming and Ventilating Buildings*, puts the price of gas at three times that of good coal when the former is mixed with twelve times its volume of atmospheric air. This invention is popularly known by the term "Atmospheric gas." Experiments made with this method proved that 720 cubic feet of gas gave the same amount of heat that could be obtained by 75 lb. of good average coal, and this at the price of 3*s.* 6*d.* per 1000 cubic feet of gas, and 24*s.* per ton for the coal, would be nearly in the proportion of three to one. When gas is burnt the boiler ought to be made of copper, and the best form is that of an upright double cylinder with a domed top.

INSECTS: *W. H.* The green grasshopper is the Brazilian Colophora cornuta, imported; described and figured in *Gard. Chron.*, August 16, 1884. It will injure both foliage and flowers by gnawing the tender parts. *I. O. W.*

KEW: *L. G.* Mr. J. Smith is still the Curator. With regard to your other question, we can but say that the proper method is to apply for information to the Curator.

NAMES OF PLANTS: *D. Elkins.* Mesembryanthemum hispidum.—*W. D.* Ruscus racemosus (the Alexandrine Laurel). The Cinerarias are quite equal, so far as we can tell from the two flowers sent, to the best average varieties.—*T. N.* 1, Insufficient; 2, Selaginella viticulosa; 3, S. Braunii (pubescens); 4, Nephrodium molle; 5, Blechnum occidentale; 6, Goldfussia anisophylla. The Pteris and Davallia appear as if they had been checked by extreme conditions of heat or cold, but without knowing the conditions under which they have been kept, we cannot say positively what has injured them.—*C. W.* We are quite unable to name Willows from a shoot with undeveloped catkins; all we can say is, that in the shape of the catkin it resembles Salix cinerea.—*H. M. H.* I, Anemone hortensis; II. A. hortensis var. pavonina; both common on the north side of the Mediterranean, and bothin cultivation here.

NATAL ORCHIDS: *J. P.* should consult Harvey's *Genera of South African Plants*, where he will find a list of the genera. We do not know of any list of species, nor can we tell our correspondent the best sorts to import for commercial purposes. A letter addressed to some nurseryman at Durban or Pieter-Maritzburg would probably elicit the desired information.

PEACHES RIPENING EARLY IN MAY: *J. W.* Early Beatrice, Early Louise, Hale's Early ripen in the order named eight weeks after setting.

TOMATOS: *J. H.* What you suppose is a disease of the leaf is simply the absence of chlorophyll, producing a creamy variegation.

WATERCRESS.—In answer to the inquiry on p. 376, Mr. E. M. Holmes, of the Pharmaceutical Society, Bloomsbury Square, writes that if specimens be sent to him he will be pleased to examine and report.

INTELLIGENT READERS, PLEASE NOTE.—*Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

CATALOGUES RECEIVED.

STANSFIELD BROTHERS, 97, St. Luke's Road, Southport—Supplementary List of Alpine Plants, &c.

LUCOMBE, PINCE & CO., Exeter—Wholesale Catalogue of Nursery Stock.

MESSRS. ELLWANGER & BARRY, Mount Hope Nurseries, Rochester, New York, U.S.A.—A Descriptive List of Fruits, and one of Ornamental Trees, Shrubs, and Hardy Perennial Plants.

MM. VILMORIN-ANDRIEUX & CO., Paris—Spring List of Seeds, Strawberries, Bulbs and Flowers; and Illustrated Sheet of Figures of Roots, Forage Plants, Grasses and Cereals.

LOUIS DE SMET, Ledeberg les Gand, Belgium—Orchid List, and Supplement to General Catalogue.

COMMUNICATIONS RECEIVED:—G. S.—W. E. G.—D. T. F.—G. W. L.—H. de V.—Lucombe, Pince & Co.—E. W. H.—J. W. O.—W. N.—W. S. M.—G. W. D.—E. de Regel, St. Petersburg.—A. D. B.—S. H. (see leading article).—G. F.—J. C.—W. M. Baillie (next week).—W. S.—J. H. & Co.—E. J. C. B.—W. B. H.—C. C.—F. Sander & Co.—H. E.—J. A. de M.—G. H. R.—J. M.

Markets.

COVENT GARDEN, March 25.

THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

A FEW samples of new Grapes have reached us this week, and prices of old have gone back. Trade somewhat better. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9 0	15 0
Arum Lilies, dozen	9 0	12 0
Azaleas, per doz.	24 0	42 0
Begonias, per dozen	6 0	12 0
Bouvardias, doz.	12 0	18 0
Cinerarias, per doz.	12 0	12 0
Cyclamen, 12 pots	12 0	24 0
Cyperus, per dozen	4 0	12 0
Daffodils, per dozen	9 0	12 0
Dracæna terminalis, per dozen	30 0	60 0
— viridis, per doz.	12 0	24 0
Ericas, various, per dozen	12 0	24 0
Euonymus, in var., per dozen	6 0	18 0
Evergreens, in var., per dozen	6 0	24 0
Ficus elastica, each	1 6	7 0
Ferns, in variety, per dozen	4 0	18 0
Foliage Plants, various, each	2 0	10 0
Genistas, per dozen	9 0	15 0
Hyacinths, per doz.	6 0	9 0
Lilies in clumps, or pots, per dozen	18 0	30 0
Margueri te Daisy, per dozen	8 0	12 0
Myrtles, per dozen	6 0	12 0
Palms in var., each	2 6	21 0
Pelargoniums, doz.	18 0	24 0
— scarlet, per doz.	6 0	9 0
Primulas, single, 12 pots	4 0	6 0
Spiræa, per dozen	12 0	15 0
Tulips, 12 pots	6 0	9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0	1 6
Anemone, French, 12 bunches	3 0	6 0
Arum Lilies, 12 blms.	4 0	8 0
Azaleas, 12 sprays	0 6	1 0
Bouvardias, per bun.	0 6	1 0
Camellias, 12 blms.	2 0	6 0
Carnations, 12 blms.	1 0	3 0
Chrysanth., 12 blms.	2 0	4 0
— 12 bunches	9 0	18 0
Cyclamens, doz. blms.	0 4	0 6
Daffodils, per bunch	0 6	1 6
Epiphyllums, 12 blms.	0 6	1 0
Eucharis, per dozen	4 0	6 0
Gardenias, 12 blooms	0 6	18 0
Hyacinths, Rom., 12 sprays	0 6	1 0
Lapageria, red, 12 blooms	1 0	2 0
Lilac, French, bunch	2 0	7 0
Lily-of-the-Valley, 12 sprays	0 9	1 6
Marguerites, 12 bun.	6 0	12 0
Mignonette, 12 bun.	4 0	9 0
Pelargoniums, per 12 trusses	1 0	1 6
— scarlet, 12 trusses	0 9	1 0
Primulas, double, per bunch	1 0	1 6
— single, per bunch	0 4	0 6
Roses (indoor), doz.	3 0	9 0
— Tea, per dozen	2 0	3 6
— red, French, doz.	2 0	4 0
Snowdrops, 12 bun.	1 6	3 0
Tropæolums, 12 bun.	2 0	3 0
Tuberoses, 12 blms.	2 0	3 0
Tulips, doz. blooms	0 9	1 0
Violets, 12 bunches	1 0	1 6
— Czar, Fr., bunch	1 6	2 6
— Parme, French, per bunch	4 0	6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	4 0	..
Asparagus, Eng., 100 s	0 ..	..
— French, bundle	8 0	25 0
Beans, Kidney, lb.	4 0	..
Beet, red, per dozen	1 0	2 0
Broccoli Sprts., bush.	6 0	..
Carrots, per bunch	0 6	..
Cauliflowers, per doz.	3 0	4 0
Celeriac, per root	0 4	..
Celery, per bundle	1 6	2 0
Coleworts, doz. bunch	8 0	..
Cucumbers, each	1 0	1 6
Endive, per dozen	1 0	2 0
Herbs, per bunch	0 4	..
Leeks, per bunch	0 6	..
Lettuce, per dozen	1 0	1 6
Mint, green, bunch	1 0	..
Mushrooms, punnet	1 0	1 6
Mustard and Cress, do.	0 4	..
Onions, per bushel	5 0	..
Parsley, dozen bunch	2 0	3 0
Parsnips, per dozen	1 0	..
Potatos, per cwt.	4 0	5 0
,, kidney, per cwt	4 0	5 0
Salsafy, per bundle	0 9	..
Savoys, per dozen	3 0	5 0
Scorzonera, p. bundle	1 0	..
Seakale, punnet	2 6	..
Shallots, per pound	0 3	0 0
Spinach, per bushel	4 0	6 0
Sprouts, per pound	0 9	..
Sprue Asparagus, per bundle	1 0	..
Tomatos, per lb.	1 6	2 6
Turnips, bunch	0 6	..

POTATOS.—Magnum Bonums, 45*s.* to 75*s.*; Regents, 55*s.* to 75*s.* per ton. Trade very heavy, and prices about the same.

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 0– 4 0	Lemons, per case	8 0–10 0
— Canadian, barrl.	10 0–14 0	Pears, per dozen	12 0 15 0
Grapes, per lb.	3 0– 8 0	Pine-apples, Eng., lb.	1 0– ..
Kent Cobs, 100 lb.	40 0– ..	— St. Michael, each	2 6– 8 0

SEEDS.

LONDON: *March* 24.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., write that there is now a steady sowing demand for farm seeds, which will daily increase if the present favourable weather continues. Values generally remain at the low level previously reported. Stocks of all varieties continue moderate. English red Clover seed is offering more freely than was anticipated. Alsike and white Clover keep steady. Trefoil still offers at unprecedentedly cheap rates without attracting attention. Perennial and Italian Rye-grasses, with a firmer feeling, are in better favour. Available supplies of spring Tares having been reduced to narrow limits more money is asked. Large Gore Tares are comparatively cheap. For Hemp and Canary there is a fair inquiry. Feeding Linseed steady.

CORN.

MARK LANE: *March* 22.—To effect sales in quantity of either Wheat or flour, except at easier rates, was not practicable; but of good current qualities sales were not pressed, and it could hardly be said that any decided change in quotations was established, although in irregular transactions buyers may have obtained some advantage. Barley and Oats were the turn in buyers' favour on the week, and other grain without material change.

March 24.—In either Wheat or flour the transactions to-day were not of sufficient extent to really test quotations. The little business in Barley showed about previous rates, whilst Oats and Maize tended in buyers' favour.

Average prices of corn for the week ending March 20: —Wheat, 30*s.* 1*d.*; Barley, 27*s.* 11*d.*; Oats, 19*s.* 6*d.* For the corresponding period last year:—Wheat, 31*s.* 11*d.*; Barley, 31*s.* 2*d.*; Oats, 20*s.* 8*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *March* 24.—Moderate supplies of fruit and vegetables met with a fairly good demand. Quotations:—Apples, 3*s.* 6*d.* to 7*s.* per sieve; Parsnips, 1*s.* to 1*s.* 6*d.* per score; Beetroots, 6*d.* to 10*d.* per dozen; Savoys, 7*s.* to 12*s.* per tally; Spinach, 3*s.* 6*d.* to 4*s.* 6*d.* per sieve; Sprouting Broccoli, 3*s.* 9*d.* to 4*s.* 9*d.* do.; forced Rhubard, 2*s.* 6*d.* to 4*s.* 6*d.* per dozen; bunch Greens, 5*s.* to 7*s.* 6*d.* per dozen bunches; do. Turnips, 3*s.* to 4*s.* do.; do. Carrots, 2*s.* to 2*s.* 6*d.* do.; do. Parsley, 1*s.* to 1*s.* do.; do. Celery, 8*s.* to 12*s.* per dozen bundles; Onions, 4*s.* 6*d.* to 7*s.* per cwt.; white Turnips, 30*s.* to 70*s.* do.; Swede do., 17*s.* 6*d.* to 27*s.* do.; Carrots, 18*s.* to 40*s.* do.; Mangels, 17*s.* 6*d.* to 22*s.* 6*d.* do.

STRATFORD: *March* 23.—There was a good supply of produce and a fair trade was done at the following prices:—Cabbages, 5*s.* to 7*s.* per tally; Savoys, 12*s.* to 12*s.* do.; Turnips, 2*s.* 6*d.* per dozen bunches; do., 60*s.* to 70*s.* per ton; Carrots, household, 40*s.* to 50*s.* do.; cattle feeding, 20*s.* to 28*s.* do.; Parsnips, 1*s.* to 2*s.* per score; Mangels, 18*s.* to 21*s.* per ton; Swedes, 20*s.* to 24*s.* do.; Apples, 2*s.* 6*d.* per bushel; Rhubarb, 2*s.* 3*d.* per dozen; Horse-radish, 10*d.* per bundle.

POTATOS.

BOROUGH AND SPITALFIELDS: *March* 23.—Trade was dull at the following prices:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 90*s.*; and Champions, 60*s.* to 70*s.* per ton.

COLUMBIA (East London): *March* 24.—Moderate supplies were to hand, and met with a fairly good demand at the following prices:—Champions, 45*s.* to 55*s.*; Victorias, 55*s.* to 60*s.*; Regents, 55*s.* to 65*s.*; and Magnums, 50*s.* to 80*s.* per ton.

STRATFORD: *March* 23.—Quotations:—Magnums, 60*s.* to 65*s.*; Champions, 50*s.* to 60*s.*; and Heros, 55*s.* to 65*s.* per ton.

Imports.—The imports into London last week consisted of 10 bags from Rotterdam, 117 from Hamburg, and 60 from Boulogne.

HAY.

WHITECHAPEL: *March* 23.—Trade was dull except for hay, which was in fair demand at the following quotations:—Clover, prime, 88*s.* to 104*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 90*s.*; inferior, 50*s.* to 65*s.*; and straw, 27*s.* to 35*s.* per load.

March 28.—A short supply was on sale. There was a dull trade, at previous prices.

CUMBERLAND (Regent's Park): *March* 23.—A large supply of hay and Clover was on offer with prices tending rather in favour of buyers. Quotations:—Clover, best, 90*s.* to 105*s.*; second, 75*s.* to 85*s.*; hay, best, 80*s.* to 90*s.*; seconds, 70*s.* to 80*s.*; and straw, 28*s.* to 36*s.* per load.

STRATFORD: *March* 23.—Quotations:—Hay, 70*s.* to 80*s.*; Clover, 80*s.* to 100*s.*; and straw, 28*s.* to 36*s.* per load.

Government Stock.—Consols closed on Monday at 100⅝ to 100¾ for delivery, and 100⅞ to 100⅞ for the account. The final figures of Tuesday and Wednesday were 100⅝ to 100¾ for both transactions. Thursday's closing quotations were 100⅝ to 100¾ for both delivery and the account.

CARTERS' PERMANENT AND BEAUTIFUL LAWNS

SOW DURING the MONTH

CARTERS' INVICTA

LAWN SEEDS.

CARRIAGE FREE.

	Per Pound. s. d.	Bushel. s. d.
CARTERS' INVICTA LAWN SEEDS	1 3	25 0
Carters' Grass Seeds for Town Lawns	1 3	25 0
Carters' Grass Seeds for Cricket Grounds	1 3	20 0
Carters' Grass Seeds for Tennis Grounds	1 0	20 0
Carters' Grass Seeds for Old Lawns	1 3	25 0
Carters' Grass Seeds for under Trees	1 3	25 0
Carters' Grass Seeds for Pleasure Grounds	1 3	25 0

Sow 4 Bushels of Seed per Acre to form a New Lawn.

THESE SEEDS ARE ALSO SUPPLIED IN PACKETS, Price 1*s.*, 1*s.* 6*d.*, and 2*s.* 6*d.*

The 1s. 6d. packet will sow one rod of ground.

Notice. **Carters' Invicta Lawn Seeds have beaten all Competitors in every Competition.**

CARTERS' GRASS MANURE.

A valuable preparation for producing a permanent luxuriant growth. In Boxes, price 1*s.*, 1*s.* 6*d.*, and 2*s.* 6*d.* In Bags, of 14 lb., 4*s.* In Casks of ½ cwt., 10*s.* 6*d.*

FULL INSTRUCTIONS WITH EVERY PARCEL.

For further particulars see Carters' Pamphlet, *How to Form a Lawn and Tennis Ground,* Gratis and Post-free on application.

SEEDSMEN by ROYAL WARRANTS to H.M. the QUEEN, and H.R.H. the PRINCE of WALES,

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The Old-Established Seed & Nursery Business.

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Hardy Trees—200 Acres. Forest and Ornamental Trees—hardily grown. Fruit Trees—50 Acres—mostly fearing—perfectly trained. Pronounced "unequalled." Evergreens, Cover Plants, Roses, in vast quantity. All Regularly Transplanted.

Prices strictly moderate. Write for Catalogues, giving full estimate information, Gratis and Post Free.

Estimates given.

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J. JENSEN & CO.'S NORWEGIAN FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash. Per Cent.		Herring and Potash. Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15.0
10.0	Magnesia	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt.	of Dried Fish Flesh—Organic Matter.
4 ,,	of Dried Fish Bone—Phosphates.
3 ,,	Sulphate of Potash.
2 ,,	Sulphate of Magnesia.
1 ,,	of Moisture, and ingredients not of manurial value.
20	

The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.

IN TINS,—2 lb. for 1*s.*; *and*

IN BAGS, 7 lb., 2*s.*; 14 lb., 4*s.*; 28 lb., 6*s.* 6*d.*; 56 lb., 10*s.* 6*d.*; 1¼ cwt., 20*s.*; 2 cwt., 30*s.* Bags free.

☞ Apply to all Nurserymen and Florists, or to

J. JENSEN & CO.,

10, ST. HELEN'S PLACE, LONDON, E.C.

CLAY'S FERTILISER OR PLANT FOOD

Sold in Packets, 6d. and 1s. each, and in

Sealed Bags only,

7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

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C. & L. also supply Crushed Bones, Bone Dust, Peruvian Guano, Sulphate of Ammonia, and Nitrate of Soda, in best qualities only.

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FIR TREE OIL INSECTICIDE (Soluble in Water)

Effectually clears all **Insects** and **Parasites** from the Roots or Foliage of Trees and Plants. Kills all Vegetable Grubs, Turnip Fly, &c. Cures Mildew and Blight. Clears Grapes from Mealy Bug, &c., and makes a good Winter Dressing. Of all Seedsmen and Chemists, 1*s.* 6*d.*, 2*s.* 6*d.*, and 4*s.* 6*d.* a bottle, per post 3*d.* extra. Per gallon, 12*s.* 6*d.*, or less in larger quantities.

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PRIZES FOR YOUNG GARDENERS.

Form of Application.

From

Full Name and Address of Competitor here.

*It is my intention to compete for the Prizes as announced in the "*Gardeners' Chronicle*" of February 27, 1886, p. 272.*

My present employer is—

Full Name and Address of Employer here.

And whose Certificate of my Age, &c., is attached.

Signature of Competitor .....

Date,

I hereby certify that

is in my employ as Gardener, and to the best of my knowledge and belief his age is .....years.

Signature of Employer.

Date,

Intending Competitors must cut out and fill in the above Form, which should be forwarded to

The Editor,

GARDENERS' CHRONICLE,

41, WELLINGTON STREET, STRAND, W.C.,

ON or BEFORE TUESDAY NEXT, the 30th inst.

G. C.
March 27, 1886.

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THE ONLY LAWN MOWER FITTED WITH DOUBLE EDGED SOLE PLATE ENABLING THE CUTTING PARTS TO LAST TWICE THOSE OF OTHER MACHINES



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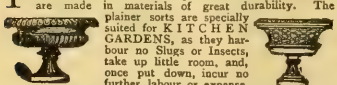
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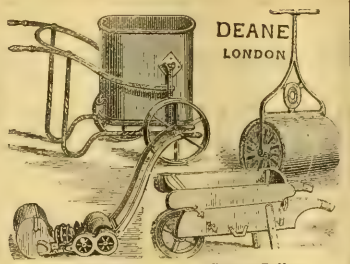
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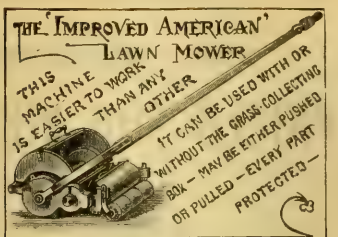
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From Damp, Frost, and Cold Winds.
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THIS MACHINE IS EASIER TO WORK THAN ANY OTHER
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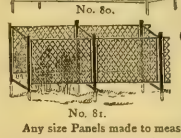
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14 x 12	20 x 15
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21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.
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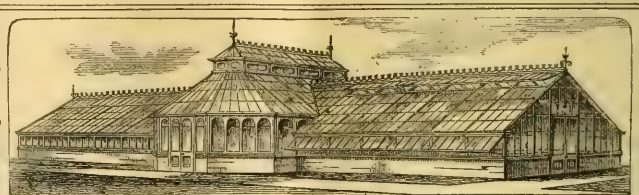


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6 feet by 3 feet, 2s. each.
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Any size Panels made to measure at 2d. per square foot.
DOUBLE STANDARDS, as per Illustration, Galvanised, 2s. 6d., 2s. 9d., 3s. each.

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The "Darlington" Wall-Cover is cheaper than anything of the kind that has ever been offered to the Public, and at the same time it is thoroughly strong, well made, and durable. It is also portable in the fullest sense of the word.

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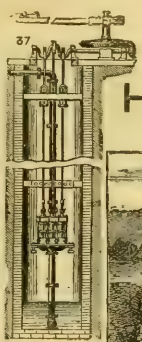
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ANCHOR WORKS, CHELMSFORD.
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Horticultural Builders in Wood or Iron.
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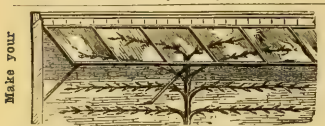
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Twelve years' experience has proved that
PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it. A large Stock always on hand. Price, in painted Iron Framing, with 21-oz. Glass, and Rods for Front Curtains, 2 feet wide, 2*s.* 6*d.*; 3 feet wide, 3*s.* 6*d.* per foot run. Any carpenter can fix. References and Prospectus free. WM. PARHAM, Northgate Works, Bath, and 411, Oxford St., London, W. Specimens may be seen at either address. Parham's Illustrated Catalogue of Horticultural Buildings, post free.

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HILL AND SMITH'S BLACK VARNISH,
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This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in Casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom

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CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

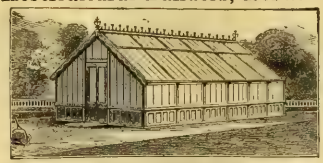
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Span-roof Greenhouses fitted complete, made in lights, glazed with 21-ounce glass and painted three coats of good oil colour, Tenant's Fixtures, 12 feet by 8 feet, £23 19*s.* For brickwork, £16 17*s.*



Three-quarter Garden Frame, with registered set-open lights, 2 inches thick, glazed with 21-ounce glass, and painted four coats, 4 feet by 6 feet, £2 17*s.*; 8 feet by 6 feet, £4 10*s.*; 12 feet by 6 feet, £6 5*s.* 6*d.*; cases, 6*s.*

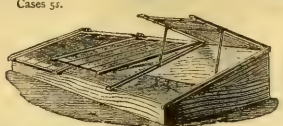
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Lights 2 inches thick, glazed with 21-ounce glass, painted four coats.

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8 ft. by 6 ft.	3	4	6
12 ft. by 6 ft.	4	12	6

Cases 5*s.*

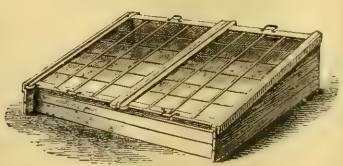




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Glazed with 21-ounce glass, and painted three coats, fitted with strong joints and (registered) set-opes, 8 feet by 4 feet, £2 2*s.*; 12 feet by 4 feet, £2 15*s.*; 16 feet by 4 feet, £3 10*s.* Cases, 6*s.*

Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, and Belfast.
Illustrated Catalogues, post-free, two penny stamps.
See Advertisement, alternate Weeks.



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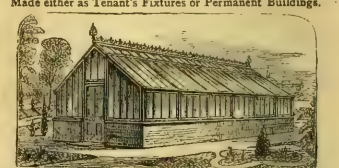
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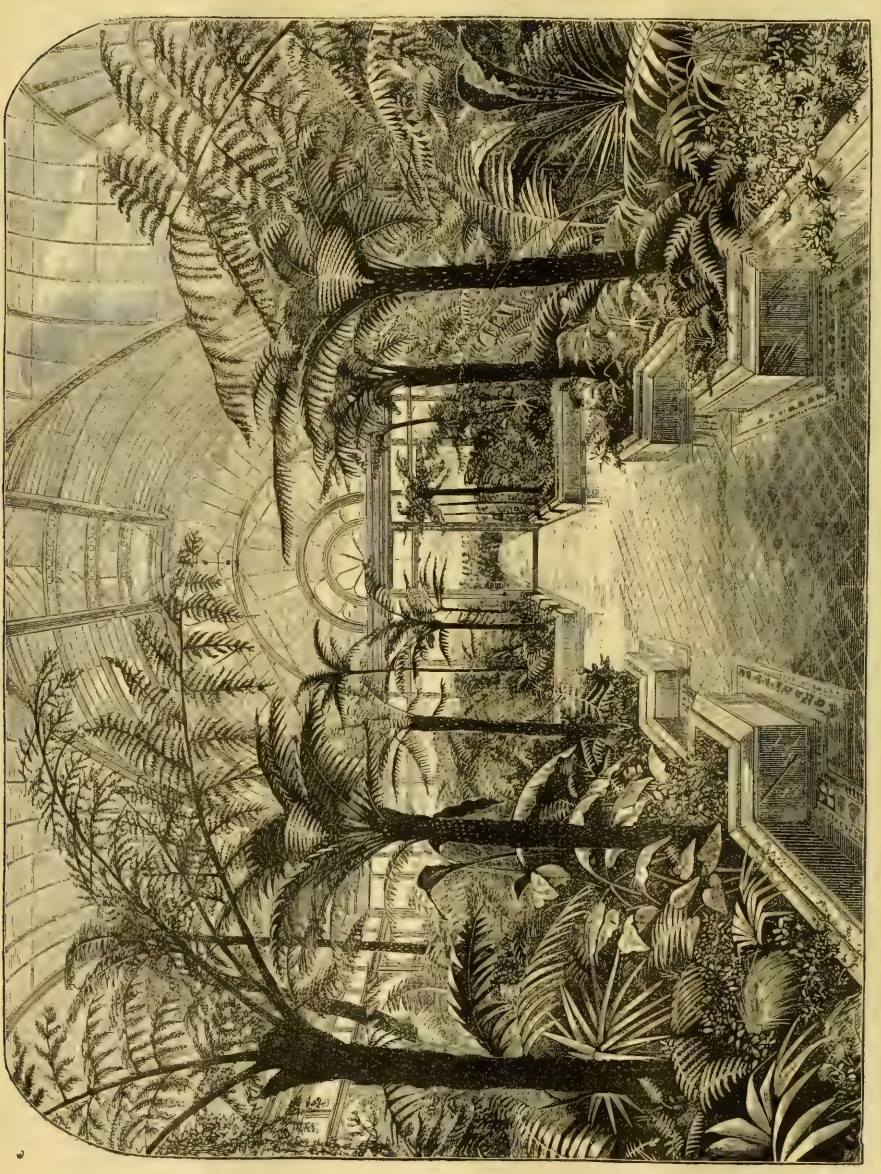
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" Andersonianum
" Chestertoni
" Œrstedii
" Alexandræ, in var.
Pilumna nobilis (very fine plants)
Vanda suavis Veitchianum
" tricolor Dodgsoni
" Sanderiana
Aerides Lobbi
Cypripedium caudatum roseum
" Veitchii
" Spicerianum
Oncidium macranthum
" Lanceanum, grand variety.
Cymbidium eburneum,
Sobralia macrantha (four splendid plants)
Ada aurantiaca (grand specimen

On view mornings of Sale, and Catalogues had.

Important Sale of a First-class Collection of CARNATIONS, PICOTEES, PINKS, CLOVES, PÆONIES, PHLOX, PYRETHRUM, a choice assortment of 400 Standard and other ROSES, selected FRUIT TREES hardy SHRUBS, AMERICAN PLANTS, Imported and other SEEDS, BULBS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on TUESDAY, April 6, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues now ready at the Rooms, and of the Auctioneers, 67 and 68, Cheapside, E.C.

Tuesday Next.

DENDROBIUM NOBILE ELEGANS DELICATA, ODONTOGLOSSUMS, HYBRIDS, several fine varieties. LYCASTE SKINNERII ALBA.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 6, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA MENDELII, in splendid order; also a fine consignment of white LÆLIA ANCEPS, CATTLEYA SKINNERII, LYCASTE SKINNERII, in superb described varieties; ODONTOGLOSSUM PESCATOREI, TRIUMPHANS, and ALEXANDRÆ, and PHALÆNOPSIS, ADA AURANTIACA, &c.; together with a choice lot of ESTABLISHED ORCHIDS in variety, another property.

On view morning of Sale, and Catalogues had.

Wednesday Next.

800 Standard and Dwarf ROSES and selected FRUIT TREES, all true to name from English nurseries, AZALEAS, FERNS, PALMS, and other PLANTS, in variety; 300 CARNATIONS and PICOTEES PHLOX, PÆONIES, PYRETHRUMS, IRIS, including the beautiful Japanese species, HARDY PLANTS and BULBS, LILIUM AURATUM, and about 30 fine plants of EUCHARIS AMAZONICA.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, April 7, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Wednesday Next.

EUCHARIS AMAZONICA.

Specimen Plants, free from all insects, at

PROTHEROE AND MORRIS', 67 and 68, Cheapside, E.C.

Friday Next.

VALUABLE COLLECTION of ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from T. W. Boord, Esq., M.P., who is leaving Ockenden House, Cuckfield, to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY, April 9, the choice COLLECTION of ESTABLISHED ORCHIDS, the whole in excellent condition and consisting for the most part of fine varieties comprising Cattleyæ, Cypripedium Dominianum, C. lævigatum, and others, Dendrobium Ainsworthii, D. moniliforme, D. Farmeri, D. Dearei, &c.; Lycaste Skinneri, fine varieties, including L. alba; Oncidiums and Odontoglossums in variety, Phalænopsis Schilleriana and P. amabilis, Sobralia macrantha, Epidendrum prismatocarpum, Peristeria elata, and numerous others.

Friday Next.

LYCASTE SKINNERI ALBA.
CATTLEYA LABIATA GASKELLIANA.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, April 9, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., a large quantity of imported plants of CATTLEYA LABIATA GASKELLIANA, in fine condition, many with flower-sheaths, and amongst them are many very fine masses, one measuring 7½ feet in circumference; LYCASTE SKINNERI ALBA, L. SKINNERI, LÆLIA SUPERBIENS (wonderful specimen, 7 feet in circumference), CŒLOGYNE OCELLATA, DENDROBIUM FALCONERI, D. FARMERI, D. HETEROCARPUM, D. DEVONIANUM, D. TRANSPARENS, ODONTOGLOSSUM MIRANDUM, O. GRANDE, ONCIDIUM, EPIDENDRUMS, ONCIDIUMS, THUNIAS, and other choice ORCHIDS; together with a very fine lot of ESTABLISHED ORCHIDS, from a well known collection.

On view morning of Sale, and Catalogues had.

Surbiton.

UNRESERVED CLEARANCE SALE, the L. & S. W. Railway requiring immediate possession of the Property.

MESSRS. PROTHEROE AND MORRIS are instructed by Mrs. Rose to SELL by AUCTION (without the least reserve), on the Premises, The Oakhill Nursery, Glenbuck Road, Surbiton, adjoining the Surbiton Railway Station, on TUESDAY, April 13, at 12 o'Clock precisely, the whole of the well-grown CONIFERÆ and EVERGREEN SHRUBS, fine Standard and Dwarf ROSES, FRUIT TREES, 800 IRISES in pots, several Beds of choice PANSIES; also the entire stock of GREENHOUSE, STOVE, and BEDDING PLANTS, including 4000 Maidenhair Ferns, 500 Azaleas, Camellias, 2500 Geraniums, 4000 Carnations, White Clove and Malmaison; Herbaceous Plants, and Bedding Stuffs.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.

Flowering Orchids—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their SPECIAL SALE of ORCHIDS IN FLOWER will, in consequence of the Easter Holidays, take place one week earlier than usual, viz., on TUESDAY, April 20; for which they will be glad to receive notice of entries as soon as possible.

MR. TYDEMAN will SELL by AUCTION, at the Exotic Nurseries, Waltham Cross, Herts, on THURSDAY, April 15, at half-past 1 o'Clock, a portion of Mr. TUDGEY'S valuable and well-known

COLLECTION OF SPECIMEN STOVE AND GREENHOUSE PLANTS,

including well-grown Specimens of Azalea indica, Cape Ericas, Aphelexis, Phœnocomas, Dracophyllums, Stephanotis, Allamandas, Clerodendrons, Franciscea, Specimen Palms, Anthuriums, Crotons, &c.

Also a quantity of Hardwood HEATHS and PALMS, in 4-inch and 6-inch pots.

And One EXHIBITION PLANT VAN, in good repair.

CHARLES NOBLE, Bagshot, in consequence of continued ill-health, has given directions for the SALE of his FREEHOLD ESTATE, some 50 acres, closely stocked, in splendid condition, consisting of all the choicest hardy TREES and SHRUBS, RHODODENDRONS, ROSES, CONIFERS, &c.

One of the best selections in Europe.

AZALEAS, EVERGREEN SHRUBS, HEATHS, &c. All interested would do well to see for themselves, as description and list of names cannot be given in advertisement.

Sunningdale Station, South-Western Railway, is within half-a-mile of the nursery. It is quite unnecessary to say the prices are merely nominal for the kind of stock.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard Garston, Liverpool.

London, W.

Re Boller, Deceased.

By order of the Executors.—Important to Florists.

TO BE SOLD, the well-known Property, The WOODFIELD NURSERY, Harrow Road, W., noted for the growth of Succulents. There are numerous Greenhouses. Terms moderate.

Apply, for full particulars, to Messrs. PROTHEROE AND MOORIS, 67 and 68, Cheapside, E.C.

Maida Vale.—Choice Position.—(5758.)

TO BE SOLD, by order of the Executor, with Possession, a genuine West End FLORIST'S BUSINESS, comprising half an acre of Land (valuable building site), with Eight-roomed Dwelling House, Seed Shop, Eleven Greenhouses, Pits, &c. Lease unexpired, 24 years. Ground Rent £25.

Apply to PROTHEROE AND MORRIS, Estate Agents, 67 and 68, Cheapside, E.C.

TO BE SOLD, a genuine FLORIST and SEED BUSINESS, near a popular town on the South Coast. An excellent opportunity for an enterprising man with a small capital.

For particulars apply by letter to Mr. HENRY FRY, Romsey Road, Winchester.

Barnes.

Facing Public Road and the Common.

TO BE LET, or FREEHOLD to be SOLD, an ORNAMENTAL COTTAGE RESIDENCE, with large and convenient Stabling, Seed Room, &c., and 1 acre or upwards of Land, having a Well therein, and long open frontages for Glass.—A. H. FREND, Architect, 3 Gray's Inn Square, W.C.

TO LET, a FLORIST'S and SEEDSMAN'S BUSINESS. Established 60 years. For particulars Apply to W. SUTTON, Kenilworth, who is retiring.

FRUITERER'S and FLORIST'S.—Old-established, Long Lease, Horse, Vans, and everything for use. Price £250; part of purchase money can remain. Same hands thirteen years.

Apply, 456, Fulham Road, S.W.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 67 and 68, Cheapside, London, E.C.

To Landed Proprietors, &c.

A. MCINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

115, Lisbria Park, Stamford Hill, N.

OSMAN AND CO.

Windsor Street, Bishopsgate, London, E.

The Cheapest House in the World for all HORTICULTURAL SUNDRIES. The Trade should refer to our new Catalogue before ordering. Any firm not having received a copy, please write for one.

Chellanthes elegans.

H. B. MAY offers beautifully furnished Plants of this elegant Fern, in 60's. Price on application. Dyson's Lane Nursery, Upper Edmonton

ORCHIDS IN FLOWER.—A magnificent display of beautiful Orchids is now in blossom at Mr. WILLIAM BULL'S. An Inspection is invited

Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

MANETTI—MANETTI STOCKS.—Twenty Thousand, extra strong and well rooted, for Sale for cash. They are extra fine Stuff.

C. LINDSAY, Chase Nursery, Southgate, N.

PLUM STOCKS, fibrous rooted and trimmed ready for quartering. SEAKALE, GRAPE VINES of extra strength, FRUIT TREES in pots. Cash price LIST free.

WILL TAYLER, Osborn Nursery, Hampton Middlesex.

Clematis indivisa.

H. B. MAY offers very strong Plants, in 48's, of this beautiful Greenhouse Climber. This is one of the best white flowering plants in cultivation, and its pure white flowers are invaluable for cutting. Price on application.

Dyson's Lane Nursery, Upper Edmonton.

PROTECTION for FRUIT and FLOWERS.

GARDEN NETTING, 7 yards wide, 7½*d.*, or per 100 yards, 10*s.*; ditto, 4 yards wide, 3*d.*, or per 100 yards, 20*s.*

SCRIM CANVAS, 1 yard wide, 3*d.*; 1½ yard, 4½*d.*; and 2 yards, 6*d.* per yard.

TIFFANY, 38 inches wide, in 20-yard pieces, 3*s.* 6*d.* per piece.

SHADING BLINDS made up any size.

RICK CLOTHS, TARPAULINS, Corn and Potato SACKS, FLAGS, TENTS, &c., for Sale or Hire.

From HY. VAN AND CO. (the oldest London House in the Trade, established 1780), 17, Tooley Street, London Bridge, S.E.

VERBENAS and LOBELIAS.—Ball of Fire, the finest scarlet Verbena, splendid bedder, 6*s.* per 100, 50*s.* per 1000; mixed Verbenas, named, 5*s.* per 100, 40*s.* per 1000; Lobelia Crystal Palace Blue, 3*s.* per 100, 25*s.* per 1000. All very strong and well rooted. Post-free for cash.

KIRK ALLEN, The Nursery, Fen Drayton, St. Ives, Hunts.

HAMPTON COURT BLACK HAMBURGH VINES.—Extra strong Fruiting Canes of the above, and all other leading varieties, at greatly reduced prices.

T. JACKSON AND SON, Nurseries, Kingston-on-Thames, and Royal Kitchen Gardens, Hampton Court.

SURPLUS STOCK.—QUICK, strong and other sizes. ASH, 2 to 4 feet. Scotch FIR, fine, 3½ to 4 feet. SPRUCE FIR, 2 to 3 feet, extra transplanted. SYCAMORE, OAK, TREE BOX, &c. ROSE, choice H.P. and Teas, assorted, 3*s.* per dozen, 20*s.* per 100.

W. GROVE, St. Owen's Nursery, Hereford.

CEDRUS DEODARA.—Just arrived; guaranteed perfectly fresh Seed. Price, according to quantity, on application to

HY. CLARKE AND SONS, Wholesale Seed Merchants 39, King Street, Covent Garden, W.C.

THE HARDY GOLDEN-RAYED LILY
(LILIUM AURATUM).

Magnificent Bulbs of this charming Hardy Lily are obtainable at the following low prices, direct from the Importers.

Immense Bulbs, as plump and sound as English-grown Roots.

Price 5s., 8s., 10s., 15s., 20s., and 25s. per dozen. Carriage Free.

The Finest Samples of L. auratum that have yet reached England.

TRADE PRICE ON APPLICATION.

CARTERS' { Seedsmen by Royal Warrants to H.M. the QUEEN and H.R.H. the PRINCE of WALES. } **237-8, HIGH HOLBORN,** LONDON, W.C.

To Orchid Amateurs, Herbarists, Collectors of Natural History Specimens, &c.

MR. F. C. LEHMANN,
OF POPAYAN (CAUCA), U.S OF COLOMBIA,

Who has travelled for over nine years in Central and South America, has established himself in the above place to continue his labours.

DESCRIPTIVE PRICE LISTS ON APPLICATION.

Gentlemen desirous to complete or enlarge their Collections from that part of South America may direct their Letters to POPAYAN.

The "INVINCIBLE" LAWN MOWER.

Is the BEST in the Market

GARDEN ROLLERS.

WHEEL BARROWS.

Horse-Power Lawn Mowers. Side Delivery.

SAMUEL EDWARDS' PATENT.

GOLD MEDAL.

The Only Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



AWARDED the First Prize at each of the 3 Great Contests BIRMINGHAM, MANCHESTER, and LONDON.

VIDE RESULTS OF CONTESTS.

PRICES (including Grass Box), Side Delivery.

6 in.	7 in.	8 in.	9 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	24 in.	30 in.	36 in.	42 in.
30s.	40s.	50s.	60s.	70s.	90s.	110s.	130s.	150s.	170s.	190s.	£22	£26	£30

Sole Makers: JOHN CROWLEY & CO., Sheffield.

HORTICULTURAL STRUCTURES of EVERY DESCRIPTION, in EITHER WOOD or IRON, or BOTH COMBINED.

WOODEN CHAPELS, SHOOTING LODGES, COTTAGES, TENNIS COURTS, VERANDAHS, &c.

Orders for shipment carefully fitted and packed, and delivered f.o.b. Glasgow. Illustrated Circulars post-free. Complete Catalogue, 3s.



JAMES BOYD & SONS,
HORTICULTURAL BUILDERS AND HEATING ENGINEERS,
PAISLEY.
LONDON OFFICE: 48, Pall Mall, S.W.

CONTRACTORS to HER MAJESTY'S BOARD of WORKS, LONDON and DUBLIN.

HOT-WATER APPARATUS for WARMING CHURCHES, SCHOOLS, PUBLIC BUILDINGS, MANSIONS, HARNESS ROOMS, DRYING ROOMS, HOTHOUSES, and BUILDINGS of EVERY DESCRIPTION.

ECONOMY IN THE GARDEN.

BIDDLES & COMPANY,

THE PENNY PACKET SEED CO.,

LOUGHBOROUGH, LEICESTERSHIRE,

Supply 3000 varieties of Vegetable and Flower Seeds in

PACKETS at ONE PENNY EACH.

These Packets contain SMALL QUANTITIES of the BEST QUALITY of Seeds, and the List includes all the choicest sorts.

ALL KINDS of VEGETABLE SEEDS

Sold by Weight and Measure, at Lowest Prices, and of Unequalled Quality.

☞ We invite a comparison of our Prices with those of other respectable Firms.

Bulbs and Plants at Equally Cheap Rates.

Catalogues, 1886, gratis on application.
(500 Illustrations.)

Florist's Flowers our Specialty.

R. B. LAIRD & SONS
(late DOWNIE & LAIRD)

Have now issued their Descriptive Catalogue for 1886. Free on application.

ROYAL WINTER GARDEN,
EDINBURGH.

BEECH FOR HEDGES.

The best Plant for shelter, retaining its old foliage until the Spring.

Stout transplanted, 2½ to 3½ feet, 6s. per 100, 40s. per 1000; 3½ to 4½ feet, 7s. per 100, 50s. per 1000.

QUICKS.

Transplanted, 10s., 15s., and 20s. per 1000. Prices of other Stock upon application to

WALTER CHAS. SLOCOCK,
GOLDSWORTH "OLD" NURSERY, WOKING, SURREY.

ROSES.

20 Acres of grand Plants, in best varieties.

BUSHES, H.P., 8s. per dozen, 60s. per 100.
STANDARDS, H.P., 15s. per dozen, 105s. per 100.
} *Packing and Carriage FREE* for Cash with Order.

CLEMATIS (80,000), 12s. to 24s. per dozen.
ROSES, in Pots (80,000), 15s. to 36s. per dozen.
FRUIT TREES (74 Acres).
VINES (6000), 3s. 6d. to 10s. 6d.
ORCHARD HOUSE TREES, "Fruiting," in Pots.
STRAWBERRIES, 4s. per 100; Forcing, 15s. to 25s. per 100.
ASPARAGUS, 2s. 6d. per 100; Forcing, 12s. 6d. per 100.
SEAKALE, strong Forcing, 16s. per 100.
EVERGREENS, CONIFERS ORNAMENTAL TREES (91 Acres).
FLOWERING SHRUBS, 8s. per dozen.
STOVE and GREENHOUSE PLANTS, in great variety, cheap.
HERBACEOUS and ALPINE PLANTS. One of the largest and best collections in the world. Good selections from 25s. per 100.
FOREST TREES, HEDGE PLANTS, UNDERWOOD, &c.

SEEDS
Of Finest Quality.

Descriptive LISTS of above and BULBS free.

RICHARD SMITH & CO.,
WORCESTER.

SPRING FLOWERS—SPRING FLOWERS.

Choicest varieties of POLYANTHUSES, PRIMROSES, COWSLIPS, AURICULAS, HEPATICAS, &c.

APPLY TO

MR. COOPER,
CALCOT GARDENS, near READING.

Potatos for Seed — secure Hoopers Catalogue of their highly selected and Notorious Collection at cheap prices — Hooper & Co Covent Garden

I often see enquiries about Maize Growing.
There is only one sort which never fails to ripen. This is COBBETT'S CORN. I can supply Cobs of last year's crop (which was at the rate of six quarters per acre), at 2s. per Cob. With full particulars for growing and cooking the same as "Green Corn," so agreeable to all who have been in America or Tropical Climates.
F. FANE, Moyle's Court, Ringwood.

NEW BEGONIA REX.

Belle Viennoise.	Souvenir d'un Ami.
M. Ferraris.	Lucy Closon.
M. Kort.	Mme. Fanny Massange.

3s. 6d. each; the set, 15s.
The new Wholesale Price LIST is sent on application.
ED. PYNAERT, Ghent, Belgium.

EXTRAORDINARY CHEAP OFFER, to clear ground:—
20,000 LARCH, 1½ to 2½ feet, 10s. per 1000.
50,000 ,, 18 to 18 inches, 6s. per 1000.
25,000 QUICK, 2-yr. 1-yr., 1s. per 100.
Write for Samples at once. Cash with Order.
F. ALLEN, Nurseryman, Seedsman and Florist, Grange Road Nursery, Ellesmere.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 10 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12s. to 24s. per dozen, strong plants. Descriptive LIST on application. Plants may *now* be knocked out of pots and sent by parcel post.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

Vines—Vines—Vines.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.
The Vineyard and Nurseries, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

PRIVET.—A Large Stock of exceedingly fine bushy oval-leaved Privet, 4 to 6 feet high. Price on application to
T. JACKSON AND SON, Nurseries, Kingston-on-Thames.

To the Trade.
W. W. JOHNSON AND SON, SEED GROWERS and MERCHANTS, Boston, have choice Stocks of the annexed home grown FARM SEEDS to offer:—

Swedes.	Carrots.
White-fleshed Turnips.	Cabbages.
Yellow-fleshed Turnips.	Kohl Rabi.
Mangels.	&c., &c.

Samples and lowest prices, stating requirements, on application.
Seed Warehouses, Bridge Street, Boston, Lincolnshire.

Cheap Bedding Plants.
WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off:—
TRICOLORS: Mrs. Pollock, 2s per doz., 15s. per 100; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s. 6d. doz., 18s 10; 12 sorts, 6s
BRONZE: McMahon, Black Douglas, The Czar, 2s. doz., 12s. 100.
SILVERS: May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.
GOLD-LEAF: Crystal Palace Gem, 1s. 6d. doz., 10s. 100; Happy Thought, 2s. doz., 15s 100.
SILVER TRICOLORS in variety: best sorts, 2s. doz., 12s 100.
ZONALS: Vesuvius, Jean Sisley, 1s. 6d. doz., 8s. 100; Madame Vaucher, Virgo Marie (white), 1s. 6d. doz., 10s. 100; Master Christine, Mrs. Levers, Jenny Dodds (pink), 1s. 6d doz., 10s 100; Waltham Seedling, 1s. 6d. doz., 8s. 100; Henry Jacoby, Bonfire (crimsons), 1s. 6d doz., 12s. 100; Mrs G. Smith (fine salmon), 1s. 6d. doz., 10s. 100; White Vesuvius, 1s 6d doz., 10s. 100.
BEST WHITE ZONAL: Queen of the Belgians, 4s. doz., 25s. 100; Niphetos, 2s. doz., 15s. 100.
LOBELIAS: Blue Stone, pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. 100 20s. 1000.
CALCEOLARIAS: Golden Gem, 5s. 100, 40s. 1000; Camden Hero, 6s 100.
HELIOTROPE: Jaun des Amours, Miss Nightingale (light), 6s. 100, 50s. 1000.
AGERATUM: Imperial Dwarf (blue), the best bedder, 5s. 100, 40s. 1000.
TROPÆOLUM: Vesuvius, good dwarf crimson, 8s. 100; coccinea elegans, 10s. 100.
CENTAUREA: candidissima, healthy seedlings, 20s. 100.
FUCHSIAS: a good collection of single and double, 6s. 100.
PELARGONIUMS: Show and Fancy, good free sorts, 3s. doz., 20s. 100
DOUBLES: F. V. Raspail (fine, scarlet), M. Baltet (white), Madame Thibaut (pink), 1s. 6d. doz., 12s. 100.
IRESINE LINDENI, 5s. 100, 40s. 1000.
VERBENAS: see separate Advertisement.
Packing included. Terms, cash with order.
Cemetery Nursery, Gravesend.

Verbenas—Verbenas.
WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 6s per 100, 50s per 1000. Post-free 3d. per 100 extra. Terms cash, packing included.
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ASPARAGUS SEED (Covent Garden Variety). We offer Seed of this very fine variety for Present Sowing. Special price per pound or hundredweight, on application.
WATKINS AND SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, London, W.C.

Seed Potatos.
JOSIAH H. BATH, York Street, Borough Market, S.E., offers the following varieties:—

Old Ashleaf.	Fortyfold.
Rivers' Royal Ashleaf.	York Regent.
Myatt's Ashleaf.	Dunbar Regent.
Snowflake.	Paterson's Victoria.
Beauty of Hebron.	Redskin Flourball.
White Elephant.	Walker's Regent.
Early Rose.	Early Don.
Schoolmaster.	Reading Hero.
Dalmahoy.	Scotch Champion.

And other leading varieties. Prices on application.

CARTERS' PERMANENT AND BEAUTIFUL LAWNS

SOW DURING the MONTH

CARTERS' INVICTA LAWN SEEDS.

	Carriage Free.	Per Pound. s. d.	Bushel. s. d.
CARTERS' INVICTA LAWN SEEDS		1 3	.. 25 0
Carters' Grass Seeds ..	for Town Lawns	1 3	.. 25 0
Carters' Grass Seeds ..	for Cricket Grounds	1 3	.. 20 0
Carters' Grass Seeds ..	for Tennis Grounds	1 0	.. 20 0
Carters' Grass Seeds ..	to repair Old Lawns	1 3	.. 25 0
Carters' Grass Seeds ..	for under Trees	1 3	.. 25 0
Carters' Grass Seeds ..	for Pleasure Grounds	1 3	.. 25 0

Sow 4 Bushels of Seed per Acre to form a New Lawn.
THESE SEEDS ARE ALSO SUPPLIED IN PACKETS,
Price 1s., 2s. 6d., and 2s. 6d.
The 1s. 6d. packet will sow one rod of ground.

Notice. Carters' Invicta Lawn Seeds have beaten all Competitors in every Competition.

CARTERS' GRASS MANURE.

A valuable preparation for producing a permanent luxuriant growth. In Boxes, price 1s, 1s 6d., and 2s. 6d. In Bags, of 14 lb, 4s. In Casks of ½ cwt., 10s. 6d.
FULL INSTRUCTIONS WITH EVERY PARCEL.
For further particulars see Carters' Pamphlet,
How to Form a Lawn and Tennis Ground,
Gratis and Post-free on application.

SEEDSMEN by ROYAL WARRANTS to H.M. the QUEEN, and H.R.H. the PRINCE of WALES,
237 & 238, HIGH HOLBORN, LONDON.

Now Offered for the First Time.

NEW EARLY POTATO,

DAY'S "EARLY SUNRISE."

An entirely New Variety, as early as the "Ashleaf," and a much heavier cropper. It is a *semi-kidney*, somewhat flat, and much resembles *in shape* the old "Fluke" or "Lapstone."
Very early, of first-class quality, and a great cropper. All Gardeners, Market Gardeners, and Potato Growers should obtain a stock of this Potato. No one can have more than four sacks.
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On view morning of Sale, and Catalogues had.



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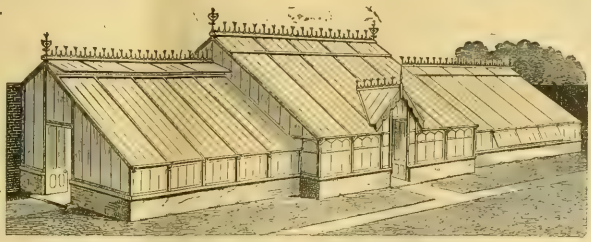
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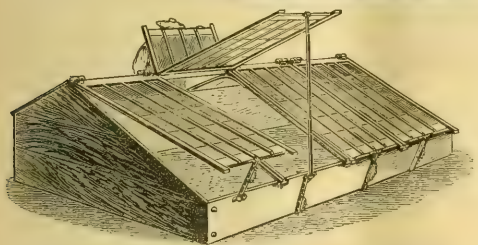
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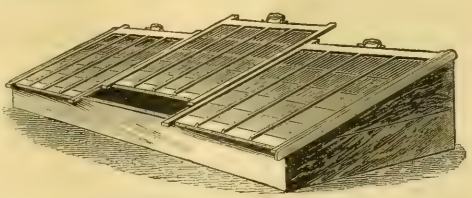


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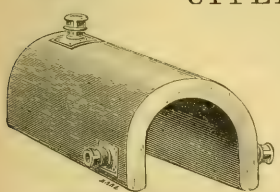
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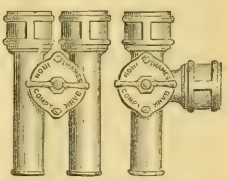
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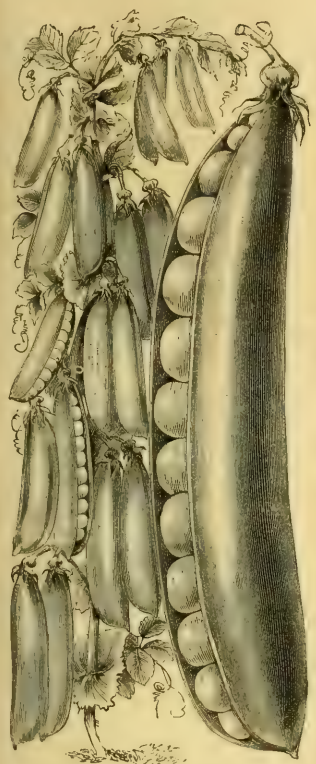
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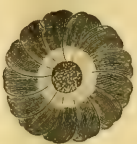
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THE

Gardeners' Chronicle.

SATURDAY, APRIL 3, 1886.

A TRIP TO THE POLELA.

FROM time to time brief notices of the flora of Natal have appeared in this journal, but they have mostly referred to well-known and frequented places. An offer was made to the writer, and gladly accepted, to ride out to the Polela district, a part of Natal which has within the last three years only been thrown open by the Government to English settlers. Hitherto it has been occupied by Kafir squatters only.

One fine morning early in December last, at sunrise (5 A.M.), the writer with three friends left the city on horseback for a fifty-mile ride, choosing the north-west road. Once leaving the townlands, planted trees are no more seen. The deserted Kafir mealie (Maize) fields are overgrown with countless Zinnias [? introduced: Zinnias are Mexican] and a white Convolvulus. Passing Edendale, we toiled up a steep hill, and, arriving at the top, halted for a few minutes to look round. Below lay the town, cheerful in the morning sunshine; far beyond rose up the long line of Table Mountain, unchangeable as ever. Beyond, again, one could just see the Noodsberg. The other side of these hills, of course out of our ken, is where Crinum Moorei and Hæmanthus Katherinæ grow wild—both very scarce and local. On again at a good pace, for we are on the flat hill-top—all hills have flat tops in Natal—and now I see several plants only found on high ground. A fine ivory-white flowered Gomphocarpus, a rich purple Convolvulus, a pretty little golden-flowered Sedge, and a rather handsome terrestrial Orchid, perhaps a Eulophia, with petals green, lip dark purple. My friends unluckily had no sympathy with plant life, and could see naught in "weeds" worth notice. We passed very many Kafir huts, all having the same lone look, for the natives always build on open hillsides or tops, and never plant a tree. A few farms were seen in the distance, marked by towering masses or lines of Blue Gums. By mid-day we reached Elands River; but the elands have long since vanished. No bridge here; those useful articles are left behind. Dense masses of dark green forests begin to clothe the hillsides relieved by whitish clumps of Calodendron capense (the Cape Chestnut). It is a noble tree, 50 to 70 feet high, and now, in full bloom, looks very gay laden with white and purple flecked flowers. On the banks of the river our only Poppy (P. aculeatum) was plentiful, plants about 4 feet high, flowers orange, leaves very prickly. Here and there amongst the grass one saw a few huge white Mushrooms 1½ to 2 feet across. Fried it is delicious, as I can testify; but oddly the Kafirs, whilst eating it, refuse to touch the common English Mushroom, which comes up plentifully in the spring months. Here we saw a couple of buck (Antelope sp.).

Still keeping on at a good rate, as the sun

declined the river Umcomas hove in view, deep sunk in his valley, and flowing swiftly from the Drakensberg Mountains. Slowly we stole down the valley side, admiring the dense forest close up to both sides of the road. A most beautiful shrub, 10 to 15 feet high, one mass of rosy flowers, proved to be one of the Thymeleæ, most likely Dais cotinifolia. It has been called by those in botanic outer darkness a Rogeria. The completion of Harvey and Sanders' *Flora Capensis* is very much to be desired. Near a small stream a singular white-flowerd, strongly-scented shrub was seen in bloom, new to me, and not far off were the pretty Pentstemon-like flowers of Phygelius capensis, red lined with yellow.

An hour before sunset we reached the primitive hotel on the banks of the river. One must rough it in out-of-the-way places, yet I must say we were very comfortable. The house was built of slabs of Yellow-wood (Podocarpus latifolius), some rooms boasted the luxury of a boarded floor, others had a floor of earth and cow-dung. Rising with the sun next morning we crossed the Umcomas at the drift, where it is about 40 yards broad and 5 feet deep. Ascending the steep hill on the opposite side a few Aloes were seen, and now, looking upward, we saw our haven nigh at hand, to which our weary course we meant to bend. Straight before us was the vast Mohaha range, according to survey 6830 feet high, and which is covered with snow during the winter months. Arriving at the farmhouse, we were very glad to off-saddle, and give ourselves a rest. The next thing was to look round the farm in company with its owner, who had ridden out with me from town. It consists of 2000 acres of undulating, splendidly grassed and watered land, comprising within its bounds a huge hill, with some fine forest on its sides. It is one of several farms sold by the Government some three years back at prices from 10*s.* to 15*s.* per acre. Terms, all transfer fees, and 10 per cent., I believe, on the purchase-money paid down, the remainder in equal instalments spread over ten years. The owner must live on the place, put up a habitable house, and cultivate a certain amount of ground, within, I believe, two years. The locality lies very high—about 5000 feet above the sea. The winter is severe, water freezes inside a stone-wall house, and snow falls some 6—10 inches deep. It is rather too cold for mealies, but Oats, Wheat and Potatos thrive well enough. Stock of all kind thrive very well, but some shelter in the way of covered-in sheds must be given them in the winter. I heard no complaints, though at first it must be a struggle. Several other farmers have settled near by—some are doing well, others have fanciful notions. What shall be said of a settler whose first care is to make a lawn tennis ground?

And now let us glance at the plants of the district. Growing on stream banks was a fine rosy-flowered Amaryllid with the habit of Agapanthus, root a bulb, and near by a Tritoma, with straw-yellow flowers. In wet boggy places a fine Gladiolus was seen in flower like G. papilio, *Botanical Magazine*, t. 5565; flower palest purple, lip dark purple and yellow. Amongst grass in dry ground Satyrium candidum, rather small, showed flower in company with another very rare and curious little Orchid, Disperis cardiophora, figured in Harvey's *Thesaurus*, t. 106. Here and there Gladiolus longicollis showed up above the long grass; flowers dull yellow, but very sweetly scented. In rocky places a showy succulent-leaved Echeveria (?) was seen with tall spikes of yellow flowers, together with a Eucomis—green, purple-edged flowers and purple-blotched stems. The day before leaving was given to ascending the hill on the farm before mentioned. Its height cannot be much less than 1000 feet; its Kafir name is Kot-chake, meaning "Hunt for yourself," and is thus explained. In the old days, some thirty or forty years back, game was so plentiful here that each Kafir could find enough for himself. But we only put up a covey of large red-winged partridges. Half-way up the hill we entered a forest of splendid large trees, Yellow-wood (Podocarpus latifolius), with trunks 20 to 25 feet round at 5 feet from the ground, and clear stems 100 to 120 feet high. Another fine tree but hardly so large as the foregoing was Sneeze-wood, Pteroxylon utile, a most valuable wood, very hard, almost indestructible. I was shown three other trees, Iron-wood, Assegai-wood, and wild Almond, but regret I cannot give their proper names.

On the ultimate branches of the Yellow-wood a tiny pseudobulbous Orchid grew thickly; the ground beneath was carpeted with mosses and Adiantum æthiopicum. Higher up, the timber trees were replaced by scattered bushes of Greyia Sutherlandi and two species of Protea with large dull red flowers. On climbing up one of the latter to get a specimen for my herbarium many large beetles flew out, disturbed in their meal on the blossoms. Peeping out amongst crevices of the rocks was Anomatheca cruenta, blood-crimson, beside the very fine Watsonia densiflora, rosy-purple flowers: the white variety I did not meet with—it is very rare and handsome. In the forest below an orange-red flowered Begonia grows very strong. It is called wild Rhubarb; the 3 feet long stems, smooth, red, half an inch through, are minced and stewed, and very good: it is eaten with bread. I cannot make it agree with any Begonia in Harvey's *Flora*, vol. ii., p. 481.

Another sharp pull and we are on the flat hill-top; no vegetation here but grass and a few crimson Helichrysum. Seated on this eminence we looked round on the boundless prospect—hill and valley, forest and stream, all is ours. Natal looks large when seen from such an elevation, yet really it is very small—some 13,000,000 acres—compared with the mass called South Africa. Away beyond all the Drakensberg shuts in the view on the north-west. I was told the Basuto land border lay only 25 miles off. The mountain-top we are on is always moist, and gives birth to a stream clear as the water of life, which rushes down the hill-side, till, reaching the forest, it abruptly sinks amongst huge boulders, murmuring as it goes down, loth to lose sight of the sun.

How Kingsley would have appreciated all this!—but that fine specimen of modern Englishmen never set foot in Natal, else might we have had from the author of *At Last* a true and lively picture of what I have feebly tried to set before your readers.

And now, after two days' scrambling about, we reluctantly turn our horses' heads homewards. One last look at the Drakensberg, which stands guarding Natal for ever and for aye, and we are off. The horses feel they are going home, and scamper down to the Umcomas, but the river through late thunderstorms on the berg is impassable at the drift, and we are ferried over in the punt.

On the way home we stopped at a Kafir kraal, and all swarmed out to see the strange white men—babies like Cupids, youth of both sexes models for a sculptor, old men and women shrivelled and ugly. With true native hospitality they offered us their *joalla*—Kafir beer, made, I believe, from Sorghum grain. It is rather like sour gruel, but becomes with habit a most seductive beverage, as many broken heads can witness. Near the huts a Myosotis grew in abundance, and one solitary "Syringa," Melia Azedarachta, doubtless accidentally introduced. Towards evening heavy mists swept over the hill tops, but we kept on at a good pace till the welcome sight of a clump of tall Blue Gums looming through the fog told us we had reached a wayside inn—our resting-place. It was a quaint little house built of slabs of yellow wood, but very warm and comfortable. The rain and wind were heavy that night, but after our long ride we slept sound. Next morning I started alone across country in search of a much talked of plant. On such a morning how pure and fresh is the air on the grassy hills of Natal. The morning mists still float and sweep along the higher ground, alternately hiding and disclosing the cattle feeding on a thousand hills. My path led along a hill side, where Anemone Fanniini (see p. 433) grew very strongly, flower-stems 5 feet high, leaves 2 feet in diameter, and flowers 2 inches across. Twenty years ago Harvey noted it as a noble plant, yet I am not aware of its being in cultivation at home. At last some distance off, amongst grass, near running water, I espied a large handsome flower-spike some 2 feet high, and coming up found the object of my search in, I believe, Disa macrantha. Flowers nearly 3 inches across, white, heavily blotched with carmine, the upper sepal spurred, the five remaining perianth segments sub-similar, save the lip, which is bluntly three-lobed; stigma distinctly three-lobed; column mauve-tinted, inclined backwards; odour very strong, and somewhat unpleasant. I am informed on good authority that the above is D. macrantha; but to make sure, if some friend will kindly send me a coloured sketch of a flower of D. macrantha of Thunberg and one of D. megaceras of Hooker, I may be able to clear up a misunderstanding. Our plant, at all events, is a very rare, handsome, and distinct Disa. Crossing a high ridge of rocks, I noticed Sandersonia aurantiaca, in fine fomr; a pink Hæmanthus like H. incarnatus (*Bot. Mag.*, t. 5532), and a very handsome flame-coloured Watsonia.

A new scene now opened out before me—a wide and deep valley, densely clothed with forest. It is the valley of the Iloro River, like most Natal rivers, bearing its original native name. At the spring-head I passed a charming spot—great boulders piled up in wildest confusion, with a few large trees over-shadowing them. On the mossy boulders an orange-flowered Begonia and blue Streptocarpus were finely in flower, with Aspleniums and other Ferns. From the tree trunks above depended masses of pendent Lycopodium, like sprays of Araucaria excelsa; and scrambling about was the delicious green of Asparagus plumosus. It was a very lovely little spot—a fernery and rockery of Nature's own design and execution, for her own special gratification. Down the river side to a friend's house, where I was treated with true colonial hospitality. The lady of the house, not content with growing great masses of Foxgloves, Roses, Fuchsias, Pelargoniums, though they were finely in flower, had a quantity of native plants under cultivation, gathered from the country round. Great clumps of Montbretia Pottsii—by the way the plate in *Bot. Mag.*, t. 6722, gives a poor idea of this fine thing—a fine large leaved, brown spotted Drimia equal to a Maranta for effect, Brunsvigia Josephineæ, and Crinums, Osbeckias, and Gladiolus. It is astonishing how our wild plants improve with a little cultivation.

The above garden is 3600 feet elevation above the sea. Next morning going home I passed a fine Asclepiad like Hoya carnosa, but with petals pink, corona green; in wet places a tall handsome Streptocarpus, and a fine mass of a Plocandra, perhaps P. purpurascens, rich in rosy bloom. A dwarf crimson Erythrina, E. Humeana, grew near the handsome white Pavetta Bowkeri. On level ground Bulbine McKenii was common, and rarer the superb Buphane toxicaria, now out of flower. Not far from town fine plants of Hypoxis latifolia, were noted, a little dwarf yellow Aloe, a pink Dianthus, a showy Asclepiad with greenish flowers, and lastly the rare Diosma agrophylla, recently figured in Hooker's *Icones Plantarum*. Nearing town long lines of Blue Gums, Acacia dealbata and A. moliissima, Grevillea robusta, and Pinus insignis were passed. Just before dark I descended into the hot and busy streets. *R. W. Adlam, Pietermaritzburg, Natal.*

New Garden Plants.

DENDROBIUM MELANOPHTHALMUM,

n. hyb. nat.

The more our eyes get accustomed to see the professed hybrids raised in England and France, chiefly by Messrs. J. Veitch & Sons, the more we begin to search for the *res* of such wild grown Orchids, which combine old apparently well-established species in thinking of natural hybrids.

Here is a Dendrobe apparently originated by a cross between Dendrobium Wardianum and crassinode. The stems are nearly those of Dendrobium Wardianum, though one must admit they are a little more nodate. The flowers are those of Dendrobium crassinode Barberianum, but there are two dark eye-spots. That gives you an idea of the plant.

The history is difficult to be given, as far as it concerns me. I hope not to forget one of my correspondents. I have a remembrance of Mr. Borwick (of Walthamstow) having spoken of a hybrid, even having sent flowers. I was then as incredulous as St. Thomas himself. Later (April, 1879), Mr. Harry Veitch wrote about a Dendrobium Wardianum that had had one year a flowering bulb like crassinode, the next one more like Wardianum. The flower was, however, that of D. Wardianum, and if the plant belongs here, it was the inverse hybrid. Quite lately my excellent correspondent, Mr. Dorman, sent flowers with eye-spots through Mr. F. Sander. Finally, Mr. Harry Veitch sent this month (March) good materials. This is all that is perfect in my memory. If I have forgotten somebody it is unwillingly. *H. G. Rchb. f.*

AMARYLLIS AND ORCHIDS AT MESSRS. J. VEITCH AND SON'S.

It is beyond the power of any one who has not seen them to imagine such a show of beautiful and variously tinted flowers as that now to be seen in the Amaryllis-house at the Royal Exotic Nursery. Out of over 2500 flowering bulbs with which the house is filled, nearly the whole have spikes in different stages, and some of the bulbs bear two, and even three, of them laden with their massive flowers. At the present time about 2000 are in flower or near flowering, presenting a display beyond compare for the fine form, substance, and colours of the strain, which is peculiar to this establishment. Its origin may be traced to Messrs. Veitch's South American introductions, which gave us A. Leopoldi and others in that way, and marked a new era for the Amaryllis, which, by careful intercrossing at Chelsea, has been brought to such perfection.

The following are among the finest now in flower :—

A. F. Barron.—All pure, rich dark scarlet.

Elaine.—A grand white, lightly feathered crimson.

Alba viridis.—Very fine in form and substance, white, slightly tipped with scarlet.

The Queen.—One of the finest of light varieties, white, veined in places with crimson.

Clarinda.—White, freckled with scarlet.

Etna.—Orange-scarlet, very fine shape.

Lascelles.—Pure scarlet, with white central band.

Garonne.—Cherry-red, white ground and star.

Lord of the Isles.—Clear vermilion, without marking on central eye.

John Heal.—The finest of the Leopoldi section, very fine in form, dark scarlet, heavily tipped with pure white.

Brennus.—Purplish-crimson, slightly mottled with white ; very fine in form and substance.

Rubicon.—Magenta-crimson, white star.

Nemesis.—Very fine white, flaked with red flowers, 8 inches across.

Besides the above, Sir Redvers Buller, George Taylor, Glamis, Empress of India, and the others recently certificate maintain their places in the front rank, and those who do not go to see them and the rest of the goodly company assembled, will miss a rare floral treat.

In the cool Orchid show-house an equally praiseworthy display will be found, among which, as usual, the scores of handsome Odontoglossum, Alexandræ form a striking feature, and the Pescatoreis are scarcely less lovely. With them some rare things are in flower, such as O. præniten:, O. crispum roseum, O. hystrix, and a very showy Odontoglossum apparently intermediate between O. triumphans and O. Halli, with the showy segments of the former, and the clear white labellum of some of the forms of the latter ; a very effective plant. Also in bloom are Odontoglossum ramosissimum with three spikes, O. pulchellum majus, O. Sanderianum, O. Wilckeanum, O. Œrstedii, O. roseum, O. Rœzlii, O. nebulosum, O. Halli, Oncidium Marshallianum, O. sarcodes, O. maculatum, O. Phalænopsis, O. cucullatum macrochilum, many O. concolor (which thrive well suspended in the cold house), O. macranthum, O. ampliatum majus, Chysis bractescens, C. Sedeni, Lycaste gigantea, Calanthe Dominianum, many Cattleya citrina, Lælia flava, Cymbidium eburneum with many spikes, C. devonianum, Miltonia Warscewiczii, Ionopsis utricularioides, Angræcum sesquipedale, &c. The Phalænopsis and Cattleya-houses have each its share of bloom, and the spring flowering Dendrobes have a profusion of flowers on D. Wardianum, D. crassinode, D. crystallinum, D. Farmeri, D. tortile, D. Heyneanum, D. macrophyllum. D. Ainsworthii, D. splendidissimum, D. luteolum, and D. draconis. The Cypripedium-house has in flower C. Sallieri×, C. stenophyllum×, C. Warneri, C. Boxalli, C. villosum, C. nitens, C. caudatum, C. Argus, and many others.

But among the mass of showy beauties there are some in flower which demand special note as being of extra interest to the plantsman, and foremost stands Cypripedium Mastersi, with its softly tinted wax-like flowers unlike those of any other known variety. Its dorsal sepals are shell-like, soft yellow, merging into green towards the middle ; pouch and petals dull rose-pink, the petals having a few black dots on them : the pouch is highly polished, and contrasts well with the soft downy upper sepal. Also of special interest is the first hybrid Phalænopsis to flower in this country (P. amabilis × P. rosea), which turns out to be just what was expected, viz., identical with the imported P. intermedia Portei, which was, no doubt, produced in Nature's garden by the same means. D. micans (D. Wardianum × D. lituiflorum) is another gem with white flowers delicately marked with pink of a pleasing shade unknown in any other Dendrobe ; Lælia flammea ×, too, with its bold flowers, orange tinged with apricot, is lovely ; and the curious and delightfully fragrant Epidendrum varicosum, which bears five upright spikes of brownish flowers with white labellum, is a worthy curiosity, its profuse flowering (one spike bears thirty blooms) and delightful odour amply making up for its want of showiness.

The show of Hyacinths and other spring flowers is also very fine at the Royal Exotic Nursery this year.

Orchid Notes and Gleanings.

MORMODES LUXATUM EBURNEUM.

The typical species has flowers of a pale lemon colour, powerfully aromatic, as described by Dr. Lindley, from a plant flowered by Mr. Baker, of Birmingham, from plants collected by Mr. Ross in the neighbourhood of Valladolid in Mexico. The variety eburneum was imported by Messrs. Backhouse, of York, some six or eight years ago, but its culture seems to have been but imperfectly understood until Messrs. F. Sander & Co. imported it in quantity, and have now hit upon the right way to grow and flower them. Like most Mexican Orchids, this fine species requires little or no shade in summer, and a moderate degree of heat when making its growth ; when the growths are completed and well matured, water is withheld for a period of six months. It is also singular if water is applied to the centre of a large mass, and over the bulbs or leaves, the whole plant will die off suddenly. The only safe plan is to water the compost between the edge of the pot or pan and the plant, but nowhere else. *J. Douglas.*

ANGRÆCUM ELATUM

is figured in the last number of the *Orchidophile*, not (unfortunately) from a cultivated specimen, but with a view to stimulate collectors to introduce so remarkable a species. The white flowers are an inch or more in diameter, in racemes, the lateral petals stalked and deeply lobed, so that they resemble the lip, which is still more deeply cut. Now that Madagascar is yielding up its treasures so freely, we may hope soon to see this plant, which, moreover, is a native of our own colony of Mauritius. Lindley includes the plant in his genus Cryptopus.

DENDROBIUM WILLIAMSONI.

At first sight this species bears a striking resemblance to D. draconis, figured in the *Botanical Magazine*, t. 5459, and a closer examination proves them to be closely related but separable species. They agree in the erect, fusiform stems, covered with a soft brown pubescence, bearing a few flowered terminal inflorescence, and clothed with lanceolate similarly pubescent leaves. The flowers of D. draconis, however, otherwise known as D. eburneum, are pure white, and shining like polished ivory, bearing on the throat of the tube formed by the labellum a scarlet blotch. On the contrary the flowers of D. Williamsoni are creamy-white, and lack the lustre so characteristic of its congener. The same or a similar scarlet blotch adorns the labellum, while a copious beard of coarse hairs or fringes partaking more or less of the same colour as the blotch, forms the leading and most valid distinction between the two species. There is nevertheless a faint indication of the same thing in D. draconis in the shape of small asperities or rugulæ on the labellum. The former was introduced from Assam in 1869, while the latter was introduced in 1862 from Moulmein. D. draconis has flowered several times within the last few years at Kew, while the species under notice is flowering in the East Indian-house at the present time. *J. F.*

LÆLIA FLAMMEA.

This distinct and very handsome hybrid is in flower in Messrs. Veitch's nursery at Chelsea, and when well developed it justifies the plate of it published recently in the *Orchid Album*, from a specimen flowered by Mr. Lee, of Leatherhead. The sepals and petals are rich orange-yellow, the lip orange streaked or flamed with red veins. It seems to thrive well with the Cattleyas, potted and treated exactly as they are. Its parentage is Lælia Pilcherix and L. cinnabarina, L. Pilcheri itself being a Chelsea hybrid between Cattleya crispa and Lælia Perrini. *J. D.*

AËRIDES CYLINDRICUM

is in flower in Messrs. Veitch's nursery—a variety of it with pure white flowers. It is very pretty and seldom seen in flower. Mr. B. S. Williams, in the recent edition of the *Orchid Growers' Manual*, states that A. cyclindricum is incorrect, and that A. vandarum is the correct name, on the authority of Dr. Reichenbach.

HORTICULTURAL EDUCATION.

We give the following remarks on the subject of horticultural education, by Mr. J. W. Odell, as those of a practical gardener, who is fully alive to the necessity of scientific horticulture forming a subject in the curriculum of the Science and Art Department at South Kensington :—

"The suggestion on p. 336, to include horticulture as one of the subjects for examination by the Science and Art Department, is one that should receive the consideration and support of all interested in the future of horticulture. I for one am confident that, with the support of the horticultural Press, and the active co-operation of all gardeners, the matter could be brought to a successful issue. There cannot be two opinions about the usefulness of the Science Department as a teaching agency ; and as a Department teacher and a gardener I believe that horticulture, if adopted as a subject for examination, would rapidly become one of the most popular subjects in connection with South Kensington. One of the recent subjects added to the list of the Department was the 'Principles of Agriculture ;' one year after that subject was adopted 2193 candidates presented themselves for the annual examination. This fact, I think, shows how quickly students take up a really useful subject. With the 'Principles of Horticulture' as a subject I believe the numbers would be far greater, simply because the subject would be far more interesting than that of agriculture, especially the proposed second branch, viz., Fruit and Vegetable Culture. Allow me to make a suggestion with reference to the difficulty of teaching. When the Department first started the subject of agriculture they selected a number of teachers holding certificates in such subjects as botany, geology, and chemistry, to attend a special course of lectures at the Normal School of Science, South Kensington, under Professor Tanner, senior examiner in agriculture. The lectures were especially adapted to prepare those attending to become teachers of agriculture. At the termination of the course an examination was held and certificates granted qualifying those obtaining them to teach under the Department. The course of lectures lasted about three weeks, and the teachers attending were allowed their travelling expenses and 30s. per week whilst at South Kensington.

"The same plan could be adopted in the event of the Department adding horticulture to their list of subjects.

"A number of teachers and gardeners could be selected to attend a short course of about six or eight days ; this course of lectures could take place about August, so as to enable gardeners to attend in lieu of their usual holiday. At the end of the course an examination would follow and certificates granted, which would enable those attending to commence a class under the direction of the Department the following October. It would be impossible to overestimate the advantages of such a proceeding, and it would get over the first difficulty of 'who is to teach.' Allow me to point out to the young gardeners who may be interested in this subject—and I am confident there are many—that as an introduction to the study of the principles of horticulture they should take up the elementary stage of agriculture ; this includes a knowledge of soils, manures, and their influence upon crops, and more in particular the important subject of the dormant constituents of the soil, and the conditions favourable to their conversion into active soluble plant food. A knowledge of these matters must give them a better chance to succeed as gardeners than those who are indifferent to such important subjects."

Trees and Shrubs.

PERNETTYA MUCRONATA.

The variety of purposes to which this neat little shrub can be put should secure for it a wider cultivation in gardens than it enjoys. It delights in a cool peaty soil, but, as in the case of other Ericaceous subjects in this country, such a soil is not indispensable, and the plant may grace the front row of any shrubbery provided the soil is tolerably moist and friable. The small, deep, shining, evergreen foliage looks fresh at all seasons, and the pendent Convallaria-like flowers are followed by red berries in the autumn that hang on the bushes all winter. These berries vary from that of medium to large sized Peas, and, comparatively recently, raisers have initiated or induced such a graduated series of colours that even the most fastidious might be satisfied in this respect. The varieties are indicated by such names as candida, carnea, rubra, atrosanguinea, and several others, while there is a slight variation in the shape of the leaves and the habit of the bush that lends additional interest to a thoroughly representative collection. These varieties are sometimes grown together and pegged down, but under such treatment lose much of their natural and individual beauty, besides partially concealing the fruit. The type is figured in the *Botanical Magazine*, t. 3093. A group of named varieties has recently been lifted from the open ground, potted up, and stood in the greenhouse at Kew, where they amply demonstrate their adaptability for such purposes, and show off their individual attractiveness to great advantage. *J. F.*

GAULTHERIA SHALLON, RABBIT PROOF.

I often wonder this pretty American shrub is not more generally planted. It is growing in the rock garden here in large clumps, and in other parts of the pleasure grounds; and it is very effective amongst a collection of other shrubs. I planted two large clumps of this in an extensive shrubbury from which rabbits and other game are not excluded: they were planted in the natural soil, a sandy loam with a mixture of leaf-soil added, now nearly ten years since; the plants have grown together, and form two fine clumps, and the rabbits do not either burrow near them, nor have they attempted to eat them, even during the recent severe weather, which has been a good test. It is quite hardy, is very effective either in bloom or berry, and I can thoroughly recommend this shrub as being quite game-proof. I have tried G. procumbers also for this purpose, but I found it too slow growing, and, therefore, had it removed to the rock garden. *Edward Ward, Hewell Gardens, Bromsgrove.*

ABIES FORTUNEI.

In our number for March 15, 1884, we were enabled, thanks to the courtesy of Messrs. Rovelli of Pallanza, Italy, to give an account and illustration of this interesting tree, the history of which was first cleared up by the late Andrew Murray. To his admirers and lovers of plants and flowers, bulbous plants have always found many ardent protectors.

No doubt the great and constant advance which civilisation has made in nearly all quarters of the world has greatly aided to extend the cultivation of flower roots and increase the demand, even in countries where fifty years ago there was not a single bulb, and where Hyacinths and Tulips were nearly unknown.

An advantage which bulbs have over plants in general is, that bulbs have nearly all a yearly period of rest, when they can, without much fear of injury, be packed and be exported to the most distant places. An advantage worth mentioning is that after they have done blooming and have grown to their full maturity, they require only to be placed in a dry locality, and for a considerable time require no labour or attention. A further important advantage of such bulbs as Hyacinths, Tulips, &c., is that by artificial treatment they can be brought to grow and bring out their bloom several months earlier than they would do when kept out-of-doors and left to their natural development, which for winter-blooming plants makes them unequalled by any other family among living plants.

I must mention first of all the so-much-beloved Hyacinth, as being not only one of the most esteemed among bulbs, but also one of the most beautiful, although at the same time the most difficult in cultivation and the most expensive to bring to perfection.



Fig. 82.—Abies fortunei: lateral branch with erect cones: reduced one-half.

The Mahogany, or Cherry Birch (Betula lenta).

This is a handsome and valuable, but, unfortunately, much neglected tree, in this country at least. It is a native of Canada, from which it was introduced to us nearly a century and a quarter since. The Mahogany Birch, or Mountain Mahogany, has been found well adapted for cultivation in Britain, where it grows freely, attains to a large size, and produces timber of excellent quality; indeed, in this latter respect we are now fully convinced that it has few rivals amongst the general run of our forest trees. For all this, few indeed are the specimens one will meet with in any part of the kingdom, which is no doubt attributable to a want of knowledge regarding its utility for general planting in this country. Grown under favourable circumstances it attains a height of 50 feet or 60 feet, is of Cherry-like appearance, but with darker bark, and cordate, finely serrated leaves. A peculiarity, noticeable at least in the trees here, is the mode of growth, which seems jointed, as in a Bamboo, this being attributable to the quick rate of growth and non-production of branches unless at the termination of each season's shoot. The catkins, which are not unlike those of the common Birch, are destitute of foot-stalks, and composed of simple undivided scales.

As regards quality of the timber produced in this country we have found it to be first-class, ample opportunities having been afforded us of judging it both in a rough and converted condition. It is reddish in colour, and beautifully marked with lighter patches, close grained, firm, and takes a high polish. For carving it is well suited, while the cabinet-maker is only too pleased to purchase a log of it when for disposal.

The soil best suited for its growth is a rather damp free loam, and where, when once thoroughly established, it will make an average annual growth of about 3 feet. *A. D. Webster.*

HYACINTHS.

The following paper, by M. J. Polman Mooy of Haarlem, was read before the Horticultural Club, March 23:—

The Honorary Secretary of our Horticultural Club has invited me to say a few words upon bulbs and bulb-growing in Holland, and while feeling willing and even anxious to oblige the members I will endeavour to meet their wishes, but the subject has been treated upon so much before that I must request their kind indulgence.

Bulbs or flower roots have for 250 years been grown and cultivated in the vicinity of Haarlem, and their cultivation has gradually increased in importance until it has reached its present position. Among the

account we were able to add several particulars as observed on the living specimens forwarded to us. We are now enabled, thanks again to Messrs. Rovelli, to give an illustration (fig. 83) of the beautiful tree in their nursery, within sight of the snows of the Simplon and of Monte Rosa, and of a cone-bearing branch (fig. 82), reduced by rather more than one-half. The erect position of the cones is well shown.

In the climate of London, unfortunately, the tree does not thrive, though Messrs. Veitch exhibited a small specimen lately at the Linnean Society. In the Channel Islands and other warm localities it would probably do well. Having so recently given a detailed account of the history and peculiarities of the tree, we need say nothing more now on the subject beyond stating that Messrs. Rovelli have a stock of the tree.

The name of this genus originated with the writers of antiquity.

The Hyacinth is a native of the Levant, and was first introduced into England in the year 1596; but it was known to Dioscorides, who wrote about the time of Vespasian. Gerard, in his *Herbal*, published at the close of the sixteenth century, enumerates four varieties—the single and double blue, the purple, and the violet. In that valuable book on gardening, *Paradisus in Sole, Paradisus Terrestris*, published by John Parkinson in 1629, eight different varieties are mentioned and described. He tells us, "Some are pure white, another is nearly white with a bluish shade, especially at the brims and bottoms of the flowers. Others, again, are of a very faint blush; some are of a deep purple, near violet, others of a purple tending to redness, and some of a paler purple. Some, again, are of a fair blue, others more watchet, and some of a very pale blue. After the flowers are past the stem bears a round black seed, great and shining, from which, after sowing and protecting, the new varieties can be obtained." During the 250 years that have passed since the above was published there has been a steady improvement in the size, form, and colour of the flowers of this plant.

From the eight varieties of 1629 more than 4000 varieties have been produced, of which, however, the greatest number have become extinct or out of cultivation. Many have been thrown out to make room for the latest improved sorts, from which about 200 varieties only are at present subject to extensive commerce.

The Hyacinth is a general favourite in the most

extensive application of the word, and the varieties in colours of different shades, from the purest white to the deepest shades of scarlet, purple, black, yellow, and violet, are fully equal to that of any other florists' flower. The Hyacinths are usually grown for forcing into flower in the dull cheerless months of winter and early spring, when their delicately coloured flowers and rich fragrance lend a charm not otherwise to be obtained. They are equally desirable for planting in beds, or in the garden border.

When looking over the cultivation of Hyacinths in Holland, a matter I have studied practically all my life, I must say that very great changes have taken place during that period in the taste and opinions of what a good Hyacinth should be; and, as a matter of course, this change has considerably influenced the varieties which have been propagated and grown. About sixty to seventy years ago there was a taste in general for the double-flowering varieties, and more particularly for the flowers with dark or in other colours striking eyes or centres; and I remember the time that a few beds sold by public auction realised very high prices indeed, while the varieties thus sold at present are not to be found. These double varieties were mostly very small bulb-producers, which fact contributed very much to their being neglected and to their loss of favour in public estimation; while the considerable increase of trade and (in consequence of this) the increased competition among nurserymen and seedsmen abroad, stimulated by the feeling of revival in all branches of trade at the fall of Napoleon, our French oppressor, brought on a gradual alteration in the Hyacinth fancy, as every tradesman—excited by the competition of his neighbours—was looking out for the largest-sized bulbs among Hyacinths, basing their trade recommendations upon the general but erroneous belief of the general public that naturally the largest bulbs must also produce the largest flower-spikes.

The small bulb-producing varieties, however beautiful they might be, could not at that time find buyers, and growers were then compelled to meet the alteration in public taste as quickly as possible; and as this alteration in taste came rather suddenly and much more quickly than the slow growth and propagation of the desired sorts could keep pace with prices at that time rose wonderfully high.

In this race after large bulbs among Hyacinths many sorts with very inferior flowers were brought out in quantity; but although these large bulbs did increase the general trade, and so far gratified the



Fig. 83.—Abies fortunei. (see p. 428.)

tradesmen abroad by a greater sale and more profit, still they did not satisfy the amateurs, and better large flowers were looked after. After large-sized bulbs with large spikes of flowers became the demand the single-flowering varieties have been found more capable of giving satisfaction than doubles; and when we compare the large spikes of the present day with the sorts we had sixty years ago we can only be well satisfied at the great progress we have been able to make. Although the double-blooming varieties have at present become so neglected, mostly because of their small-sized bulbs, there are some few double sorts which have pretty well maintained their position in public estimation, but their number is small compared with the large number of single ones in cultivation, and their very great beauty will certainly enable them to remain very long as great favourites with lovers of very fine large flower-spikes.

Among the esteemed double sorts I may mention Lord Wellington and Grootvorst, rose; Prince of Waterloo, La Tour d'Auvergne, and Florence Nightingale, white; Louis Philippe and Garrick, dark blue; Blocksberg and Rembrandt, light blue. Of the double yellow flowers Goethe is about the best, but most in this colour are of rather small spike. Of dark red among the double flowers there are only very few varieties, of which Louis Napoleon and Waterloo are about the best, but the latter sort is not so full double as should be wished for.

Among the single varieties we at present possess the greatest variety of colours, and among them we can now show superb large and handsome flowers, such as are Garibaldi, Pellissier, Scarlet Light, brilliant scarlets; Fiancée Royale, Gertrude, Koh-i-noor, Prima Donna, Von Schiller, reds; Carlyle, Charles Dickens, Dr. Livingstone, Gigantea, Macaulay, roses; La Grandesse, Alba superbissima, Crown Princess, Madame Vander Hoop, pure whites; Grandeur à Merveille, Baroness Van Tuyll, Mammoth, Seraphine, blush whites; General Havelock, Baron Von Humboldt, Masterpiece, Mimosa, William I., black blues; Baron Van Tuyll, Charles Dickens, King of the Blues, Bleu Mourant, dark blues; Blondin, Czar Peter, Grand Maître, Leonidas, Grand Lilas, Lord Raglan, light blues; L'Honneur d'Overveen, Sir Henry Havelock, Charles Dickens, Haydn, violets; Ida, King of the Yellows, La Citronière, Obelisk, Anna Carolina, pure yellow; Beauty of Waltham, Clio, Lamplighter, Lord Palmerston, Argus, flowers with striking eyes or centres.

Seedlings.

All the varieties have been obtained from seed selected out of thousands of seedlings and by artificial crossing and impregnations, which is an occupation of very long duration, as a little bulb grown from seed requires six or seven years before it is of sufficient size to produce a good flower; and when considering that this bulb, if found worthy to be grown on, requires twelve to fifteen or twenty years' careful artificial propagation before a moderate stock can be had, it will not create astonishment when many times new varieties have realised large sums of money. New varieties in almost every shade of colour have been saved from year to year, showing improvements in size of spike, in size of bulb, &c.; but it may be worth remarking that in all the different colours we have obtained improvement in size of bells with the exception of the bright scarlet-coloured sorts, which until now have always turned out with small narrow bells. If we could obtain a Hyacinth flower of a bright scarlet colour like Queen of the Hyacinths or Garibaldi, with bells as large as those of La Grandesse or Cloche Magnifique, what a splendid improvement it would be, and probably in the course of time we may obtain this treasure.

Between the time when double Hyacinths were most esteemed and the time when single varieties came into favour, a period of perhaps ten years, the always increasing demand was greater than the general stock could furnish, and consequently the prices of Hyacinths increased every year, and it was at that time a rather profitable culture. This induced a great number of farmers in the neighbourhood of Haarlem to try growing Hyacinths, which many have done with more or less success. At that time land was worth only half the price that it is at present, and the most easy-growing Hyacinths were then artificially propagated to such a large extent that the stock overgrew the demand, and during the last three years has forced the market price of such sorts down to such low figures, that during the last two years thousands of Hyacinths have been exported at prices below the actual cost of production, bringing great losses to the growers of this beautiful flower, while it has overstocked the markets in several foreign countries where these bulbs were most used, to which poor circumstances the general depression in trade has of course contributed.

Respecting the use made of Hyacinths, I may say that the greater portion of the bulbs are forced, and for this purpose the bulbs should be potted about the middle or end of September in 5-inch pots in rich light soil, and placed in a cold frame or under a wall, where they can be covered with wooden shutters, or some similar contrivance, to keep off heavy rains. In either case they should be covered a foot thick with newly fallen leaves, and being once well potted after watering they may be left for months to form their roots, when the most forward should be brought out (some repot into somewhat larger pots according to the apparent strength), and the bulbs should be placed in a gentle heat as near the glass and light as possible to prevent the flower-stems rising to an unnatural height. Some care is necessary in the application of this, or the flowers will be abortive. It should not exceed 50° for the first three weeks, but afterwards may be increased gradually to 60°; and if the pots are plunged into bottom-heat the same care should be observed, or the points of the roots will certainly be killed. One-third the depth of the pot is fully sufficient at first, and if the heat is brisk they should not be plunged more than a few inches at any time.

When the flower-stems have risen to nearly their full height, and the lower bells of the spike are beginning to expand, the plants should be removed to the lower temperature usually afforded by the greenhouse, and when the bells are fairly expanded the plants can be taken to the sitting-room, or wherever their presence is desired, taking care to protect them from sudden changes or cold draughts of air, and the water given to them should be moderately warm.

Instead of the usual practice of drying Hyacinths at once in the sun I would rather recommend the method adopted in this country—namely, to place them side by side on a sunny spot of ground, and cover them with about an inch of loose earth to thoroughly ripen the bulbs by the subdued heat imparted to the earth which surrounds them. Left in this position for a fortnight they will become dry and firm, and an hour or two's sunshine will finish them properly for storing.

Propagation.

The multiplication of Hyacinths may artificially be done in two different ways. 1. By the bulbs being cut crosswise and sprinkled with sand to absorb any superfluous moisture that may exude from the incisions. After a time they are planted in the earth in the usual way, when the mother bulb divides itself into small bulbs. 2. By scooping out the base of the large bulbs after they have been taken out in July. After this operation it requires great attention in watching carefully the process of properly drying the wounded bulbs, because by not properly attending to this the whole bulb may become mouldy and be lost completely. The bulbs thus treated are planted in October, at which time the small offsets at the base of the bulb are partly visible already, and are then planted in the usual way, only with a slight covering of earth in a warm situation as much exposed to the heat of the sun as possible, where the small bulbs gradually develope in the warm sandy soil, with the proper degree of moisture, aided by the climate, which about Haarlem appears to be so very suitable to the growth and development of this flower. 3. In the most natural way, by offsets from the parent bulb, which is, however, rather a slow process to meet the present large demand.

Tulips.

The Tulips used for forcing require nearly similar treatment to the Hyacinths. When placed in heat they should be located as near to the glass as possible, in order to prevent the flowers drawing up too high, and the flower stems should occasionally be assisted when by their quick growth they get entangled in the foliage. During late years Tulips have have become great favourites for planting out in beds, for which thousands are annually employed, making by their very brilliant colours a very showy effect indeed. I could dwell for a considerable time upon the history of the Tulip and the very unusual speculation, or rather gambling, of which they were in past times made the object; and in case my present paper should meet with your approbation and have given some little pleasuse to some of my audience, it may induce me to try another paper on these and other sorts of flower roots at some future occasion.

I have no doubt that in several ways my present paper may be found wanting, but I may be allowed to remind you that as a foreigner I write in a language strange to me. As an ardent admirer of horticulture in every branch, and stimulated by the earnest desire to do something to oblige the members of the Club, who may all be considered lovers of horticulture, floriculture, and botany in every branch, I have ventured the writing this short paper.

The Apiary.

SEASONABLE HINTS.

The very long continued frost having at length departed, the beekeeper must be up and doing. If you have not examined your hives you may do so at once, but not during a high wind, nor while it is raining. The best time to look at the hives is in the middle of a fine warm day. At present it is much better not to open the hives more than necessary, because, as the bees have commenced to breed, it is absolutely essential that the babies be kept warm. You will rue it if they catch cold, and your punishment will be foul brood. Go, then, to each hive carefully, and lift up the cover just sufficient to see if they have plenty of honey. Remember that while bees are breeding they consume stores at an amazing rate. If you feel satisfied that they have sufficient honey cover them up warm again, and leave them entirely alone. Go through the apiary, and look at each stock in a similar manner. Cover each stock up warm before you look at another. If you find a stock short of food you might chalk the letter F outside it; then close up all entrances so that bees can only pass in and out one at a time, for be you very sure that at this time of the year robbing will be vigorously attempted directly you feed. For this reason do not feed in the middle of the day. Having marked all the hives which are short of food, go and get as many bottles ready as you require, and make your syrup. For spring feeding the syrup does not need to be so thick as for autumn feeding. I use a pound of sugar to three gills of water. Mix them well together in a saucepan, and put the saucepan on the fire till it nearly boils. Whatever you do do not let it burn. Put a little salt and vinegar in, about a teaspoonful of each. Some people do not put so much salt in, but at this time of the year a little more salt is very beneficial to the bees. This will make a very good food for the bees. At the present moment my bees are taking it down with a vengeance. Wait till the evening, when all bees will be indoors, and then give each hive that requires it a bottle of the food, warm, but turn the bottle in such a manner that they can only take it slowly, for you do not want the bees to store the syrup, because stored syrup is not honey. If you feed in the evening and contract the entrances robbing will be checked in the bud. Do not feed by fits and starts, but do it gently and regularly till the beginning of May. *Walter Chitty.*

The Uses of Honey.

While the British Beekeeper's Association, and not a few active country associations also, are doing their utmost to encourage bee-keeping, and especially so among the working classes, the question is sometimes put—If we keep bees and produce honey, to what account can we turn it? One answer may be given—Why do you not eat it? This was the answer addressed to a number of working men and others by the Rev. Mr. Burkitt at a meeting a few days ago. He said that honey was cheaper than butter or jam, and more wholesome. There were many ways in which honey could be used. It was now largely consumed in the manufacture of syrups for summer drinks. Then it could be used in the same way as jams for puddings and tarts, stale bread crumbs being first mixed with it till it was of about the same consistency as jam. But it was necessary to use plenty of lemon juice and peel to take off some of the sweetness of the honey. Further, if they must use alcohol, why not in the form of mead? It was easily made, and far more wholesome than any British wines that could be bought. But mead could not be drunk with the same freedom as beer, for instance; the worst of it was, that some people wanted that of which they could drink a pint

right off. But mead is a somewhat powerful intoxicant, and a pint of it would have the same effect as a pint of port or sherry. When taken in moderation mead was a very nice and wholesome drink. A large amount of honey was now being used in biscuit making. Messrs. Huntley & Palmer, of Reading, were using at the rate of 2 tons of honey a week in the manufacture of their very nice honey-drop biscuits; and Messrs. Fry & Co. were also making some delicious honey and chocolate creams. It was therefore the duty of bee-keepers to do all they possibly could to bring into notice such products, for they all tended to create an increased demand for honey. *R. D.*

Fruit Notes.

APPLE WAREHAM (WAVERHAM, CHESHIRE) RUSSET.

This useful late-keeping kitchen Apple, which will keep good till April, is deserving of a place in any large collection, but is, I believe, very little known. It is of medium size, firm, crisp, juicy, and pleasantly acid, and an abundant cropper; in fact it seldom fails to carry a heavy crop of fruit, no matter how bad the season may be. I first obtained this variety some few years since from that well known firm the Messrs. F. & A. Dickson & Son, of Chester. I believe I am right in stating that theirs is the only fruit list in which this variety is offered. *E. Ward, Hewell Gardens, Bromsgrove.*

Pear President Drouard.

A comparatively new market Pear, sent out by M. Louis Leroy, of Angers. The tree is naturally of pyramidal habit, hardy and fruitful. The fruit is shortly stalked, of medium size, regularly pyriform, greenish-brown, with a few scattered spots, flesh white, melting, juicy, and perfumed. Season, January to March. "A first-class variety, combining all the requisites that can be desired." It is figured in the *Bulletin d'Arboriculture* for February.

Growth of Fruit.

By accurate comparative measurement M. Krauss, of Halle, has shown that the growth of fruit is always greater at night than in the daytime. An Apple, for instance, increases 80 per cent. at night as compared with 20 per cent. in the day; the fruit of the Cherry Laurel increases at the rate of 90 per cent. at night, and only 10 per cent. in the day.

American Blackberries.

Your correspondent, Mr. W. Culverwell (p. 402), is not alone in experiencing considerable disappointment in the cultivation of the American Blackberry in this country. It is true there are a few instances where these plants thrive admirably and bear fair crops of fruit; but in the majority of cases where their culture has been attempted (by first-class practitioners, too), failure rather than success has attended their efforts. The only really successful instance that we are conversant with is at Oldlands, Uckfield, Sussex, the seat of Alex. Nesbitt, Esq. The plants were planted in deeply trenched and very heavily manured soil, overlying the Hastings Sandstone formation, by the then gardener, Mr. Edward Luckhurst, an excellent hardy fruit-grower. If we remember rightly, this cultivator told us that it was only after several repeated trials that he became successful therewith. The variety was the Parsley-leaved Bramble. Three years ago we planted the latter variety here in thoroughly manured and deeply trenched soil, but the plants have made comparatively little growth. Last year in the early part I was induced through reading glowing accounts in the gardening advertisements, and in pamphlets, to order a dozen of a new variety, which was pronounced by the introducers to be far superior to all others in size and quality of fruit, as well as productiveness. Similarly to your correspondent, after waiting for the receipt of the plants until the end of April we received a small bundle by parcel post, in which I found the said plants, averaging from 3 to 5 inches in length, with stems no thicker than a straw, and with scarcely any appearance of vitality in them. We planted and afterwards mulched them, but only two out of the dozen survived, and these are so feeble that we fear it is useless to expect them ever to make any more growth. This has taught us a useful lesson—never put too much faith in highly coloured Yankee advertisements and exaggerated engravings. This last season we selected a dozen of the Kittatiny variety in Messrs. Veitch's nursery, and as these are strong, healthy plants, we hope to be a little more successful next year. Our soil is a shallow, light, sandy loam, overlying a deep gravelly subsoil, and the position an exposed one. *T. W. S.* [We saw the Lawton Blackberry, which was the first American variety sent to this country, well grown and fruited in a warm, sheltered kitchen garden on the Dorsetshire coast. This was about twenty-five years ago, and still these fruits are but little known in this country. The flavour is flat, and the fruit has the unpleasant property of staining the lips. Ed.]

The Flower Garden.

BEDDING OUT PLANTS.

The sashes should be removed from all half-hardy bedding plants in frames during fine days, but do not allow the plants to be injured by cutting winds and saturated by drenching rains.

Box Edgings and Walks.

These may now be trimmed and repaired; with a draw-hoe scrape the gravel from the edgings for a little way, make good all blanks with some fresh Box, cut the Box level with a pair of shears to the height of 3 inches, then proceed to straighten the edging. This is easier of accomplishment if a line be stretched on the top, with some small pegs put in X fashion for the line to lay in. Then with a pair of edging shears cut the sides on each side of the line; sweep up the clippings and replace the gravel. This is a good time for surfacing the walks with a little fine gravel. There is nothing that brightens up a garden more than a slight surfacing of fresh clean gravel every spring.

Where Box edgings do not thrive, there are many other green edgings which can be employed. What can be prettier than a long line of Gentiana acaulis, or a long line of Daisies, Statice Armeria, Antennaria, Saxifraga umbrosa, and many others according to taste? Grass verges may now be well beaten or rolled, and then be trimmed with the edging iron. Always use a line and measuring rod for this purpose, and have plenty of pins handy, never trusting to the eye for parallel lines. It takes a little longer perhaps to shift lines and fix pegs, but then the work is well done. Where the edging is worn away, cut the turf about a foot wide, and move it forward to the line, and the parings of other parts of the verges will do well enough for filling in. Lay those on the spaces requiring mending, and well stamp or beat them down to the required level. This is, I believe, the best method of laying turf, I have tried it with good results on a pretty extensive scale, and it is astonishing by this means how much space small pieces of turf will cover. Ivies may now be trimmed: this is best done with a knife, as then the leaves are not mutilated. Let the trimming of shrubs be completed as soon as possible, and all planting yet unfinished be speedily brought to a close. See that all newly planted trees and shrubs are securely fastened to withstand strong winds. *W. M. Baillie.*

Plants and their Culture.

THE CONSERVATORY.

In this department climbing plants are always a desirable feature, and if planted with taste and kept within certain limits so as not to interfere with the other occupants of the house, they add very much to the effect of the arrangements. Most of them will now be starting into growth, and many of them which flower on the young wood should be pruned in close. Such things as Tacsonias and Passifloras should have the whole of last year's growth removed if the allotted space is covered, but if not the shoots can be induced to extend so as to occupy vacant parts. Tacsonia Van Volxemii is a striking climber on account of its brilliant colour. T. exoniensis, a hybrid, is also a very desirable variety. The blooms of these are borne on long slender peduncles far beneath the foliage, so that they are seen to the best advantage from below. Lapagerias, white and rose-coloured, should find a place wherever creepers are employed, nothing looking so well, and they are so useful for cutting from, where they do well. Shoots with from five to twenty fully expanded blooms can often be cut for indoor decoration; that is the only way in which the blooms can be used effectively. Where large-sized pillars are to be covered, Plumbago capensis will be found a most useful plant, the colour providing a nice break to that of other trailers or creepers. Trachelospermum jasminioides, Bougainvillea glabra, Clematis coccinea, Bignonia grandiflora, Cobæa scandens, Habrothamnus elegans, Bomarea Carderi, Abutilons, Jasminums, &c., will all be found most desirable plants. If any of these are failing from age or other causes now is a good time to replace them, which should be done by removing the border and planting strong specimens, that if well attended to will cover large spaces during the summer.

The soil most suitable is sound turfy loam, fibry peat, decomposed manure, and sand. See that the beds and borders where creepers and other plants are growing are not in a dry state. If dryness be suspected give a thorough soaking with clear water. Where plants are grown in contracted spaces, as is often the case, pick off as much of the top soil as possible without damaging the roots, replacing it with some of the same compost as recommended above, and applying some liquid manure when convenient a few times during the season.

If any insects are found on the plants, such as scale, thrips, or aphides, the plants should be thoroughly cleaned—the scale by washing with soap and paraffin oil; for the latter two pests, syringing with tobacco-water diluted will answer the purpose. As a rule, it is rather difficult to fumigate conservatories, either from their close connection with the mansion or by reason of their height. *A. Evans, Lythe Hill.*

Hardy Fruit Garden.

FIG TREES.

The winter protection should now be removed from the trees, if not already done. If the growth on the trees was thinned out last autumn as an inducement to the wood to mature, no cutting away will now be required; but if any further pruning be thought useful, the longest-jointed pieces, and those which are showing the least number of young embryo fruits, alone should be cut away. An abundant crop of fruit, in the case of outdoor trees, is the greatest consideration.

Grafting Fruit Trees.

The grafting of Apple and Pear trees should now be pushed on, bearing in mind that the essentials attending this operation are a perfect union of graft and stock, and afterwards a thorough protection against the drying influences of the air. For this purpose the clay requires a thoroughly good working-up before being used. Moss placed over the clay, and securely bound on to keep it moist, is useful, and during long spells of drying weather it may be syringed or sprinkled with a fine rose waterpot to promote the purpose in question.

Protection.

Notwithstanding that stone fruits are much later than usual in opening their blossoms, the propriety of being prepared with protective materials as usual should not be overlooked. Just before Peach and Nectarine trees expand their blossoms, the young shoots should be examined, in order to ascertain that blackfly is not present. Should any be found they should be crushed between the finger and thumb, and the shoots affected well dusted with tobacco powder. The insects generally locate themselves just behind the triple sets of buds, and can be easily seen before the flowers open.

Newly Planted Subjects.

After the late rainfall newly planted trees and even bushes should be examined, to make sure that their roots have not been disturbed by the swaying of the trees, and probably the stakes also, which were placed for the express purpose of preventing this at planting time. Where something obnoxious to bullfinches has not been sprinkled over fruit trees and bushes, it will be advisable to keep a sharp look-out for these little depredators, or much mischief will be quickly wrought. Shooting amongst fruit trees or bushes should be discountenanced as far as possible, but where other timber trees or shrubs surround the garden, many bullfinches may be disposed of. The wire netting attached to fences enclosing plantations of young fruit trees should be occasionally looked to, for if rabbits should effect an entrance they would most likely damage the young bark on the trees, whatever the state of the weather might be. *C. H. Richards, Somerley, Ringwood.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	April 5	Sale of 7000 Lilium auratum, 4000 Freesia refracta alba, Tuberoses, Gladioli, &c., at Stevens' Rooms.
Tuesday,	April 6	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
Wednesday,	April 7	Spring Show of the Royal Caledonian Horticultural Society (two days). Sale of Roses, Plants, Carnations, &c., at Protheroe & Morris' Rooms.
Thursday,	April 8	Sale of Importations of Orchids from Messrs. Shuttleworth & Co., at Stevens' Rooms.
Friday,	April 9	Sale of Established and Imported Orchids, at Protheroe & Morris' Rooms.
Saturday,	April 10	Sale of Roses, Fruit Trees, Shrubs, Border Plants, &c., at Stevens' Rooms.

UP to the present time we have received rather over sixty applications from young GARDENERS for permission to compete for the PRIZES offered by us. Of these, more than half are from private gardens in England, seven are from Kew, two from Chiswick, two from the Royal Botanic Garden, Edinburgh, one from the Trinity College Botanic Garden, Dublin, twelve from various nurseries, and one from a public park.

Scotland does not show such a muster-roll as we expected and as the traditional repute of Scotch gardeners led us to anticipate, and Ireland and Wales contribute but one each. One foreigner asks to be allowed to send in an essay "not for competition." We had hoped and expected a larger response, but, all things considered, it is perhaps a fair muster-roll, and we shall look forward with interest to the results. From the correspondence that has passed we fear that in certain cases young gardeners have held back, from an exaggerated idea as to what would be expected from them. Young gardeners are not university students, and few of them can have had much, if any, laboratory training. To expect elaborate chemical analyses or minute microscopic detail would therefore be out of the question. We offer the prizes to young gardeners with a full knowledge of the opportunities which they as a class have—or have not; and in considering their essays we shall, as a matter of course, take into consideration the average circumstances under which the writers may be supposed to be placed. Meanwhile, as we cannot address each correspondent individually, we may take this opportunity of supplying a hint or two to the competitors. As young gardeners they have to dig, hoe, rake, mix composts, pot plants, form Vine-borders, and carry out other work in connection with roots and the soil. Why do they do these things? What is the best way of doing it? Of what use is it? Again, they sow seeds, raise seedlings, prick them out, plant and lift Potatos, take up bulbs, lend a hand in removing shrubs and trees and in replanting them, set out bedding plants, root-prune on occasion, and conduct divers other operations in which the roots are concerned. They daily see and handle roots of every description and variety, from the root of a Cabbage plant to that of a Vanda. Why all this variety? What does it indicate as to the habits and requirements of the plants? How, with these facts before us, can these requirements most readily be met in practice? They give water and liquid manure: why? Under what circumstances is it proper to give, and when is it better to withhold?

We want the young gardeners, in discussing these and like matters, to use their own eyes and bring to bear their own intelligence on the details of their daily work. Books are very useful as assistants, but they are no more the be-all and end-all than a spade is a sack of Potatos.

Blind, unintelligent routine is fatal to all progress, and begets indifference, it not aversion. Careful personal observation, and an endeavour to ascertain the meaning of and the reasons for what one sees, tend to advancement in all directions, mental and material. So far from rendering work irksome, or a matter of indifference, they invest it with interest, and convert a toil into a pleasure. Looked at from this point of view a Cabbage plant becomes as interesting as an Orchid or an Azalea—the kitchen garden as full of interest as the vinery or the Orchid-house.

Briefly, our object is to encourage intelligent practical observation and research on matters which come in each man's daily work, and we do not expect him to go beyond it, or to attempt anything more than his ordinary avocations give him facilities for accomplishing.

—— ANEMONE FANNINNI.—This is a magnificent perennial, seeds of which have lately been distributed by our correspondent Mr. ADLAM, of Pietermaritzburg, Natal. Our illustration (fig. 84) shows what a noble plant it is, and in all probability it is one which would prove hardy in the south-western counties and similar warm localities. As a greenhouse plant it would be a fine acquisition, should it prove amenable to that mode of culture. It is a stemless perennial, with stalked, velvety, palmately-lobed leaves, 1½—2 feeet across. The flower-stems are white, fragrant, 2½—3 inches across. It flowers in Natal from September to December, in open grassy places, at an elevation of 3600—4000 feet. The locality is more fully described in Mr. ADLAM'S interesting article on p. 426.

—— "LES PLANTES DES ALPES."—We learn that this work of M. CORREVON, Director of the Jardin Alpin d'Acclimatation, Geneva, has been translated by Mr. R. J. LYNCH, of the Cambridge Botanic Garden, and that it will be published by him, if a sufficient number of intending purchasers are forthcoming. Mr. LYNCH will be glad to receive intimations from purchasers. The price will be less than five shillings. The author has written for this translation an additional chapter on botanising in the Alps. Reviews of the original will be found in the *Gardeners' Chronicle*, November 22, 1884, and in the *Garden* of December 6, 1884, p. 479.

—— POTATOS.—The Crystal Palace Company has decided to make a special feature of an exhibition of Potatos to be held in connection with their fruit show this autumn.

—— A CURIOUS COINCIDENCE.—We have frequent evidence of the wide circulation of this journal, and the following incident affords a curious illustration of it. Of six letters lately addressed to the Editor, and all received at the same time, and opened consecutively, one was from Afghanistan, one from St. Petersburg, one from Jamaica, one from Antibes (South of France), one from the United States, and one from Natal.

—— ILLUSTRATIONS OF GRASSES.—In reference to our remark at p. 371, Messrs. VILMORIN-ANDRIEUX & Co., of Paris, send us a specimen sheet representing several pasture Grasses of life-size in colours. The representations are excellent, the more so as they show the "habit" and root-development of the Grasses better than most illustrations of the kind do.

—— GLASGOW BOTANIC GARDEN. — Whether the important city of Glasgow shall have the means of affording her students practical assistance in botanical studies, and of generally helping in horticultural and cognate subjects at home and abroad, will shortly be decided in committee in the House of Commons.

—— IRIS RETICULATA AND GALANTHUS ELWESI.—We have this week received from Messrs. WATKINS & SIMPSON, seed merchants, Strand, London, a small boxful of Iris reticulata, the dark purple blooms of which have a pervading smell of fresh Violets—indeed, quite remarkable on being unpacked. So short a time ago as eight days nothing was visible of this plant above-ground, not even the foliage. The bloom of Elwes' Snowdrop seems to be losing the purity of whiteness noticeable earlier in the season.

—— TILLANDSIA LINDENI.—We have received a photograph which represents this plant, from our correspondent "W. G.," who mentioned it in our columns January 16 last, p. 86. "W. G." says that he has not heard of another plant throwing up so many scapes as this one. The photograph fully bears out the statement made as to the specimen in question bearing many scapes—seven besides the central one.

—— CYCAS BELLEFONTI.—This is a species (?) introduced from Tonquin by the Compagnie Continentale, and figured in the *Illustration Horticole*, t. 586. The leaves are elegantly curved, with numerous narrow pinnæ and spiny petioles (no spines are shown in the figure). It is dedicated to the Marquis DE BELLEFONT.

—— "LA BELGIQUE HORTICOLE."—We have but recently received the numbers for July and August, 1885. No doubt the delay in their issue is in part attributable to that ill-health which has since deprived the horticultural world of one of its most distinguished workers. There is given a coloured plate and a description of Cyrtanthus Macowani, t. 15, a plant described in our columns in 1875, vol. ii., p. 98—a species with long linear leaves and erect scapes, bearing a one-sided truss of recurved, orange-coloured, trumpet-shaped flowers, Professor MORREN availed himself of the opportunity of giving a monograph of all the species, of which he enumerates twenty. M. CORREVON writes on the culture of Cacti, *apropos* of a visit to the collection of M. TROFFIMOWSKI, of Geneva. Professor MORREN also contributed a coloured illustration and a description of a new species of Caraguata (C. Osyana, t. 16), a Bromeliad with strap-shaped, acute glabrous leaves, and a club-shaped inflorescence, of which the most conspicuous features are the densely packed rose-coloured bracts. The plant is a native of Ecuador, whence it was introduced by WALLIS.

—— HANDBOOK ON DAIRY FACTORIES.—The Rev. Canon BAGOT has done good service by calling attention to new and improved methods of dairying on a large scale for Ireland. His pamphlet should be read by every one interested in the welfare of Ireland, and we earnestly hope the Canon may be the means of keeping in the country some at least of the wealth now sent to Denmark and Holland. In this as in other matters an overweening sense of our own superiority has led us to stand still while other nations more progressive have adopted scientific methods of precision which have secured them a market for their wares.

—— GRASSES.—The Sussex Association for the Improvement of Agriculture has undertaken some experiments with a view to ascertain the degree of value to be attached to pasture grasses in regard to earliness, lateness, quantity, and quality, together with other matters. A vast amount of information on these points is already collected in the records of the Rothamsted experiments, wherein a general reply will be found to all or most of the ten points proposed to be investigated at Hassock's; nevertheless, it is highly desirable to repeat experiments in different localities under as many conditions as possible, so as to arrive at safe general conclusions. We may specially urge upon experimenters the desirability of a thorough study of the organisation and mode of growth of the several plants experimented on, and of the way in which they are influenced by manurial or other conditions. It is fortunate that a duplicate set of experiments under as nearly as possible the same conditions, barring soil and climate, is being carried out at the same time near Aberdeen.

—— THE MANCHESTER WHIT-WEEK EXHIBITION will be held as usual at the Royal Botanic Gardens, Old Trafford. Amongst the numerous things the schedule includes there are, as hitherto, classes for the various flowering and fine-leaved plants, Nepenthes, pot Roses, hardy herbaceous plants, and fruit. But Orchids, always so exceptionally well represented at Manchester, hold the first place. Of these there are classes for amateurs for fifteen, nine, and six, and also one for ten plants, exhibited as grown, made-up specimens not allowed; likewise classes for six Cattleyas and for three Vandas. In the nurserymen's division prizes are offered for sixteen and ten Orchids. Altogether the exhibition, as heretofore, is likely to maintain its attractive character.



Fig. 84.—Anemone Fanninii: flowers white, fragrant. (see pp. 426, 432.)

—— ARISTOLOCHIA LONGIFOLIA.—This recently introduced species has flowered for the first time at Kew. At first sight it bears a superficial resemblance to A. Thwaitesii, introduced more than thirty years ago, and said to be from Ceylon, but now more generally believed to have come from Old Calabar. The leaves of A. longifolia are linear or linear-lanceolate and acuminate, borne on short slender stems, that at present show little or no tendency to twine. The whole plant does not exceed 2 or 3 feet in height, and although it is premature to judge of its floriferousness from such a small specimen, there is good promise of its becoming a useful and interesting stove plant. The flowers of A. Thwaitesii are small, and yellow with a purple throat, while those of A. longifolia may attain a width of 2 to 3 inches across the limb. The curiously bent tube is densely covered with brown hairs, as well as the outer surface of the whole perianth, but the upper, or inner is nearly smooth, except in the tube, and of a deep purplish-brown. The flowers are produced in clusters near the base of the stem, as in A. Thwaitesii and A. leuconeura, which is perhaps its greatest defect. This species is a native of Victoria Peak, Hong Kong, from which it was sent to Kew quite recently by Mr. C. FORD, Superintendent of the Botanic Garden there.

—— ANTHURIUM REINE DES BELGES.—A hybrid from A. Andreanum, fertilised by pollen of A. Lindeni. The habit is tufted, the petioles cylindric, the blades cordate, ovate-acute, the spathe which is flat and nearly of the same shape as the leaf, is of a lovely rose colour, and the cylindrical spadix is pale yellow flushed with rose. This very beautiful variety is figured in the *Illustration Horticole*, t. 588.

—— ARISÆMA FIMBRIATUM, *Mast.* (*Gard. Chron.*, vol. xxii., 1884, pp. 680, 689).—Professor H. G. REICHENBACH states "that Mr. FÖRSTERMANN is not satisfied with the statement that the plant was accidentally imported with Orchids. No; it was intentionally sent by this excellent traveller to Mr. F. SANDER, his employer. How much Mr. FÖRSTERMANN liked the plant is proved by his having prepared a very nice representation of it in water colours, and by a fine dried specimen, both of which are before me. The spathe of the original plant is shorter and much broader than that one represented in the woodcut, and the white stripes on the reddish-purple ground are broader, more irregular, and much interrupted on outer margins."

—— VEGETABLES—FRUITS.—Dr. STURTEVANT, at a recent meeting of the Western New York Agricultural Society proposed the adoption of the word "pomiculture" for fruit culture, and of "oleriCulture" for vegetable culture, words analogous to horticulture and agriculture. "Vegetables," in a gardener's sense, the Doctor goes on to say, are habitually propagated from seed, while "fruits" are propagated by grafts. We are afraid these definitions will not bear the test any better than others that have been produced. Cucumbers, Vegetable Marrows, Tomatos, Aubergines, are, in a culinary sense, vegetables, but assuredly they are genuine fruits, as also are Melons, which are not propagated by grafts. Under what heading is Rhubarb to be placed? It is not a fruit in any but a cook's sense, it is not a "vegetable;" it is usually propagated by division, never by grafting, sometimes by seed. Has it a pedigree or only a parentage? But this involves an explanation. Dr. STURTEVANT lays it down that vegetables—that is, according to his definition, plants reproduced from seed—have a pedigree, while plants propagated by grafting, by division, cuttings, &c., have a parentage but no pedigree. This looks unkind, and is not, we venture to think, quite in accordance with the Doctor's real meaning. A pedigree records the series of consecutive generations. In division the same generation is continued, not reproduced; but that generation, however long maintained, has surely an ancestral pedigree as well defined as the more ephemeral seed generations. Pursuing the subject further Dr. STURTEVANT points out that in vegetables we have to deal with varieties (seedling varieties), while in pomiculture we have to do with variations (bud variations—sports), not with varieties. Varieties reproduce themselves from seed; variations do not, or if they do, then they take rank as varieties. Dr. STURTEVANT proceeds to comment on the antiquity of many of the types of vegetables, some of which are sent out as new in these days, though their prototypes are represented in HIERONYMUS TRAGUS (1552); BAUHIN'S *Pinax*, 1671; GERARD, 1597; and others. DESCOURTILZ in 1829 figures a Tomato, which was recognised by an expert ignorant of its history as a modern variety. GERARD, DODOENS, and BESLER, all or some of them were familiar with the Cherry type, the Plum type, and with yellow and red varieties of Tomatos.

—— APHELANDRA MACEDOIANA.—This is a new stove plant described by Messrs. LUCIEN LINDEN and RODIGAS in the *Illustration Horticole*, t. 583. It has elliptic, ovate, subobtuse leaves, purplish on the lower surface, greenish above, with the midrib and lateral veins of a white colour. It is dedicated to M. DE MACEDO, who discovered the plant in Brazil. It will form a handsome foliage plant.

—— AMERICAN POMOLOGICAL SOCIETY.—We are indebted to the courtesy of the Secretary for a copy of the annual report of this flourishing Society. The enormous area, the correspondingly diversified climate, and the proportionate commercial importance of fruit culture give an impulse to pomology that we can only faintly understand in this country, even though we are content to pay our American cousins many thousands of dollars annually for fruit, a large proportion of which we might very well produce ourselves. The annual meeting was held at Grand Rapids, Michigan, and was attended by numbers from all parts of the Union, from Canada, and even from Japan. A very practical tone was given to the meeting by some of the speakers insisting on a stricter attention to business at these meetings, and advising that there should be less sight-seeing and banquetting. We should be disposed to concur in these remarks, at least so far as to advise the business to be steadily pursued first, and to defer the junketing till after the completion of the more serious business. We know by experience how difficult and how exhausting it is to combine business and pleasure in this way, and how much better it is to do the work first, and then relax. But our cousins are so virtuous that they even dispensed with any banquet, and substituted an evening meeting with speeches, &c., and "no excursions nor banquets" were allowed to disturb the work of the meeting. The venerable President was not able to be present, but his annual address, before noticed by us, breathing the old spirit of gratitude and trust, inculcates the duties of the pomologists of the future. Discussions of a practical nature relating to the suitability of particular varieties to particular localities took place, and much useful interchange of opinion ensued. Dr. BESSEY gave a popular lecture on Fungi, Professor ARTHUR gave an account of his experiments in the production of Pear blight by Bacteria, and various other matters were treated of. The catalogue of fruits was revised, and consists of a list of varieties found most suitable for culture in the various States and Territories of the Union.

—— ORCHID SHOW AT BIRMINGHAM.—Of late years Orchids have been largely grown in the neighbourhood of the hardware city, several important collections having been formed. At the exhibitions that are annually held in the Botanic Gardens these plants are the centre of attraction. This season there is to be an exhibition wholly composed of Orchids. In the leading class for twenty plants (open) £15, £10, and £6 are offered; there are classes of ten and six plants for amateurs, ten and six for nurserymen, with Cattleyas and Lælias, each in sixes, for both amateurs and nurserymen; and an open class for twelve Masdevallias; for all of which there are handsome prizes. The exhibition takes place on May 12 and 13 in the new exhibition hall in the Botanic Gardens.

—— LÆLIA ANCEPS HILLIANA.—This beautiful white-flowered variety forms the subject of a plate in the *Illustration Horticole*. The erect lateral lobes of the lip are flushed with rose, the central and larger lobe is yellow.

—— GHENT HORTICULTURAL SOCIETY. — At the last meeting of this Society the following awards were made:—

First-class Certificates.—To Mr. Vervaet-Vervaene, for Clivia Madame Vervaet; to Mr. A. Peeters, Brussels, for Oncidium Jonesianum; to Mr. Joseph Vervaene, for Azalea Vervaeneana; to Messrs. Vervaet & Co., for Cypripedium Leeanum; to Messrs. Vervaet & Co., for Odontoglossum Pescatorei Vervaeteanum, and for Odontoglossum Halli leucoglossum; to Mr. Jules Heye, for Cypripedium Sallieri; and to Messrs. Desbois & Co., for Amasonia punicea.

Cultural Commendations.—To Mr. Jules Heye, for Cypripedium superciliare; and to Madame Ve J. Vanderzwaelmen, for Pellea ornithopus var.

Commendations for Novelty. — To Mr. L. Desmet-Duvivier, for Cattleya Trianæ magnifica; to Mr. M. de Ghellinck de Walle, for Clivia miniata Triomphe de Wondelghem; to Messrs. Blancqaert & Vermeire, for Clivia miniata Triomphe de Gendbrugge; to Mr. James Bray, for Cattleya Trianæ var.; to Mr. Joseph Vervaene, for Azalea indica L'Ami du Cœur; to Mr. Van Geert, Sen., for Cypripedium Boxalli guttatum var.; to Messrs. Vervaet & Co., for Odontoglossum mulus, and Cattleya Trianæ var. Popayan; to Mr. Jules Heye, for Cypripedium hirsutissimum Vuylstekianum, for Cypripedium politum, and for Anthurium Adriani.

—— HIMALAYAN BAMBOO. — In a note read before the Royal Society of New South Wales, Dr. BRANDIS, the late Director of the Forest Department of India, mentions Arundinaria falcata (not the plant generally grown in this country under that name, and which the late General MUNRO determined to be Thamnocalamus Falconeri) and Thamnocalamus spathiflorus. The canes of the latter are exported to the plains of Hindustan for water-pipes, fishing-rods, baskets, &c. This is the kind commonly known as Ringal. It grows with the Deodar, Cupressus torulosa, Abies Smithiana and Webbiana, generally inhabiting moist climates. Dr. BRANDIS gives an account of the characters of the two species, and takes the opportunity of correcting some errors of detail into which he fell when describing the plants in the *Forest Flora of North-West and Central India*. Both species would probably thrive in our south-western counties, and in South Ireland.

—— MONTREAL HORTICULTURAL SOCIETY.—The tenth annual report of this Society, in addition to a statement as to the progress of the Society contains reports on Apple culture and the varieties best suited to Canada; as well as a paper on galls and the insects which produce them. One feature of the Society consists in a series of visits to the more important horticultural establishments of the vicinity, private as well as public. Professor PENHALLOW discusses the question of Botanic Gardens, *apropos* of the one now established in the city. In the course of his remarks he notes how Germany has thirty-two such establishments, Italy twenty-four, France twenty-two, Great Britain and Russia only twelve, Switzerland even has five, while the United States have but three, and Canada till now, none. Of the 187 Botanic Gardens enumerated by Professor PENHALLOW 31 per cent. are directly connected with Universities or similar educational bodies, while of the remaining 69 per cent., many, perhaps most, afford means of instruction to students. The direct educational value is large, and the indirect use, in supplying information to the public and gardeners, should be larger still. In addition to their educational value Professor PENHALLOW speaks of their value as affording means for original research, and for the accurate determination and classification of plants. It is pointed out that all botanical questions, however practical their ultimate bearing may become, must first of all be approached in their scientific aspect. Exact scientific knowledge furnishes the only certain basis of study of the means to prevent or palliate such evils as the Potato disease and the Coffee-leaf fungus. Another use of botanic gardens consists in the dissemination of practical information and in the distribution of seeds and plants. The growing season near Montreal begins in May and lasts for about five months, during which time growth is rapid, and a varied flora developed, while the heat of summer [and intensity of light] permit Indian Corn, Peaches, Grapes, and other fruits, which it is rarely possible to ripen perfectly in northern England, to come to maturity.

—— EAST GLOUCESTERSHIRE ROSE SOCIETY.—We find from the recently issued schedule of the above Society that the annual exhibition will be held on July 13 at Moreton-in-the-Marsh. The prizes seem to be apportioned on a fairly liberal scale, so that considerable competition may be expected.

—— GARDENING APPOINTMENTS.—Mr. GEORGE JUDGE, until recently Foreman, The Gardens, Idsworth House, Horndean, Hants, as Gardener to J. C. GEISELBRECHT, Esq., Beechdale, Lee, Kent.—Mr. JOSEPH ELLIS has succeeded Mr. TURNER as Gardener to the Right. Hon. Lord MOSTYN, Mostyn Hall, Holywell, Flintshire.—Mr. CHARLES GREEN, for the last four years Foreman at Clumber, Worksop, has been appointed Gardener to Sir HENRY WATSON, Shirecliffe Hall, Sheffield.

A PROPOSED INTERNATIONAL HORTICULTURAL EXHIBITION FOR 1887.

[A Paper read by Mr. W. S. Manning before the Royal Botanic Society.]

It is most important that this proposal to hold a show at South Kensington should not be dropped for next year, because — 1. It is much more certain of success if held immediately after the present very popular series, the public having got into the habit of going to South Kensington during the summer of late years. 2. The foreign exhibits would serve to offer very valuable hints as to the most advanced system of and laws on the Continent regarding training in the rural schools, also as to the many kinds of market garden produce and hardy fruits grown in North Europe, at present unknown here. 3. The crisis in the farming world has become so severe, that no time should be lost in promoting any scheme that might aid in solving the knotty questions of agricultural distress, and in showing how land is profitably cultivated abroad. Our Consuls could look up exhibits for this purpose, probably. 4. The allotments agitation and proposed land law reforms will tend to popularise such an exhibition, and it would serve to help in selecting the most lucrative crops for small holdings. 5. We can best compete with America in our Apple growing, and with other foreign fruit growers, when we see the finest and best paying varieties that are grown in climates like our own in Europe. 6. Indirectly it will tend thus to relieve the terrible distress in the towns by promoting profitable spade culture and increasing food supplies in our rural districts. 7. The Queen's Jubilee may probably be kept next year, and this exhibition, in its floral and festive elements, affords especially appropriate means of celebrating it. Whatever may be the difficulties in carrying out the scheme this year they must be overcome whenever it is undertaken, and the guarantee fund would be most liberally responded to if the above items can be all included in the project, so that all classes in the community may take a special interest in its success, from royalty and our large landowners downwards.

The leading features in such an exhibition would be permanent and occasional shows, amongst the latter—1. A grand display of flowers from all Europe would probably produce the finest spring show ever held. 2. A series of similar shows for Orchids, Roses, Liliums, Clematis, Coleus, cut flowers, will be held during the summer. 3. Shows of market garden produce, with the most complete possible selection of the large varieties of Continental kinds, unknown almost at present here, such as Carrots of upwards of thirty kinds; Turnips of fifty-eight sorts; Haricots of seventy-five sorts; Salading, &c. 4. Every variety of fruit, especially of the best and most profitable Apples and Pears to keep up a regular supply all the year round, can be shown from all parts, thus affording valuable opportunities of comparing notes, and enabling both producer and consumer to see what is done abroad in hardy fruit culture. Such fruits as Strawberries, already largely grown by our farmers, might be produced of sorts that would prolong the season, by planting a larger variety for successive supplies. These educational and economic objects to be made the leading features to show the best system of culture for small farmers, cottagers, &c. Specimens of such culture from all the more advanced states of Europe to be kept on show in successive relays, and similar exhibits from each of our own counties in the United Kingdom. The permanent shows would include :— 1. Fruit trees in pots, showing pyramid, bush, cordon and espalier trees. 2. Specimens of all fruits and vegetables manufactured and dried, apparatus for canning, &c. 3. Table decorations, window cases, vases. 4. Palms, Coniferæ, flowering shrubs, evergreens. 5. Plans for gardens, irrigation works, reservoirs (some Kentish farmers have water companies' water for their Strawberries—it would be far better to get rain-water stored up during winter), aqueducts. 6. Bees, honey, and apiary apparatus. 7. Seeds, protecting apparatus for fruit trees from frost and birds for walls, orchards, also trellising for same. 8. Glasshouses of all kinds for various fruits and flowers for market, garden frames, *cloches*, as used abroad. 9. Packing cases, fruit baskets, refrigerating apparatus for choice fruits, and as used for Apples in America.

GARDENIAS ALL THE YEAR ROUND FROM YOUNG PLANTS.

During the last few years I have annually propagated a few hundred plants of the Gardenia for producing a good supply of their fragrant and ever-welcome flowers of pearly whiteness the following year with the most satisfactory results, the plants being either given away or destroyed after they have done flowering to make room for the plants struck the same year; and as I feel sure that there are many readers of the *Gardeners' Chronicle* who would be only too pleased to attempt in a small way the culture of this favourite sweet-scented flower, did they but see any prospect of their being rewarded by success from the limited accommodation for the production of such flowers at their command, I will, therefore, state as briefly as possible, consistently with making the cultural details clear, our method of procedure, which is as follows :—

In early springtime we select the necessary number of good cuttings from the young growths of a few cut-back plants, and insert them in 3-inch pots which have been properly crocked, filled to the rim with light mould, consisting of light loam and leaf-soil in about equal parts, and having a surfacing of sand, which, as the cuttings are being put in, is worked down to the base of each with the cutting stick. The pots are then plunged to the rim in sawdust in a hand-light placed on slates resting on the hot-water pipes in one of the forcing pits or houses, and sufficient water is given to settle the soil about the cuttings; and which, being kept close, and having a brisk bottom and top heat, become nicely rooted within a few weeks from the time of putting them in. They should then be potted off singly into small 60-size pots, using the same kind of compost as before with a little sand added thereto, and make it moderately firm about the roots in potting, and be put back into heat and watered. After this water need not be applied to the roots until the latter have pushed into the soil; but the plants should be damped lightly overhead morning and afternoon with the syringe, and the nearer the plants are kept to the glass without coming in contact with it the better it will be for them, as a sturdy growth will thereby be secured. Afterwards shift the plants as they require more room at the roots, and before the latter become cramped in the pots into 48's and 32's (their flowering-pots) respectively, this time using a like proportion of peat and fibry loam with sufficient sharp sand added to render the whole somewhat porous, and grow them on in the best positions that can be given them in forcing-houses and pits—in fact, in any place where they can have plenty of light, heat, and atmospheric moisture—conditions which can be easily accorded them during the summer and early autumn in pits or frames having a sunny aspect. In each case of potting, and after the roots have taken to the soil, the plants should be stopped to cause them to branch. In our case the plants are grown on in hot-water pits and Melon and Cucumber houses up to the middle of October, when they are placed on the side stages in the Camellia-house, in which the night temperature ranges between 45° and 50° during the interval from October to the middle of April, and during which period they are kept on the dry side at the roots. This fact, in connection with the low temperature to which the plants are subjected, admits of the wood being thoroughly ripened and well set with flower-buds during the winter months.

While the plants are growing they are kept well supplied with tepid diluted liquid manure at the roots alternately with clean water. A small portion of the plants treated as indicated above, which were top-dressed with soil containing a small percentage of Beeson's manure, and placed in heat six weeks ago, are now coming into flower. The successional supply of blooms will be maintained by putting into heat the remaining portion of the plants in the Camellia-house at short intervals during the next six or seven months, and afterwards by the plants now coming into flower producing a second crop. Thus, each successional batch of plants following in the same order with a second crop of flowers, the supply may be continued uninterruptedly throughout the next twelve months. Moreover, plants thus treated, produce much larger and finer blooms when kept well supplied with weak manure-water at the roots, not only during their growing period, but also while developing their flowers, than older plants do under similar treatment. *H. W. Ward.*

FORESTRY.

CONSIDERATIONS PRELIMINARY TO PLANTING.

It is said if a thing is worth doing at all, it is worth doing well. That saying may probably meet with general acceptance, but still leave the problem unsolved as to what is doing the work well in regard to planting. Some descriptions of work, though not done perfectly at first, may yet be so far improved upon afterwards as to render the commencement of it, whether perfectly or imperfectly done, of comparatively little importance. The work of planting, however, is exceptional in that respect, for if not done properly, and in every respect perfect and complete, at first, nothing, or, at least, next to nothing, can be afterwards done to improve it.

The first matter for thought and determination is where is the plantation to be situated in regard to locality—on the top of the hill or mountain, on the slope, the plain, or partly on some or all of them? The second consideration is in regard to the condition of the soil, whether it is rich or poor, dry or wet, close or open. Also as to its quality and composition, which can only be ascertained accurately by careful analyses. The mechanical condition of the soil, however, may always be regarded as of more practical importance to the forester than the chemical quality of it, however well known.

The exposure is also of very great consequence, and should be well considered, because some species o tree grows best in one, and some in another; some prefer the north, while others are equally partial to the south, and so on with every variation of the compass. Some trees, again, grow comparatively well in a maritime exposure, while to others it is quite fatal. Some species grow in marshes, while others quite refuse to do so. Some, again, will thrive in a dull and cloudy atmosphere, and amid volumes of smoke from mines or cities, while to others anything but a clear atmosphere is fatal.

The altitude must also be well considered, and should be taken in its full connection with surrounding objects. Trees in general will grow as well at 1000 feet above the sea level, when the surrounding mountains are much higher, say 1500 feet, than they will at 600 feet, when no higher grounds surround them. The configuration of the ground's surface is also productive of important results, and will be found better adapted to trees in general when serried and undulating than when uniform and smooth, or level.

As one of the objects of planting is to clothe and adorn the surrounding country and beautify the landscape, therefore the future appearance of the plantation ought to be duly considered and thoughtfully planned. The outline of the plantation requires very careful defining, and must be viewed from all the different points where it can be seen from, especially roads, drives, the mansion windows, &c. In order to form an opinion of the outline correctly it is needful to have something for the eye to rest upon, and nothing answers this purpose better than a few Spruce Fir thinnings, strong, laid out so as to be distinctly seen from a distance, and they are easily moved in any direction till the desired outline is secured.

The extent or size of the plantation, too, as well as its form, requires mature thought and consideration. Where the estate, or rather surrounding fields are small and the view circumscribed, the plantation should be correspondingly small, so that it be in keeping, and proportionate to all the other surroundings. The kind or species of tree to plant must also be kept in view, so that it may harmonise with other surrounding objects, and at the same time be adapted to other conditions essential to successful growth, development, and general utility.

The kind and description of fence must also be duly considered and adapted to the requirements of the places, but in doing so we may be reminded that the plantation fence, unlike most others, is in a very short time rendered quite invisible even at a short distance, because of the trees growing up and obscuring it; and even an exactitude and nicety, very properly to be observed in laying off a flower garden or shrubbery, need not be aimed at, because the trees

when grown up completely alter the whole complexion of the figure. This aspect is very clearly demonstrated in the grounds at Abbotsford, which were originally laid out under the eye of the immortal novelist, Sir Walter Scott, whose taste in such matters could not well be surpassed, or even equalled; yet even he, for want of future perception to see what the groups, masses, and lines would be like fifty years afterwards, just did what is daily done under corresponding circumstances.

All roads, whether for present or future use, should at least be defined and marked off. In order to do this properly, much thought and consideration must be bestowed. The gradients must be well considered, and no road laid off for cartage steeper than 1 in 15, or thereabouts. Dry and firm ground is also an important requisite, whether the road is to be metalled or not. The situation of objects of interest or of views commanding the surrounding country, is also a proper consideration in laying off plantation roads. The roads, too, should be so directed as to lead conveniently to other roads, whether private or public, and to do this properly entails a correct knowledge of all the adjacent and surrounding district.

The making and maintaining of roads is of itself a subject so vast and important that it is neither possible nor desirable to enter upon it here, and it is moreover a branch of work, though closely connected with forestry, not usually required to be done antecedent to planting, but may be done from time to time as required for carriage of the wood produce as it grows up and becomes fit for market or otherwise. *C. Y. Michie, Cullen House, March* 15.

Work for April.

The severity of winter has prevailed through the past month, and forest work generally has been considerably retarded in consequence. In most quarters the arrears of work both in the nursery and woodland will be considerable, and unusual vigilance and the employment of extra hands will alone cope with the difficulty, and bring labour of all kinds up to usual seasonable standard. Unfinished planting operations had now better be deferred till autumn, and the transplanting of nursery stock, preparation and sowing of seed-beds, and other unavoidable works pushed forward instead.

Seedling hard woods will require first attention, and should be lined out at once, following up with the various species of Pinus, Cupressus, and Thuia; Larch and Hawthorn, as they make an early start to grow, will likewise require immediate attention. In transplanting the great point now to be attended to is quick removal, so that as little exposure of the roots as possible may take place. Plants received from a distance are especially liable to become dry at the root, and it will be found advantageous before planting out to puddle the roots well, and should even a short interval of time be likely to elapse previous to "lining out," they may be loosened from the bundles and placed thinly in a trench, thus preventing heating as well as insuring a regular dampness over all the roots. Recently formed seed-beds may be lightly raked over, and should frosts again appear beds of Beech, Ash, &c., will be much benefited by sticking in Spruce branches which will not only act as a partial frost-protective, but prevent the sun striking directly on the young plants during the fore part of the day.

The pruning of evergreens may for another fortnight be engaged in, and the same may be said of hedge-trimming and the grafting of ornamental trees. The latter is a simple as well as inexpensive method of multiplying the stock of rare and valuable trees. Many methods of grafting are now in practice, but that usually adopted as well, indeed, as the simplest and most common, is what is termed crown-grafting. This may be considered as the best month for sowing grass seeds upon wood-rides, where trees have been grubbed out, on the lawn or other conspicuous places, or where the dragging and cartage of forest produce renders such necessary.

Previous to sowing grass seeds a thorough preparation of the ground is absolutely necessary, for unless this is attended to it is but vain labour and waste of seed. Fork the ground lightly over and break down any hard clods of earth that may be met with, after which the surface should be made smooth and finely raked, and the seeds covered lightly in. *A. D. Webster.*

LYCASTE HARRISONIÆ ALBA.

The illustration (fig. 85) of the handsome Lycaste Harrisoniæ alba was taken last year from a plant in the possession of Sir T. Lawrence, Bart., who obtained the plant by purchase in 1882, and divided it with Mr. W. Lee, Downside. It had a First-class Certificate at the Royal Horticultural Society's meeting on April 24, 1883. A flower was shown by M. le Comte de Kerchove at the meeting of this Society on March 23 last. The segments of the flower are pure wax-white, the lip having purple or violet furrows running down it.

Home Correspondence.

The "Narras" Plant.—This anomalous Cucurbit has so far baffled all attempts in England to cultivate it, notwithstanding that good seeds have again and again been obtained and sown under all sorts of likely treatment. At Kew many and various methods have been tried, but hitherto we have never got beyond seedling plants, a foot or so high, which soon perished. Possibly some reader of this paper is acquainted with the habits of this plant, and the precise conditions under which it thrives naturally. We know that it is found in the same region as the Welwitschia, but that whilst the latter grows only in rocky places, the Narras frequents those places where sand only is found. There are healthy young plants of Welwitschia at Kew, raised from seeds several years ago. We have also good seeds of the Narras, but cannot get plants to thrive. That this Cucurbit is of more than ordinary interest is shown by information in the following note, which I will preface with a hope that some one who knows will tell us how this plant may be successfully grown in a hothouse:—"Narras" (Acanthosicyos horrida) is unique, as constituting the only instance of one of the Cucurbitaceæ assuming any other than a trailing habit. It grows up into a very prickly dwarf shrub without any foliage, and bears abundance of Melon-like fruit, very nice indeed, and of which the natives are passionately fond; in fact, they crowd down to the coast region (where only it thrives) and almost live upon it, and then carry away with them sacks of the seeds, which also are edible. These seeds are also brought down by the coasters for market here in a small way. The Cape Town children are always glad to see "Boter pitgies" (Butter seeds) exposed for sale at the fruit stalls, but the actual fruit cannot be had out of Damaraland. Mr. Palgrave describes it as really delicious, but from what he says of its mode of growth, and the kind of soil it affects, I think there is small chance of its growing in Europe. The seeds are like Melon seeds in size and shape, but the shell is harder and the kernel is not unlike that of Almonds. I have tasted them and found them very good, even after having been subjected to the drought and rough usage of a small packet sent from Central Africa by the post. *W. Watson, Kew.*

Spring.—Two warm days, with wind due south, have already changed the aspect of the country. In gardens Primroses are in bud and Violets in flower. Birds everywhere are gaily singing. The small tortoise-shell butterfly, Vanessa urticæ—no doubt a hybernated example—has just fluttered into my room. *W. G. S.* [Another fluttered in our room when a box from Cambridge was opened. Ed.]

The Silver Tree.—With reference to the interesting article on the Silver Tree of South Africa contained in your issue for March 20, I wish to state that about two years ago a few seeds of Leucadendron argenteum were sent from the Cape to a friend of mine in this country, who kindly forwarded a few seeds to me. These were subsequently inserted in a pot in a conservatory, but, probably owing to a non-suitable soil, only one germinated. The friend to whom I consigned the seed writes to me that "the plant is now about 20 inches high, and the stem barely an inch in circumference. The leaves began about half way up the stem, and the plant looks very healthy." In *Notes by a Naturalist* (H. N. Mosely, in the *Challenger*), the author remarks of this remarkable plant:—"Above Wynburg on the Inlus slopes, on *débris* mounds of Table Mountain, covered with the wonderful Silver Tree, whose leaves shine like burnished metal, and which is found nowhere else in the world but about the slopes of this mountain and its immediate neighbourhood. It does not even grow at Simon's Bay—nowhere on the earth but just round this mountain." About May or June, 1859, I happened to be on duty on that magnificent range of hills, the Pulney, in the district of Madura, Madras Presidency. I spied one tree (there may have been others) of the Leucadendron, growing luxuriantly in the garden of the Collector and Magistrate of the district. I remember using some of the leaves for book markers, when dry as they will last for a long period. The owner of the property where the tree flourished on the Pulney, had a few years previously gone to the Cape on medical certificate, and probably had on his return to India brought back with him either plants or seed of this beautiful tree. Before the expiration of the East India Company's charter, in 1854, the civil and military servants were often sent to the Cape or Mauritius on sick leave, which in those days counted for service. Numerous plants of rare beauty were by these means thus introduced into India. *J. Colebrook.*

The Cultivation of various kinds of Mushrooms.—Our attention has been drawn to the fact that one of the questions to be discussed at the horticultural congress to be held in Paris in May next is "Can any other edible Mushroom besides the common one (Agaricus campestris) be artificially cultivated?" Judging from the results of our experience as manufacturers and growers of Mushroom spawn we should have little hesitation in answering that question in the affirmative. We believe that nearly if not all of the fungi that are classed in the handbooks on fungi as terrestrial could be successfully cultivated. We now grow the spawn of the A. campestris direct from spores saved by ourselves from specially selected specimens, and if it can be done in the one instance why not in others? We would suggest that a more practical question for discussion is, "What other Mushroom would be worth cultivation?" If this question were satisfactorily answered, and it could be shown that there would be even a moderate demand for any fungi other than the A. campestris for artificial cultivation, we have little doubt but that after the coming fungus season the demand could be met with a supply of the necessary spawn for the purpose. *John Hamlin & Co.* [Attempts made in this direction have not been very successful. Ed.]

Vegetables for Exhibition.—Roots are not grown (as a rule) in private gardens to such a state of excellence as other surrounding crops. A higher standard of cultivation is necessary than is generally practised for the production of fine clean samples fit to compete at exhibitions. Good samples of most of the Brassica tribe can be produced more easily, and that, too, under greater diversified conditions of soil, &c., than fine samples of such roots as Carrots, Parsnips, Beetroot, Turnips, Celeriac, Kohl Rabi, &c. Why this should be so seems easy of comprehension. With regard to kinds of vegetables which produce their edible part above the surface of the soil, the facts that they are comparatively speaking always under the observation of the cultivator, and that insects which attack and disfigure them can be diligently kept in check, could be mentioned as advantages possessed by them. It is not so with edible roots maturing beneath the surface of the soil, and it is herein we must recognise the greater importance, when preparing the soil for them, of tillage operations being carried out with thoroughness. Depth of tillage, a comminuted state of the soil, and freedom from large stones and noxious insects, are the essential conditions of the soil. The proper texture is also a matter of importance. Soils highly charged with vegetable earth (humus) the outcome of continual dressings of manures, generally causes too much of what might be termed formation of lateral roots, hence many of the samples grown are found to be irregular in outline and rough in the skin—two serious drawbacks from an exhibitor's point of view. The manure of animals is that which is commonly used in private gardens, and which more or less, according to kind, favours the multiplication in the soil of noxious insects. Lime, soot, and salt are also valuable manures, especially the two former, and they have an opposite effect upon the soil; and it is when they are applied to old garden soil which has been for years in continuity enriched only with strong dung, that their beneficial effects are most visible in after-crops. Even in the absence of a chemical knowledge of the requirements of certain characters of soil, brilliant

results have been obtained by their use, and various theoretical doctrines upset. On what may be termed poor shallow soils marvellous crops have been achieved by the application of top-dressings, and so forth, to such kinds of the Brassica tribe as Cauliflower, but such roots as Carrots and Parsnips were not similarly influenced by the action of these substances; in fact, the surface feeding of such plants seems to be without any perceptible result. Size would be increased by surface manuring as the crop advanced, but the development would be irregular, and quality would deteriorate. No after-treatment, when the seeds are committed to the ground, can rectify the bad results arising from a defective preparation of the soil, as the source of evil would then be beyond reach. Success will in a great measure depend upon a proper selection of varieties suitable for the depth of soil found in the garden. I have often noted the fact in practice, that the finest exhibition roots are produced on ground quite recently trenched, and where the operation had not previously been carried out for a number of years. This seems a conclusive proof that the aids to fertility, such as manures, should be in proximity to the tap-root during the latter stages of growth, as in these instances it always is. The comparative lightness and porosity of trenched soils, by preventing the pressure of the soil, counteracting the natural outward distension of roots, must likewise assist the formation of large and smooth roots. Wood ashes, rich in fertilising properties, form a good surface dressing prior to sowing the seeds, and if lime, soot, or salt have been incorporated with the soil beneath, in quantity according to its texture and requirements, the harvest in due course of a perfect sample of roots should be the result. *G. H. Richards.*

Hyacinth The Sultan.—I send herewith some flowers of this variety which seem uncommon. The usual flower-spike was normal, and fully developed, but those enclosed grew up beside it; one is a scape with one terminal bell, whilst the other is, I should say, a racemose cyme. The specimens came from Messrs. Lucombe, Pince & Co.'s nursery at Exeter. Has such a freak been observed elsewhere? *W. Napper.* [A Hyacinth bulb at this period contains not only the young flower-spike of the present season, but the germs of those for the next year. Something—what, we cannot say—has started the latter into growth before their time, hence they are irregular and malformed in more than one way. Ed.].

Anthracite Coal.—Mr. Rust will, I hope, pardon me if I venture to point out that his note is not altogether satisfactory, because he omits the prices of coke and anthracite; "15*s.* worth" and "£1 worth" are indefinite. Anthracite should be a splendid fuel for heating horticultural structures, provided the boilers are of suitable shape, for with an adequate draught it gives out an intense heat, but not "more heat than coke," because the combination of so many pounds of carbon with oxygen can produce only so many units of heat. The question turns simply on the price per ton of the respective fuels delivered where they are to be consumed, and it may be that anthracite is cheaper than coke at Eridge Castle. I have an idea, however, that anthracite will be found too fierce for many of the horticultural boilers. Anthracite varies slightly in composition; but as a rule it is free from the impurities of bituminous coal. *Samuel Ray.*

Ferns Eaten by an Insect.—I herewith send you specimens of an insect that has been playing sad havoc in one of my plant-houses here. I first noticed the young fronds of Adiantum cuneatum eaten off, and the small pinnæ lying about wholesale; Davallia bullata and Adiantum farleyense were also eaten; some plants of Azalea that had been taken in to force had their flowers partly devoured, and the insects also attacked a plant of Cœlogyne cristata, and ate the flowers. At first I thought it was slugs that had been doing the damage, and then woodlice, and next cockroaches were blamed but we seemed perfectly free from all these pests. After two or three searches at night we discovered three of these little weevils. By shaking the plants of Maidenhair Ferns that had been eaten we found several, and have altogether caught about fifty at night. It took me some time to find out their haunts, thinking they were in the bed of soil, but I discovered a few small holes in the pots of the Ferns, and cutting the fibrous balls open, found the pests concealed under the crown of the plant. I also found some in the grub and chrysalis state. It seems to take a strong solution to kill them, and I am afraid there is only the old remedy—to "Catch 'em, and kill 'em." Thinking it might enlighten others, who might be plagued for the first time in the way I have been, I have penned these few notes. Are they Curculio sulcatus? *C. Orchard.* [The Ferns were eaten by a common species of weevil, the way to trap which was given in the *Gardeners' Chronicle* for February 27, 1886, p. 281. Ed.].



Fig. 85.—Lycaste Harrisoniæ var. alba: from Sir T. Lawrence's collection. (see p. 436.)

Plants in Flower at Shirenewton Hall, near Chepstow, on March 28:—

Primula vulgaris, in abundance
,, capitata, just in flower
,, hybrids, flowering through the snow all winter
Scilla bifolia, in flower since March 23
,, præcox, do
,, sibirica, do
Saxifraga Borsagiana, almost over
,, ovata
Galanthus nivalis, just over
,, ,, var. Melvillei, in full flower
,, ,, var. serotina, do.
,, Elwesii, do.
,, Redoutii, do.
,, nivalis maxima, do.
,, ,, gigantea, just over
Narcissus minor, in full flower
,, minimus, do.
,, pallida præcox, do.
,, pseudo-scoticus, do.
,, spurius, do.
,, Irish nanus, do.
Hepatica, double red, do.
,, double blue, do.
,, single red, do.
,, single blue, do.
,, single white, do.
Omphalodes verna and var. alba
Leucojum vernum, almost over
Crocus vernus, in full flower
,, vars., do
Helleborus guttatus, do.
,, atrorubens, almost over
,, niger and vars., over
,, fœtidus, in full flower
Pulmonaria virginica, do
,, ,, alba, do.
,, saccharatum, do.
Arbutus Unedo, do.
Jasminum nudiflorum, nearly over
Sisyrinchium grandiflorum album
Eranthis hyemalis
Corydalis cava alba
Common Wallflower, in full flower
Harpur-Crewe's Wallflower, do.
Erica mediterranea, do.
,, herbacea, do.
Iberis superba, do.
Aubrietias, do.
Ayssum lucidum, do.
Bellis perennis, do.
Wild Daffodil, do.
Laurustinus, do.

The severe winter does not seem to have been very destructive to plants here, as plants of Ornithogalum maritimum and Œnothera taraxacifolia are the only plants certainly dead. The Cistus tribe have suffered much, and so have Pentstemons. The Snowdrops bloomed above the snow for nearly a month. Slugs (as is always the case after a severe winter) are unusually abundant. During the past week the growth of plants has been something extraordinary. I send this as companion to Mr. Fish's report. *E. J. Lowe.*

Corn Mildew and Barberry Blight.—In a recent communication upon this subject my friend Mr. W. G. Smith has made some remarks which seem to me to call for a reply. In the first place I cannot agree with him in the slight value he puts upon the observations of "rustics." Now, rustics are dwellers in the country as opposed to dwellers in towns. Surely those who live amongst cornfields and hedgerows are much more likely to notice facts connected with mildewed cornfields than those who spend their lives in the labyrinth of bricks and mortar which constitute our towns. The rustics have observed and recorded the fact (for it is a fact and not a town-born fancy), that Wheat growing near a Barberry is more generally mildewed than when it grows elsewhere. Mr. Smith says the mycelium invades the seeds, and "these seeds are frequently planted with the mycelium in their tissues." This may be perfectly true, but Mr. Smith jumps to the conclusion that "a diseased progeny is the result." Has Mr. Smith forgotten his numerous endeavours to obtain Mahonia plants from diseased berries? Not only did he fail himself, but professional horticulturists who also attempted to get these Æcidium-affected berries to grow were equally unsuccessful. That the mycelium of certain Uredines does permeate the whole of their host plants from top to bottom (*e.g.*, Æcidium tragopogonis, Uredo suaveolens, &c.), is a fact well known to mycologists, but it is equally well known that the majority of the Uredines have localised mycelia. No amount of argument can alter these facts. It is absurd to argue because a few

Uredines have permeating mycelia, therefore all have. It is not a question of argument but one of observation. Mr. Smith quotes Mr. Brebner to the effect that it is "extremely probable that Berberis vulgaris is inoculated by its own Æcidium." When we remember that the Æcidiospores have been placed over and over again—not by one but by many observers—upon Barberry leaves, and in no case has the wished-for Æcidium appeared, the extreme probability of the case becomes changed into an extreme improbability. The same gentleman considers that "the position of these Æcidiospores strengthens the theory that they are resting spores." Certainly this theory requires something to strengthen it, inasmuch as the Æcidiospore is a spore which retains its vitality for a very limited period only. I never could get an Æcidiospore three days old to germinate, but I am willing to concede that under favourable circumstances they might retain their vitality for a week. Mr. Smith gets so confident upon the subject that he ruthlessly condemns all possible experiments when he says, "All experiments are perfectly worthless unless it can be proved with the utmost certainty before the experiments are commenced that there is not a scrap of mycelium or a single spore of Æcidium or Puccinia on or in the plants to be experimented with." In other words, before you infect a plant it must be cut up into sections a fraction of an inch in thickness—that is to say, you must destroy it! I would venture respectfully to point out that other means may be adopted which, short of mincing up the plant to be infected, will convince any ordinary mind of their healthiness. Thus, if a plant has six leaves upon it, and you infect three of these, and if the infection is followed in a fortnight by the fungus upon those three leaves you have infected, while the other three leaves remain healthy for the remainder of the season, surely your object is attained. Or if you place a dozen plants in a row, and infect every alternate plant, and the fungus appears on the plants you infect and not upon their uninfected neighbours during the rest of the year, such a demonstration can hardly fail to convince an unprejudiced observer. Both these methods have been adopted by myself, and are easy enough to repeat by any one desirous of doing so. I would ask my friend, if he is so convinced of the absurdity of the connection existing between Æcidium Berberidis and Puccinia graminis, why he does not pluck up courage and try the experiment for himself? It is not a difficult one to perform, and there is no reason to suppose the neighbourhood of Dunstable is less suited for experimental investigations than that of King's Lynn. Not the least amusing part of Mr. Smith's communication is the representation (fig. 59), not of what really happens in the life history of Puccinia graminis, but of what Mr. Smith thinks it ought to be found. *Charles B. Plowright, F.L.S.*, 7, *King Street, King's Lynn.*

Camellia in the Open Air.—Considering the very severe weather we have had, I thought you might like to see a seedling white Rhododendron raised on this place, and now about 16 or 18 feet high, with several trusses, one of which I have sent, and cut from the open air. The change in the weather has brought out flowers in a wonderful manner—Camellias in particular; one or two I have put in the box, cut in front of our house, and which, if this weather lasts, will have many hundreds of blooms on it. I am afraid the two large Benthamias will hardly recover; Ozothamnus is also killed. *R. G. Lakes.* [Both Camellia and Rhododendron are unhurt. The former is in the way of Lavinia Maggi, the latter has good trusses of white bells. ED.]

Eucharis amazonica.—I have been very much interested in the correspondence on "our favourite Lily," and as I have some very healthy plants in pots that require two men to carry them, which are placed on one side of a house 40 feet long, I thought it might nterest your readers to know that they are the same bulbs that were badly infected by fungus some ten years ago. I did not burn my stock as some recommend, but removed all the soil and washed them clean with Gibb's soft soap, and repotted them myself in brown peat, with all the woody fibre removed, one-third silver-sand being added; from that day to the present I have had no trouble with them, and I quite agree with Mr. W. B. Grove, that good healthy bulbs resist all attacks of disease in whatever form it may appear so long as the soil is suitable. Now a word of warning to young gardeners. Never use leaf-mould with decayed woody particles in it for growing Eucharis; in using peat take time to clean it of every particle of fibre. If you omit this precaution, and you place the pots in the stove, what can produce fungus better than decayed wood in a moist heat? And I can quite endorse Mr. Edward Ward's method as to planting out the bulbs into beds. I enclose you a leaf to show what vigour is got from such culture. I should like to know how often Mr. Ward or Mr. Adams replant the Eucharis beds. And just let me say that the leaves of my bulbs cover the hot-water-pipes from view and they are not injured thereby. Neither do I allow my bulbs to get dried up, and my present stock is fourteen years old. *Amos Groombridge, Plymouth.* [The leaves sent were of large size, and very healthy. ED.]

—— Having read the correspondence recently going on concerning this plant, I should say from Mr. Macdonald's own account he has certainly got a fine lot of Eucharis, and is very successful in flowering them at all seasons of the year. Such being the case, he will do best to let well alone. At the same time I think he is too unbelieving about the planting-out system, and has apparently had no experience of it. I have seen both the Hewell Grange and Stoke Edith collections of Eucharis, and at both places they are a great success. At Lord Londesborough's garden in Surrey the whole of the Eucharis have been planted out about ten or twelve years in one house, and have always given grand results. *Charles Denning, Holme Lacy Gardens, Hereford.*

Reports of Societies.

EDINBURGH BOTANICAL: Mar. 11.

THE usual meeting of the Society was held in 5, St. Andrew's Square, this evening, Professor Dickson, President, in the chair.

The following communications were read:—

I. "On the Structure and Functional Arrangement of the Leaves of Darlingtonia." By Dr. Macfarland.

II. "Observations on the Island of Rum, with notes on its Flora." By Mr. Symington Grieve.

III. "Report on the Excursion of the Scottish Alpine Botanical Club to Killin and Loch Awe." By Dr. William Craig.

IV. "Report on Temperatures and Open-air Vegetation at the Royal Botanic Garden." By R. Lindsay, Curator.

"February has been extremely wintry, with much snow and uninterrupted low temperatures; vegetation has therefore most fortunately been held well in check. Had it been otherwise, the results would have been much more disastrous than we now find them, particularly when such unusually severe weather has been protracted into the present month.

"During February the thermometer was at or below the freezing point on twenty-two mornings, indicating collectively 128° of frost for the month as compared with 67° for February, 1885. The lowest readings were registered on the 3d, 22°; 4th, 20°; 5th, 16°; 25th, 23°; 27th, 22°. The highest morning readings were on the 8th, 36°; 9th, 40°; 10th, 38°; 12th, 34°; 13th, 39°. The lowest day temperature was 30°, which occurred on the 3d; and the highest 50°, on the 13th of the month.

"Not much direct injury has been done to vegetation by frost, notwithstanding the large amount experienced. This result is due in great measures to the almost dormant condition in which most outdoor plants still remain and also to the absence of extremely low readings, 16° being the lowest marking for February. Of the forty spring flowering plants whose dates of flowering are annually recorded, the following ten came into flower, but they cannot by any means be said to have reached perfection, viz.:—Tussilago fragrans, on February 6; Galanthus nivalis, on February 9; G. plicatus, on February 9; Tussilago alba, on February 10; Corylus Avellana, on February 10; Eranthis hyemalis on February 10; Crocus susianus, on February 12; Scilla præcox, on February 13; Leucoium vernum, on February 17; Scilla sibirica, on February 17. On the rock garden twenty plants came into flower, amongst which were the following:—Colchicum crociflorum, Crocus Sieberi, C. annulatus, Galanthus Elwesii, Primula vulgaris and varieties, P. veris do., Rhododendron præcox, Saxifraga Burseriana.

"Since the present month began there has been no improvement in the character of the weather, but the reverse. Besides snowstorms of unusual severity there has been hard frost every morning without intermission. On the morning of the 7th the glass fell to 13°, or 19° of frost, which is the lowest register at the garden for the month of March since 1879, when 3° lower were registered on March 14 of that year. The total amount for the whole month at that time was 60° of frost, while during the last eleven days 89° of frost has been registered.

"Outdoor work is far behind; but good progress will be made whenever a thaw comes on, as the ground is sure to be in fine working condition, owing to the mellowing influence of so much frost on the soil."

V. "On the Vegetation in the Garden of the Royal Botanic Institution, Glasgow." By R. Bullen, Curator.

This report stated that the lowest temperature for February was 20°, registered during the night of the 3d. This was the lowest temperature since the night of December 13, 1882, when the same record was made. The night temperature was at or below the freezing point on twenty nights. The day temperature was correspondingly high, the temperature being below 32° on four days only. Slight drifting snow and cold winds had a marked effect in retarding vegetation, fewer hardy plants being in bloom than is usual even after a hard winter.

In the discussion following these papers Mr. Buchan, of the Meteorological Society, said the cold had been most extreme in the south and midland districts of England, where it was 7° below the average; in Yorkshire about 6°; from the Cheviots to the Grampians about 5° below the average. North of the Grampians it had been very much warmer, and in Shetland it was not much more than 1° below the average.

VI. Miscellaneous.

The following plants in pots were exhibited from the garden:—Primula floribunda, an improved form, having flowers as large again as the typical species; Crocus Imperati albiflora, Crocus chrysanthus, Polystichum Lonchitis, crested variety, found by Dr. Craig last year.

GLASGOW AND WEST OF SCOTLAND HORTICULTURAL.

THE spring show of this Society was held in St. Andrew's Hall on Wednesday, March 24. After such a prolonged and severe winter, the exhibition was looked forward to with some anxiety by the directors, and it was not until the exhibits were actually in the hall that they felt assured it would be a success. The issue of cheap tickets, which had been sold previous to the show, was largely taken advantage of, and if continued will tend to popularise these exhibitions. During its long history the Society has done much to foster in Glasgow a love for flowers, and it is pleasing to note that its efforts have at last been recognised by our municipal rulers, whose taste for flowers is shown in the great attention now paid to the floral adornment of the public parks and open spaces. The local nurserymen sent in large collections for exhibition. Messrs. Austin & M'Aslan furnished the platform with a large and varied collection of greenhouse flowering plants, also a number of hardy shrubs, which are usually forced into bloom at this season, the brilliant colours of which were relieved by a judicious admixture of the elegant cut-leaved Japanese Maples, which varied in colour of leaf from light green to bronze. Messrs. Smith & Simons also furnished a table which was very effective, some well grown Palms added greatly to the appearance of the centre of the hall, as well as contributed much to what was generally admitted to be one of the best arranged groups.

Mr. John Sutherland, Lenzie, contributed a large number of miscellaneous small greenhouse plants, nothing particularly novel being amongst them, excepting some seedling Azaleas, all (except one) being unnamed. This was a very large white flower of good substance, with a tendency in some of the flowers to become semi-double. It is named Mrs. Beveridge.

Mr. George Russell, Redlands, Kelvinside, sent a plant of Maranta Veitchii in a 24-inch pot which was very highly commended, and deservedly so, for a better grown specimen had not been seen in these parts.

Mr. Peter Mackenzie, Bellfield Nursery, Paisley, had, as usual, a number of bouquets, which were much admired by the visitors.

Messrs. Dobbie & Co., nurserymen, &c., Rothesay, exhibited some specimens of their improved Parsnip, about 2½ feet in length, but deficient in girth. It was suggested that the manure had been trenched in too deep.

COMPETITION CLASSES.

Bulbous plants are always a leading feature at this season, and were largely represented, but although some good blooms might be found amongst the various collections, the majority were small.

The best Tulips were Pottebakker, Proserpine, and

Keizer-Kroon. Mr. James Heron, Pollock House Gardens, Pollockshaws; and Mr. Hugh Miller, gr. to William McOnie, Esq., Everslie, Pollockshields, took the lead in these classes; the latter was also 1st for Crocuses and hardy spring flowering plants.

Mr. George Irvine, gr. to Mrs. Townsend, Italian Villa, Pollockshields, took the lead in the Hyacinth classes open to gardeners and amateurs.

Mr. Peter Mackenzie was a good 1st for a collection of bulbous plants, table space not to exceed 12 feet by 6 feet, Mr. J. Sutherland being 2d. Mr. Mackenzie was also 1st for eighteen Hyacinths, Mr. Sutherland 2d, and Mr. Alexander Lister, nurseryman, Rothesay, 3d.

Stove and Greenhouse Plants.

For a collection of plants to fill a table 12 feet by 6 feet two collections only were entered. First honours were awarded to Mr. John Matheson, gr. to John L. Henderson, Esq., West Bank, Partick. This table was neatly arranged, and contained a variety of elegant pinnate-leaved Palms, such as Dæmonorops pyracanthus, Cocos Weddelliana, Dypsis madagascariensis, &c., some coloured Dracænas, and Crotons, &c.; but the blooming plants, particularly the Azaleas were poor, and detracted considerably from the effect of the group. The corresponding table was furnished by Mr. James Clatworthy, gr. to R. Ramsay, Esq., Langside, and was awarded a special prize, the 2d prize being withheld by the judges owing to some Hyacinths, &c., having been introduced into the arrangement, contrary to the wording of the prize schedule. The collection contained some very large Azaleas, splendidly bloomed and which occupied the centre of the table, being surrounded by small well grown foliaged plants (two or three tall Palms would have added greatly to the effect of this group).

For six stove and greenhouse plants in flower, distinct varieties, Mr. Thomas Hogg, gr. to John Gordon, Esq., Aikenhead, was 1st, with grand plants of Ericas, Azaleas, Rhododendron Countess of Haddington, Clivia miniata, and Dendrobium nobile; Mr. W. M'Lachlan, gr. to A. Hutchinson, Esq., Violet Bank, Langside, was 2d: his collection contained two very fine Azaleas, but his other plants were weak.

Mr. Hogg was 1st for three Azaleas, and Mr. Clatworthy 2d. Mr. Hogg was also 1st for three Azaleas, distinct varieties, grown and shown in pots not exceeding 8 inches, all five-year-old plants, struck from cuttings by Mr. Hogg. The other collections of Azaleas were also good—in fact, they have seldom been seen in better form in Glasgow. And the same may be said of the greenhouse Rhododendrons, the three plants shown by Mr. James Hutchison, gr. to J. B. Greenshields, Esq., Lesmahagow, being very fine; his varieties were Princess Alice, Countess of Haddington, and Multiflorum. Mr. Clatworthy 2d.

Ferns, especially Mr. Hogg's Gleichenias, were well shown. The only Tree Fern in the hall was exhibited by Messrs. Scott & Co., 28, Queen Street, who were awarded 1st prize for a well-grown plant of Cyathea medullaris.

Amaryllis were well shown by Mr. Hogg, and Lily of the Valley by Mr. Heron. The latter exhibitor was 1st for the collection of vegetables in season, eight distinct varieties; Mr. Hogg was 2d, and Mr. John McLean, Auchenames Gardens, West Kilbride, was 3d.

Most of the other classes were fairly well represented, especially the three table plants in the amateurs' class, the plants being superior to those shown in the higher classes.

In the schedule there were three classes for Dutch bulbs (open to ladies only) and one for the best stand of Ferns grown under a glass shade. It is to be regretted that there is not more competition in these classes. *Robert Bullen.*

PAISLEY FLOWER SHOW:

March 25 and 26.

Paisley is becoming celebrated in the West of Scotland for its flower shows. The public spirit shown by those who own valuable collections of plants is possibly more marked here than in any district of Scotland. The consequence is that the articles furnished for exhibition and competition are not only numerous but are, generally speaking, of high meritorious character. This not only applies to the general furnishing of ordinary glasshouses, but the higher priced plants, as Orchids, Sikkim and other greenhouse Rhododendrons; and choice specimen plants are found in such quantities here that no place of similar extent of population in the North can vie with them. This is mainly owing to the owners of such collections taking a pride in allowing their plants to be exhibited for the general welfare of the community; and when one considers the risk attending the moving of tender plants from their usual comfortable homes to public halls, the concession is seen to be a most laudable one; and judging by the numbers that flock to the show, especially during the evening, it is abundantly appreciated.

The show as usual was held in the George A. Clark Townhall, a place admirably adapted for exhibiting plants to the best advantage, and it was literally loaded with a miscellaneous assortment. The post of honour is the filling of the large orchestra, which requires a good half dozen vansload of plants to fill it decently. This space was occupied by the collection of Stewart Clarke, Esq., Kilnside. In the background were noble specimens of Kentia Fosteriana and K. Baueriana, several towering masses of Areca, and Dæmonorops fissus, which, from their elegant cut pinnatifid foliage always make a splendid background for masses of colour confronting them. In salient spots were set great pyramids of red and white Azaleas, nothing more captivating for a bit of colour among them than A. amœna; these again relieved with bronze and particoloured Dracænas, all without a blemish so far as the eye could see; and in a broad flower-garden-like posy of Dutch bulbs sprung up several excellent specimen Orchids, amongst which was Cœlogyne cristata, and an effective piece of Cypripedium villosum, along with various Alocasias, the whole fronted with a line extending 20 yards of Dendrobium Wardianum and Odontoglossum Alexandræ, with a thin line of Maidenhair Ferns as a front dressing—an exceedingly effective table, which commanded general admiration, although possibly a little too equal in the foreground, but nevertheless showing much cultural skill on the part of Mr. Allan Henderson, the gardener.

At right angles was the collection of Mrs. Coats, Fergushe, artistically put up by Mr. Duncan McDonald, with a fine Tree Fern for the centre, some well flowered Azaleas flanked with Pandanus Veitchii, and confronted with a lot of chiefly forced shrubs and flowers arranged somewhat bouquet-like as to colour, but exceedingly effective as a whole, and fringed with Maidenhair Ferns and Isolepis, such choice things as Rhododendron Veitchianum springing out amongst the artificial shrubbery.

The adjoining table was filled by a new exhibitor, Mrs. Kerr, Gallowhill, whose gardener, Mr. Macraild, is entitled to a meed of praise for his general collection, which, like all the others, was effectively staged. It comprised a pair of Kentias and an Areca, an Araucaria excelsa, a well-flowered Clivia, and an effective display of Sikkim and other hybrid indoor Rhododendrons, which, from their novelty, attracted much attention. They were all well flowered, and comprised the sweet-scented Nuttalli, Dalhousieanum, Veitchianum, jasminiflorum, and several of the Princess Alice strain. These, along with Cœlogynes, Azaleas, Dendrobium Wardianum, Cattleya amethystoglossa, C. Trianæ, and a general miscellaneous mixture, all of more than average merit, made up a very showy table. *Vis-à-vis* to this was the collection from Archibald Coats, Esq., Woodside, which comprised many of the more excellent and valuable Orchids, Gleichenias, and other plants which always take the eye of a *connoisseur*, and which did much credit to the gardener, Mr. Beveridge. The greenery was mainly made up of Palms with masses of Azaleas trained, which had all the better effect in a mixed collection.

The Orchids here were both numerous and choice, and comprised Dendrobium Gibsoni, a huge Cymbidium eburneum, a capital C. Lowianum, also the usually indifferently cultivated Lycaste Skinneri, but here in several dense pieces, which used to delight Mr. Skinner and many others thirty years ago. The usual finishing at front was Maidenhair Fern, indispensable everywhere, but here grouped with the charming Hoop-petticoat Narcissus, which even now captivates an old Orchid stager more than many novelties. The adjoining table was purely competition subjects, excellent in themselves, but sadly disarranged, the *tout ensemble* of all exhibitions. Heaths, Clivias, Genetyllis, Clematis, and big Orchids in pairs or singles, each competitor anxious to have his own pet spot, that did not make an effective whole. The principal prize-takers here were Mr. James Maxwell, gr. to Mr. Arthur Barshaw; Mr. Alexander Baure, gr. to Provost Clark, Chapel House; Mr. A. Johnstone, gr. to Mr. James Wood, Oakshaw; Mr. William Cameron, gr. to Thomas Glen Coats, Esq.

Among Hyacinths there was little novelty, the old-fashioned sorts still keeping to the front. The best in the gardeners' class came from Mr. Jas. Millar, gr. to John Clark, Esq., Gateside; and the best in the open classes were exhibited by Mr. Peter Mackenzie, closely followed by Mr. R. Millar, gr. to Mrs. Clark, Netherhill.

Some very good Orchids were shown by Messrs. Ireland & Thomson, Edinburgh, comprising Cattleya Trianæ, Dendrobium Wardianum, Odontoglossum triumphans, and the beautiful Cattleya citrina. Mr. J. Dickson, Ladyburn; Messrs. Wm. Paul & Son, and Mr. P. Mackenzie had each effective lots.

The show was formally opened by Mr. Renshaw, before a large and influential audience, and the receipts were quite up to expectations.

CRYSTAL PALACE.

The spring show of the Crystal Palace Company was held on the 26th ult. in the centre transept. The exhibits were displayed to advantage, being lightly arranged, and were fully appreciated by the large company of visitors. The competition was not so large as might have been expected.

Cyclamens were the great feature of the show, the St. George's Nursery Company (Mr. H. B Smith, manager), being the most successful exhibitors, showing splendid plants, masses of clear and bright blooms. Amateurs stood well with these plants, Mr. Wiggins, gr. to W. Clay, Esq., Kingston, being 2d in the open class. This exhibitor and Messrs. Cannell & Sons, Swanley, Kent, staged good collections in the miscellaneous class.

Hyacinths formed an important feature, being extremely well shown by the nurserymen, by Mr. H. R. Wright, Blackheath, and Messrs. H. Williams & Sons, Finchley, who took prizes in the above order. Mr. Wright had an extra collection of about 100 pots, containing many fine specimens especially of the dark blues; the amateurs' class was not well represented.

Narcissi were shown in quantity by Messrs. Barr & Son, Covent Garden, and by Mr. T. S. Ware, Tottenham, whose specimens were in pots. Mr. H. R. Wright, and Messrs. H. Williams & Sons, Finchley, were the prize-takers in the competition classes.

Tulips were well shown by both amateurs and nurserymen, Mr. H. R. Wright being again to the fore, and closely followed by Messrs. H. Williams & Sons. The successful amateurs were Mr. T. N. Penfold, gr. to Rev. Canon Bridges, Beddington, and Mr. J. Horsley, South Kensington, S.W.; their plants were small, but very good, the flowers being nicely shaped and bright in colour.

Lily of the Valley was best shown by Messrs. H. Williams & Sons, whose plants attracted great attention, being masses of flower; Mr. H. Wright, 2d. Amateurs stood well here, Mr. Luff, gr. to R. R. Hyatt, Esq., Heatherset, Streatham, showing plants which were a credit to him: they were well flowered.

Roses were not numerous, Messrs. Paul & Son, Cheshunt, being the only exhibitors. Their collection was very prettily set up, and each plant well flowered.

Mignonette was shown in the ordinary form by the St. George's Nursery Company, and in the tree form by Mr. Luff. Both were good specimens of their respective classes. Cinerarias and Azaleas were not either of them good, being straggly specimens, and not in a good condition.

Groups.

Messrs. J. Laing & Co., Forest Hill, secured the 1st prize here with a group which well deserved the award. Foliage and flowering plants were tastefully arranged, displaying each other to advantage. Many Orchids—Odontoglossums, Lycastes, Cattleya Lawrenciana, Phaius grandifolius, and others—being used. These, with Acacias, Caladiums, Dracænas, &c., intermixed with Palms and Ferns, formed the greater proportion of plants employed. A striking plant in the foreground was Leptospermum scoparium, a handsome flowering hard-wooded New Holland plant, which attracted much attention. Mr. H. James obtained the 2d prize.

Mr. F. Bause, Morland Nursery, South Norwood, staged a small collection of extremely well grown examples of foliage plants, as sent to market. The group contained a fine fruiting plant of Ananassa sativa variegata, and several Tillandsias of rare beauty and excellence.

Certificates.

Messrs. J. Laing & Co., Forest Hill, were awarded Certificates for the following:—Begonia Gloire de Sceaux, Cattleya Lawrenceana, Clivia miniata Mrs. Laing.

ROYAL AQUARIUM, WESTMINSTER.

The first show of a series to be held this year at the above place was opened on Tuesday last. The quantity of plants and flowers shown was larger than one would have expected, judging from previous exhibitions this season.

Narcissi and Daffodils predominated, Messrs. Collins Brothers & Gabriel, 39, Waterloo Road, S.E., staging the best collection of the latter; the flowers were most bright in appearance, and of rich colours. Messrs. Barr & Son, Covent Garden, and Mr. T. S. Ware, Hale Farm Nurseries, also exhibited large and good collections of the same. Narcissi in pots were well shown by Mr. H. R. Wright, Lee, Kent, and also by Mr. T. S. Ware; these two exhibitors were 1st and 2d, both showing good specimens.

Tulips were not numerous but of good quality, Messrs. H. Williams & Sons, Finchley, taking the lead with a lot of well-flowered plants. They were closely followed by Mr. H. R. Wright

Hyacinths were well represented by the nurserymen, and here Mr. Wright was 1st with a good

collection, most of the spikes being very fine. The 2d prize group, which came from Messrs. H. Williams & Sons, was very near the 1st in quality; Mr. Brown, Richmond, Surrey, was placed 3d with a collection of much smaller plants. Amateurs did not make a good show here.

Cyclamen played an important part in the exhibition, very fine specimens being shown by the St. George's Nursery Co., Hanwell, W. (Mr. H. B. Smith, manager). Mr. J. T. May, Hillingdon, also contributed good plants. The 3d place was occupied by Mr. T. Wiggings, gr. to W. Clay, Esq., Kingston-on-Thames, who exhibited also in the amateur's class, gaining the highest place in it.

Cinerarias were fairly well represented by Messrs. J. Carter & Co., High Holborn, and by Mr. A. D. Clarke, gr. to W. B. Brand, Esq., Wanstead Park, Essex. Prizes were awarded in the order of the names.

Pelargoniums, both red and white, were exhibited. Messrs. H. Cannell & Sons, Swanley, Kent, staged a cut collection of many varieties of zonals; the colours were bright, and the individual flowers large. Mr. F. Perkins, Leamington, exhibited a box of trusses of a very good white form of the decorative Pelargonium Volonté Nationale.

Lily of the Valley was shown by Mr. Wright. The plants were well flowered.

Groups of market plants. — These were very attractive and interesting. Messrs. H. Williams & Sons secured the 1st prize with a good representative group of flowering plants, consisting chiefly of Cytisus, Deutzias, Primulas, bulbous plants in season, Azaleas, &c. Mr. H. R. Wright followed with a group chiefly of foliage plants, with a few Odontoglossums and Spiræa japonica.

Hardy spring flowers formed an interesting feature, as showing what could be done in the way of spring gardening. Mr. T. S. Ware, Tottenham, staged the finest lot, the quantity, quality, and variety, being very great. Iris reticulata vars., Muscaris, Primulas, Hepaticas, and many other well known hardy flowers being well represented. Mr. A. Dean, Bedfont, Hounslow, W., followed in order of merit with a group consisting chiefly of Primulas in great variety, Cyclamen Atkinsi, Saxifrages, Hepaticas, &c.

SCOTCH NOTES.

SALE OF ORCHIDS AT BRIDGE OF ALLAN, STIRLINGSHIRE.

MR. J. B. YOUNG, of Allanbank, Bridge of Allan, offered for sale, on the 25th ult., a large collection of Orchids, imported and established plants, amounting in all to nearly 500 lots. Among the established plants were fine healthy tufts of Masdevallia Lindeni No. 1, described as a very fine variety from Meadowbank, which were knocked down at an average of 32*s.* each; grand plants of M. Lindeni, Wrigley's variety, went at from 23*s.* to 40*s.* each; M. Harryana cœrulescens, at from 13*s.* to 15*s.* each; M. Walkeri, 41*s.* to 46*s.* each; M. versicolor, 56*s.* each; and M. Wagneri, from 5*s.* to 10*s.* each. These were all exceptionally well-established plants, of considerable bulk, in 5, 6, and 7 inch pots, and were sold, as the phrase goes, at "an old song." A very fine healthy plant of Cattleya exoniensis superba, with nine pseudobulbs, was sold a bargain at £40; and a very fine established clump of C. labiata (autumn-flowering variety) went at 50*s.*, also a great bargain.

Amongst the imported plants we noted that fine clumps of Odontoglossum pulchellum majus sold at 1*s.* 4*d.* each; O. Alexandræ, at 2*s.* 6*d.*; Oncidium Jonesianum, at 2*s.* 6*d.*; Cattleya Mossiæ, at 1*s.* 6*d.* to 2*s.* 6*d.*; Galeandra Baueri, 9*d.*; and Cattleya Gaskelliana at 1*s.* 6*d.* each.

The principal buyers were Messrs. Paterson, Paisley; D. Mitchell, Millfield, Polmont; Ogilvy, Arendean, Dollar (who was the fortunate buyer of Cattleya exoniensis superba); Cocker, Wheatlands, Falkirk; and Peck, Glasgow. We left Bridge of Allan with a deep conviction that only such a conjuror among Orchids as Dr. Paterson could induce Orchid lovers to go to that place to attend a sale of their favourites.

DR. PATERSON'S ORCHIDS, BRIDGE OF ALLAN.

A recent visit to this famous collection of Orchids afforded me the greatest pleasure I have had for many a day in connection with this class of plants. There is always something in bloom here, and always well bloomed whatever it may be. But were there nothing in flower the spectacle of so many faultlessly cultivated plants would of itself be a treat rarely enjoyed. Every plant, be it what it may—Orchid, Todea, Sarracenia, or Mammillaria—the latter growing (for the drollery of the thing, I presume), in an old French *sabot*—is done to perfection. Robust health is manifest in each individual, and cleanliness and order are conspicuous everywhere. Dr. Paterson's practice with East Indian and other species which are almost universally grown in high temperatures would not be endorsed by Orchid growers generally; it would rather be condemned. His low temperatures for such species would be scouted as wild heresy. Yet the Doctor can lie in his bed without turning uneasily of a cold winter's night, even though perfectly conscious that the thermometer may descend in his warmest house before morning to 45°. Such a probable contingency does not in any way disturb him; he does not wish it otherwise; indeed, he would rather have it so than 15° or 20° higher, which is more like the figure universally regarded as orthodox and safe. He is also heterodox on another point of cultural practice. He has no faith in the practice of standing Orchids on stages specially constructed to retain moisture by any means, whether by carpeting with sphagnum or any other moss, or strewing them over with retentive material, such as gravel, crocks, or charcoal. All his plants stand on dry boards, and he gives an excellent reason for his practice in this respect. Abundance of atmospheric moisture, is, he admits, essential during the growing season, especially on hot bright drying days, but he justly says it should be under complete control—that such days are the exception rather than the rule in our climate, and that it is absurd to make our arrangements on a permanent footing on such a point as if the reverse were the case. He says, moreover, that he found greater difficulty in controlling the moisture in the atmosphere during a prolonged period of dull muggy weather when he practised the popular system than he has ever experienced in keeping up sufficient humidity during hot dry weather on his own method. Therefore, he has long discontinued the practice of loading his stages with moisture-retaining material, and relies exclusively on the frequent use of the watering-pot on his stages, walls, and passages to maintain the necessary atmospheric humidity in due balance with the temperature of the hour and the day. And judging by the results nothing could be more satisfactory, for a thriftier collection of Orchids than that of Dr. Paterson it would be difficult to find.

Among the many fine things in bloom I give as follows those more especially noteworthy:—

Odontoglossum cordatum (Dr. Paterson's variety), carrying several panicles of flowers of the largest size and the richest colouring I have ever seen in the species. The deep rich maroon-crimson blotches on the clear yellow ground of the petals and sepals, coupled with the large white rose-suffused sports of the lip, making altogether charmingly attractive object.

O. cirrosum.—Of this species there were several plants in flower. I have to confess that I never hitherto had been able to get up any enthusiasm for this species, but as it is seen here in only choice selected varieties, sturdy and compact of habit, with large clearly marked flowers, it is admittedly a captivating elegant gem of the first water.

O. Pescatorei.—Several very fine types of this handsome species were in bloom, the vigour of the plants being evinced by the great length and floriferousness of the panicles, some bearing as many as nineteen fine flowers.

O. triumphans was very conspicuous and fine in several forms, one especially being remarkable for the extreme density and brilliancy of its colouring and the large size of its flowers.

O. Alexandræ. — Many plants of this species were in bloom, all excellent, but one was very conspicuously so, the petals and sepals were of extraordinary length, not so broad as in some shorter petalled forms, pure white, with extraordinary large sized deep crimson spots, few in number, dotted over the flowers with some approach to symmetry.

Ada aurantiaca.—A fine plant, with four strong spikes of richly coloured flowers.

Cymbidium Lowii.—A magnificent plant, in a 14-inch pot, with four spikes about 3 feet long each—a splendid variety, with deep crimson blotch on lip.

C. eburneum.—A remarkable variety, with rose-tinted flowers.

Cœlogyne ocellata maxima.—Very beautiful chaste white, with brownish spot on lip, margined with orange-red, and having the odour of Whin bloom.

Aerides rubrum.—Rare, interesting, and pretty.

Lycaste fulvescens.—Rare, but more curious than beautiful; free-flowering.

Uropedium Lindeni.—Very interesting and curious, like Cypripedium caudatum, minus the pouch.

Angræcum eburneum. — A fine plant, with two grand spikes of flowers of enormous size and great purity of colour.

Dendrobium sulcatum.—A specimen which Dr. Paterson believes to be unique, as he is not aware of any other being in cultivation in this country at present. It is of the densiflorum section, and has small orange-yellow flowers, of no great beauty.

Angræcum sesquipedale.—Spring flowering variety, with enormous flowers, measuring from tip to tip of sepals about 9 inches, and of great substance and purity of colour.

Dendrobium Brymerianum, belonging to the fimbriatum section, very curious and beautiful withal, bright yellow, with large deeply fringed lip.

D. Jamesoni. — A very beautiful form of the infundibulum section.

Rodrigueæia planicaule.—Small, interesting, very floriferous and fragrant species, with crisped straw-coloured flowers, extremely lasting, those I saw on the plant having been open several months. See *Gardeners' Chronicle*, April 5, 1884, p. 448.

These, with the Kew variety of Vanda tricolor, Vanda gigantea, Leptotes bicolor, a grand variety of Cattleya Trianæ, with deep rose-coloured petals and sepals and an intense crimson-purple lip; the striking Cypripedium Haynaldianum, Cattleya Warscewiczii, Ansellia africana, and Saccolabium giganteum, formed the bulk of the species in flower, and all were characterised by remarkable freshness and purity of colour, due no doubt, in part, to the excellent atmosphere of Bridge of Allan, but largely also to the perfect intelligent control that is maintained over the atmospheric moisture in the houses. *X.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MARCH 31, 1886.

Month and Day.	Barometer. Mean Reading at 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°			In.
25	29.79	+0.02	54.5	47.0	7.5	50.6	+8.3	49.0	95	S.W.	0.00
26	29.76	−0.01	53.5	46.0	7.5	49.6	+7.1	44.0	81	S.S.W.	0.00
27	29.62	−0.15	54.3	47.5	6.8	50.5	+7.8	48.4	93	S.W.; S.S.W.	0.00
28	29.69	−0.07	58.1	48.0	10.1	51.9	+8.9	49.1	87	S.W.; S.S.W.	0.14
29	29.46	−0.30	43.3	39.9	9.4	44.3	+1.0	40.4	86	S.W.; S.S.W.	0.16
30	29.82	+0.06	48.0	36.0	12.0	42.9	−0.8	38.6	85	S.W.	0.02
31	29.54	−0.21	53.5	39.0	13.6	45.4	+2.4	38.1	74	S.W.; W.S.W.	0.07
Mean	29.67	−0.09	53.0	43.5	9.5	48.0	+5.0	43.8	86	S.W.	0.39

March 25.—Dull day; sun shining at times.
— 26.—Dull and overcast mostly; strong wind in afternoon.
— 27.—Overcast; very strong wind.
— 28.—Rain falling in early morning; dull day, occasional sunshine.
— 29.—Rain falling in early morning; overcast throughout.
— 30.—Very fine and bright in early morning; overcast and rough wind day and night.
— 31.—Strong wind in early morning; fine and bright from 10 A.M.

LONDON: *Atmospheric Pressure.* — During the week ending March 27, the reading of the barometer at the level of the sea decreased from 30.03 inches at the beginning of the week to 29.98 inches by 10 A.M. on the 21st, increased to 30.15 inches by 9 A.M. on the 23d, decreased to 29.87 inches by 9 A.M. on the 24th, increased to 29.98 inches by 9 A.M. on the 25th, decreased to 29.82 inches by 3 P.M. on the 27th, and was 29.84 inches by the end of the week.

The mean reading of the barometer for the week

at the level of the sea was 30 inches, being the same as last week, and 0.04 inch higher than the average of the week.

Temperature.—The highest temperature in the shade in the week was 60°, on the 24th; on the 22d the highest temperature was 52°.3. The mean of the seven high day temperatures was 55°.6.

The lowest temperature was 40°.8, on the 24th; on the 21st and 27th the lowest temperature was 47°.5. The mean of the seven low night temperatures was 45°.4.

The greatest range of temperature in one day was 19°.2, on the 24th; the smallest, on the 27th, was 6°.8. The mean of the seven daily ranges was 10°.2.

The mean temperatures were, on the 21st, 51°.7; on the 22d, 47°.2; on the 23d, 53°.1; on the 24th, 49°.4; on the 25th, 50°.6; on the 26th, 49°.6; and on the 27th, 50°.5; and these were all above their averages by 9°.9, 5°.3, 11°.1, 7°.3, 8°.3, 7°.1, and 7°.8 respectively.

The mean temperature of the week was 50°.3, being 14° higher than last week, and 8°.1 higher than the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 102° on the 24th. The mean of the seven readings was 83°.7.

The lowest reading of a minimum thermometer placed on grass was 40°, on the 22d. The mean of the seven readings was 43°.

Rain fell on two days, to the amount of 0.10 inch.

England: *Temperature.*—During the week ending March 27, the highest temperatures were 64°.2 at Bristol, 63° at Cambridge, 62°.1 at Nottingham; the highest at Newcastle was 58°, at Bradford 59.°6. The general mean was 60°.8.

The lowest temperatures were 35° at Newcastle, 36° at Cambridge, 37°.7 at Nottingham; the lowest at Truro was 46°, at Plymouth 45°.7, at Bristol 43°.8. The general mean was 40°.3.

The greatest ranges were 27° at Cambridge, 24°.4 at Nottingham, 23° at Leeds and Newcastle; the least ranges were 14° at Truro, 14°.3 at Plymouth, 17°.8 at Bradford. The general mean was 23°.5.

The mean of the seven high day temperatures was highest at Cambridge, 59°.8, at Leeds 59°.5, at Sheffield 59°.4; and was lowest at Plymouth, 54°.3, at Brighton 54°.9, at Blackheath 55°.6. The general mean was 57°.3.

The mean of the seven low night temperatures was highest at Truro, 48°.6, at Preston 47°.7, at Bristol 47°.2°; and was lowest at Newcastle, 42°.3, at Wolverhampton 43°.1, at Sunderland 43°.4. The general mean was 45°.3°.

The mean daily range was greatest at Cambridge, 15°.9, at Hull and Newcastle, 14°.3; and was least at Plymouth, 7°.2., at Truro 8°, at Preston 8°.6. The general mean fall was 12°.

The mean temperature was highest at Truro, 51°.4, at Sheffield 51°.3, at Leeds 51°.2; and was lowest at Newcastle, 48°.3, at Brighton 48°.4, at Plymouth 48°.5. The general mean was 50°.1.

Rain.—The largest fall was 1.34 inch at Preston, 0°.89 inch at Truro, 0°.75 inch at Liverpool; the smallest falls were 0.10 inch at Blackheath, 0°.14 inch at Nottingham, and 0°.19 inch at Hull. The general mean fall was 0°.50 inch.

Scotland: *Temperature.*—During the week ending March 27 the highest temperature was 64°.5, at Glasgow; at Edinburgh the highest was 56°.5. The general mean was 60°.9.

The lowest temperature in the week was 35°.5, at Aberdeen; at Edinburgh the lowest temperature was 42°.4. The general mean was 39°.6,

The mean temperature was highest at Glasgow, 50°.6; at Lundee, 47°.5. The general mean was 49°.1.

Rain.—The largest fall was 1.75 inch, at Greenock; the smallest fall was 0 52 inch, at Aberdeen. The general mean fall was 0.99 inch.

JAMES GLAISHER, F.R.S.

Summary of Temperature, Rainfall, and Duration of Bright Sunshine in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, March 29, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been in a mild, changeable condition generally. Heavy rain has fallen over the west districts, and showers at our eastern and southern stations. Thunderstorms were experienced in some parts of England during the evening of the 29th.

Temperature has been above the mean, the excess ranging from 3° in the "Channel Islands," to 6° in "England, N.W.," 7° in "Scotland, E.," "England, N.E.," and "England, E.," and to 8° in the "Midland counties." The highest of the maxima, which were registered on the 24th, were very high for the season. Over eastern, central, and southern England, the thermometer rose to 65°, in the east of Scotland and the western parts of England to 64°, and elsewhere to between 58° in "Scotland, W.," and 63° in the "Channel Islands." The lowest of the minima were recorded either on the 28th or 29th, and ranged from 31° in "Ireland, N.," to 39° in "England, S.," and to 43° in the "Channel Islands." During the greater part of the week, however, the minima ranged, in most places, between 45° and 50°.

The *rainfall* has been slightly less than the mean in "Scotland, N.," "Scotland, E.," and "England, N.E.," but more in all other districts. Over Ireland and western and central England the excess is considerable.

Bright sunshine shows an increase on that reported last week, although it has still been deficient. The percentage of the possible amount of duration varied from 11 in the "Midland Counties," to 24 in "Scotland, N.," and 32 in the "Channel Islands."

Depressions observed.—During the whole of this period, pressure was highest on the Continent and lowest to the W. and N. of our Islands. A series of large depressions skirted our western and north-western coasts, but the only disturbances which came directly over us were some shallow subsidiaries observed on the 28th and 29th. Fresh and strong southerly to south-westerly or westerly winds have consequently been general over the United Kingdom. On the 26th a southerly gale was experienced at some of our western stations.

Answers to Correspondents.

*** *Many communications are unavoidably deferred from the great pressure on our space, and the difficulty of finding room for half what is sent to us.*

Ansellia africana: *W. W.* The Ansellias are terrestrial, and succeed best in a compost of fibry peat, a good portion of rotted leaf-mould, lightened by silver-sand. The plants being free-rooters, require plenty of pot-room. The temperature of the East Indian house suits them best. Caution must be used in watering to prevent water lodging and rotting off the young growths.

Anthracite Coal.—The superiority of this coal as compared with common coal or coke in places where the price is not in excess of those fuels, and where the boiler is of suitable construction, is fully borne out by communications we have received from several of our correspondents, and which for want of space we must defer publishing at the present time.

Books on Roses, Cucumbers, and Tomatos: *Jno. C. G. The Art of Growing Roses Out-of-Doors*, by the Rev. O. Fisher, M.A., reprinted from the *Gardeners' Chronicle*, published by Messrs. Bradbury, Agnew, & Co., Bouverie Street, London, E.C.; and *Vegetable Culture for Amateurs*, by W. J. May, published by Messrs. Upcot & Gill, 170, Strand, London, W.C.

Clivia superba: *W. Troughton.* The truss forwarded was a very fine one, the individual blooms being smooth and regular in outline, and the petals sufficiently broad to avoid a starry appearance. The colour is very good.

Corrections.—In our notice of the meeting of the Horticultural Club (p. 401), the names of two Dutch gentlemen who were present were incorrectly spelled. M. Polman Mooy should read M. J. Polman Mooy; and M. E. Kersten, of the firm of Kersten & Son, instead of E. Herten.

Diseased Orchid: *J. R.* The leaves are infested with the curious but objectionable thread-worms as recently figured in our columns (January 9, fig. 7). Probably the creature was introduced with the soil. We know of no remedy, but strongly advise you to burn the affected plants and procure fresh soil.

Gardeners' Education: *G. K. G.* is thanked for his note, with much of which we concur. If "G. K. G." likes to send in his essay, "not for competition," it shall be considered.

Grafted Tree as a Coat of Arms: *X.* Prince William of Henneberg's armorial device was a tree headed down and grafted, the grafts covered with clay. Artistically the device was not pretty, but together with the motto, *Deo volente*, it was highly significant.

Insects: *W. H.* is requested to note that "I. O. W.'s" Copiophora cornuta in passing through the press last week was accidentally changed to "Colophora cornuta.

Inverted Mushrooms: *Mrs. B.* is thanked for her specimen. The occurrence is not very rare. The spawn overruns the top of the larger Mushroom, and is uplifted with it during growth.

Names of Plants: *W. M., Ely.* Genista sagittalis, a very old garden plant, highly curious from its leafy stem.—*Hon. Mrs. H.* The Editor regrets that the specimens sent were quite irrecognisable when received. Few flowers are more fugacious than Irises. —*C. E. F.* 1, Cheilanthes odora; 2, empty; 3, Saxifraga cuneifolia.—*P. H. G.* Artillery plant (Pilea muscosa).—*W. E. Humphreys.* Odontoglossum hastilabium.—*Alfred Taylor.* 1, Epidendrum Stamfordianum; 2, Æschynanthus pulcher; 3, Selaginella cæsia; 5, Selaginella Mertensi.—*G. Paul, Leeds* 1, Habrothamnus fasciculatus; 2, Pteris tremula; 3, Aspidium falcatum (Cyrtomium).—*Sent without any Name.* 1, Cochlearia officinalis; 2, a variegated Carex, the species of which we do not recognise; 3, Ruscus Hypoglossum; 4, Thuia filifera.—*X. X.* 1, Garrya elliptica; 2, Daphne laureola; 3, Quercus Ilex var.; 4, Gynerium argenteum; 5, Rhododendron hirsutum.

Northern Spy Apple: *G. F. W.* These were beautifully coloured for fruits grown in this country, and were solid in flesh, crisp, and well-flavoured, appearing capable of being kept in a usable state for some months yet.

"Malformation" in the Leaves of the Elm: *W. E.* The growth in question is a gall produced by an aphis, Aphis gallarum ulmi (see fig. 86).



Fig. 86.—Gall on elm.

Outgrowths From Stems of Maréchal Niel Rose: *D. T. F.* We have examined the specimen sent; but, to arrive at a more satisfactory conclusion, should require to examine specimens in all stages of growth. The specimens sent exhibit a large spongy mass of dead cellular tissue, underlying which the living cells are seen, swollen, disintegrated, and crammed with starch grains. The appearances are consistent with the idea of excessive luxuriance of growth at particular spots, forming tumours analogous to what surgeons call fatty tumours. What causes these outgrowths, and particularly why they occur at certain places only, is more than we can say. There is evidently faulty nutrition, and this is probably due to improper food, or food supplied at improper times. A starving treatment is, therefore, indicated.

Pear Congress Report: *R. G. C. & Co.* This is still in hand, and not yet published.

Plants suitable for Mid-winter Flowering in an Intermediate-house, on the Back Wall: *G. Payne.* Camellias, Lapageria rosea and L. alba, Choysia ternata, Begonia crassicaulis, flowers white tinged with pink; B. erecta multiflora, reddish-pink; B. longipes, pure white, strong flowers; Siphocampylus microstomus—flowers crimson; Acacia Riceana, flowers yellow; Luculia gratissima, pale flesh colour; Heliotropium peruvianum. The flower you sent is Petasites fragrans.

Potatos and Peas: *T. L.* We will have them tried, and report in due season.

Rosa pomifera: *J. E. B.* The plant will scarcely be found out of a botanic garden. Mr. Burbidge, Trinity College Botanic Garden, Dublin, could probably supply information respecting it.

Saxifraga Growing Under Trees: *G. Finlay.* The note on this subject occurs on p. 802, vol. xxiii.

Vine-dresser's Situation in Australia: *Vanity Fair.* Advertise in a colonial newspaper.

Vines Bleeding: *Young Gardener.* Get a bottle of Thomson's Styptic from a nurseryman and apply it to the bleeding shoots. It will cease of itself when the Vines come into leaf, and it seldom proves in-

jurious. It is little but water pumped up by the roots and lost. You need not keep the Vines back, as the sooner foliage is produced the better.

CATALOGUES RECEIVED.

VICCARS COLLYER & CO., Leicester—General Catalogue.

CHARLES TURNER, The Royal Nurseries, Slough—General Spring Catalogue.

M. BRUANT, Poitiers (Vienne—France)—General Spring Catalogue.

RAWLINGS BROTHERS, Old-Church, Romford, Essex—Dahlias.

COMMUNICATIONS RECEIVED.—A. Bleu, Paris.—Major Lendy.—J. R.—Professor Sargent, Boston, U.S.A.—Hon. Mrs. H. A. D. B.—Dr. Kanitz, Kolonsvar.—M. Correvon, Geneva.—Dr. Gravis, Liége.—C. Sharpe—Professor M. F. J. Scouse.—C. J.—J. G. B.—S.—E. F. L. Braie.—L. A. L.—A. G.—W. W.—J. F.—W. E.

DIED, on March 21, at Wakehurst Place, Haywards Heath, Sussex, WILLIAM THOMAS DOWDEN, Gardener to Lady Downshire, aged 34 years.

—— At Rough Bank, Sheffield, on Friday, March 26, Mr. JOHN SIMONITE. He had completed his 86th year on the previous Monday. Mr. Simonite was an exhibitor and raiser of florists' flowers more than half a century ago, and took an active part in their culture until a few weeks ago, when he caught a chill which brought on a severe attack of bronchitis. He was father of Mr. Ben. Simonite, the celebrated cutler-florist of Sheffield, whose many florist friends will deeply sympathise with him in his sorrow.

Markets.

COVENT GARDEN, April 1.

BUSINESS improving, and with prices lower, Grapes have been well cleared. Strawberries selling freely. Apple market dull except for bright samples, which are in demand. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0	4 0	Pears, per dozen	1 2 0	1 5 0
— Canadian, barrl.	8 0	21 0	Pine-apples, Eng., lb.	1 0	..
Grapes, per lb.	.. 3 0	8 0	—St. Michael, each	6	8 0
Kent Cobs, 100 lb.	40 0	..	Strawberries, per lb.	8 0	12 0
Lemons, per case	.. 8 0	10 0			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mint, green, bunch	1 0	..
Asparagus, Eng., 100	10 0	..	Mushrooms, punnet	1 0	1 6
— French natural, per bundle	.. 3 0	8 0	Mustard and Cress, do.	0 4	..
— Spanish natural, per bundle	.. 4 0	..	Onions, per bushel	5 0	..
Beans, Kidney, lb.	3 0	..	Parsley, dozen bunch	2 0	3 0
Beet, per dozen	1 0	2 0	Parsnips, per dozen	1 0	..
Broccoli Sprts., bush.	5 0	..	Potatos, per cwt.	4 0	5 0
Carrots, per bunch	0 6	..	— kidney, per cwt	4 0	5 0
Cauliflowers, per doz.	3 0	4 0	Salsafy, per bundle	0 9	..
Celeriac, per root	0 4	..	Savoys, per dozen	3 0	5 0
Celery, per bundle	1 6	2 0	Scorzonera, p bundle	1 0	..
Coleworts, doz. bunch	8 0	..	Seakale, punnet	2 6	..
Cucumbers, each	0 9	1 0	Shallots, per pound	0 3	0 9
Endive, per dozen	1 0	2 0	Spinach, per bushel	4 0	6 0
Herbs, per bunch	0 4	..	Sprouts, per pound	0 9	..
Leeks, per bunch	0 6	..	Sprue Asparagus, per bundle	1 0	..
Lettuce, per dozen	1 0	1 6	Tomatos, per lb.	1 6	2 6
			Turnips, bunch	0 6	..

POTATOS.—Market all lower than last week by 5s. to 10s. per ton.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0	Ferns, in variety, per dozen	4 0	18 0
Arum Lilies, dozen.	9 0	12 0	Foliage Plants, various, each	1 0	2 0
Azaleas, per doz.	24 0	42 0	Genistas, per dozen	0	15 0
Begonias, per dozen	6 0	12 0	Hyacinths, per doz.	6 0	9 0
Bouvardias, doz	12 0	18 0	Lilies in clumps, or pots, per dozen	18 0	30 0
Cinerarias, per doz.	10 0	12 0	Marguerite Daisy,		
Cyclamens, 12 pots	12 0	24 0	per dozen	8 0	12 0
Cyperus, per dozen	4 0	12 0	Myrtles, per dozen	5 0	12 0
Daffodils, per dozen	9 0	12 0	Palms in var., each	2 6	21 0
Dracæna terminalis, per dozen	30 0	60 0	Pelargoniums, doz.	18 0	24 0
Ericas, various, per dozen	12 0	24 0	— scarlet, per doz.	6 0	9 0
Euonymus, in var., per dozen	6 0	18 0	Primulas, single, 12 pots	4 0	6 0
Evergreens, in var., per dozen	6 0	24 0	Spiræa, per dozen	12 0	15 0
Ficus elastica, each	1 6	7 0	Tulips, 12 pots	6 0	9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0	1 6	Marguerites, 12 bun.	6 0	12 0
Anemone, French, 12 bunches	3 0	6 0	Mignonette, 12 bun.	3 0	9 0
Arum Lilies, 12 blms.	4 0	8 0	Pelargoniums, per 12 trusses	1 0	1 6
Azaleas, 12 sprays	0 6	1 0	Primulas, double, per bunch	0 6	1 0
Bouvardias, per bun.	0 6	1 0	— single, per bunch	0 4	0 6
Camellias, 12 blms.	1 0	6 0	Roses (indoor), doz.	2 0	6 0
Carnations, 12 blms.	1 0	3 0	— Tea, per dozen	2 0	3 6
Cyclamens, doz. blms.	0 4	0 6	— red, French, doz.	2 0	4 0
Daffodils, per bunch	0 3	1 6	Tropæolums, 12 bun.	2 0	3 0
Epiphyllums, 12 blms.	0 6	1 0	Tuberoses, 12 blms.	2 0	3 0
Eucharis, per dozen	4 0	6 0	Tulips, doz. blooms	0	1 0
Gardenias, 12 blooms	6 0	12 0	Violets, 12 bunches	0	1 6
Lapageria, red, 12 blooms	1 0	2 0	— Czar, Fr., bunch	1 0	2 0
Lilac, French, bunch	2 0	7 0	— Parme, French, per bunch	0 4	0 6
Lily-of-the-Valley, 12 sprays	0 6	1 6			

SEEDS.

LONDON: *March* 31.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report to-day's market thinly attended, with, for the time of year, a moderate business doing. As regards values generally no change of importance can be noted. The offerings of home-grown Clover seed, both new and yearling, increase—rates in consequence tend in favour of buyers. Alsike, white and Trefoil, are now obtainable at low figures. Grass seeds are in improved request. For spring Tares there is an active sale at full prices. Canary and Hemp seed move off slowly on former terms. The demand for blue boiling Peas and Haricot Beans continues, and values are hardening. There is no important change in any other article.

CORN.

MARK LANE: *March* 30.—A decline of 6*d.* in the average price for the Kingdom, and on only white Wheats here can hardly be regarded as indicating a weak state of trade. Business in foreign and colonial Wheat was very slow, owing to the large home supply; but trade on the whole, though not lacking stability, was somewhat disappointing. Flour met a moderate demand at steady rates. Barley was without quotable alteration. Beans and Peas having come in more largely buyers had not only a better choice but also an advantage of 6*d.* in price. Russian Oats upheld their value, but Swedish were rather lower on the week.

March 31.—English Wheat is without further alteration here or in the provinces, and foreign shows rather a hardening tendency. Flour sold slowly at about previous rates. Barley and Maize were steady. Beans and Peas were quiet and unchanged; Swedish Oats slow sale at Monday's easier rates, and Russian firm.

Average prices of corn for the week ending March 27:—Wheat, 30*s.* 9*d.*; Barley, 27*s.* 6*d.*; Oats, 19*s.* 5*d.* For the corresponding period last year:—Wheat, 32*s.* 7*d.*; Barley, 31*s.* 4*d.*; Oats, 20*s.* 10*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *March* 31.—Fair supplies of fruit and vegetables were on offer, and trade brisk. Quotations:—Apples, 3*s.* to 6*s.* 6*d.* per sieve; Savoys, 8*s.* to 14*s.* per tally; Spinach, 3*s.* 6*d.* to 5*s.* per sieve; Sprouting Broccoli, 3*s.* 6*d.* to 5*s.* do.; Turniptops, 2*s.* 6*d.* to 4*s.* 6*d.* do.; Parsnips, 1*s.* to 1*s.* 3*d.* per score; Beetroots, 6*d.* to 1*s.* per dozen; Rhubarb, 2*s.* 6*d.* to 4*s.* do; bunch Greens, 5*s.* to 8*s.* per dozen bunches; Turnips, 3*s.* 6*d.* to 5*s.* do.; Carrots, 2*s.* 6*d.* to 3*s.* 6*d.* do.; Celery, 11*s.* to 14*s.* per dozen bundles; Onions, 5*s.* 6*d.* to 7*s.* per cwt.; Carrots, 20*s.* to 45*s.* per ton; white Turnips, 35*s.* to 60*s.* do.; Swede do., 18*s.* to 26*s.* do.; Parsley, 4*s.* 6*d.* to 8*s.* per dozen bunches; Mangels, 17*s.* 6*d.* to 22*s.* 6*d.* per ton.

STRATFORD: *March* 30.—During the past week the market has been well supplied, and fair trade was transacted at the following prices:—Savoys, 12*s.* to 15*s.* per tally; Greens, 7*s.* to 8*s.* per cwt.; Cauliflowers, 16*s.* per crate; Turnips, 2*s.* 6*d.* per dozen bunches; do., 60*s.* to 70*s.* per ton; Carrots, household, 35*s.* to 45*s.*; do. cattle feeding, 20*s.* to 26*s.* do.; Parsnips, 1*s.* 9*d.* per score; Mangels, 20*s.* to 22*s.* per ton; Swedes, 22*s.* to 25*s.* do.; Onions, 4*s.* 6*d.* to 5*s.* 6*d.* per cwt.; Apples, 2*s.* 6*d.* to 7*s.* 6*d.* per bushel; Radish, 1*s.* per bale.

POTATOS.

BOROUGH AND SPITALFIELDS: *March* 30.—Supplies have increased, and trade drags. Best samples uphold their value, but common sorts are lower. Quotations:—Regents, 60*s.* to 110*s.*; Magnum Bonums, 50*s.* to 90*s.*; Victorias, 60*s.* to 70*s.*; and Champions, 50*s.* to 65*s.* per ton.

COLUMBIA (East London): *March* 31.—There has been a good demand for first qualities, but rather slack for inferior kinds. Quotations:—Champions, 45*s.* to 55*s.*; Victorias, 50*s.* to 70*s.*; Regents, 55*s.* to 75*s.*; and Magnums, 50*s.* to 80*s.* per ton.

STRATFORD: *March* 30. — Quotations:—Magnums, 50*s.* to 70*s.*; Heros, 55*s.* to 65*s.*; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports into London last week consisted of 220 bags from Boulogne and Rotterdam, 9 cases 10 sacks 15 tons from Malta.

HAY.

WHITECHAPEL: *March* 30.—Trade exceedingly depressed in tone, with larger supplies. Quotations:—Clover, prime, 88*s.* to 104*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 90*s.*; inferior, 50*s.* to 65*s.*; and straw, 27*s.* to 35*s.* per load.

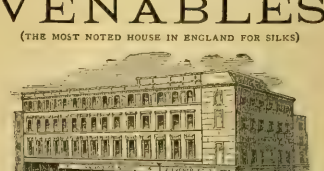
April 1.—There was a short supply on sale. Trade was very dull, at previous prices.

STRATFORD: *March* 30.—Prices:—Hay, 70*s.* to 80*s.*; Clover, 58*s.* to 70*s.*; and straw, 26*s.* to 34*s.* per load.

Government Stock.—Consols closed on Monday at 100⅛ to 100⅜ for both delivery and the account. Tuesday's record is 100⅛ to 100⅜ for delivery, and 100⅜ to 100⅝ for the account. The final quotations of Wednesday were 100⅛ to 100⅜ for delivery, and 100⅜ to 100⅝ for the account. The closing figures on Thursday were 100⅜ to 100⅝ for delivery, and 100⅜ to 100⅝ for the account.

The LONDON DRESS GOODS MARKET is the BEST and CHEAPEST, for the best of everything comes to London.
ALL GOODS GUARANTEED.
Ladies in the Country may rely upon our reputation of over 60 years' standing to supply the very best, yet the cheapest goods.
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(THE MOST NOTED HOUSE IN ENGLAND FOR SILKS)



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Their SPECIALITÉS for the SEASON include:—
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ALL-WOOL FRENCH CASHMERES, in 5 qualities and 25 colours, from 1*s.* 6½*d.* to 3*s.* 3*d.* per yard (sold elsewhere at 4*s.* 6*d.*)
ALL-WOOL FRENCH BEIGE, 25 inches wide, 4 qualities, 15 colours, from 6¾*d.* to 1*s.* 0¼*d.* per yard (sold elsewhere at 1*s.* 6*d.*).
ALL-WOOL BOUCLE CLOTH (or Curl Cloth), in 6 qualities and 15 colours, from 8¾*d.* to 1*s.* 9*d.* per yard (undoubtedly the most fashionable dress material of the season).
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ALL-WOOL MERINOES, in 13 qualities, from 1*s.* 6¾*d.* to 5*s.* 9*d.* per yard (sold elsewhere at 7*s.* 6*d.*)
PERSIAN and RUSSELL CORDS, in 6 qualities, from 4¾*d.* to 1*s.* 9*d.* per yard (sold elsewhere at 2*s* 6*d*).
CANVAS CLOTHS, SOLEILS, and NUNS' VEILINGS, in numerous qualities and colourings, from 5¾*d.* to 1*s.* 6½*d.* per yard (sold elsewhere at 2*s.* 3*d.*).
ALL WOOL SKIRTINGS, 38 inches wide, 10¾*d.* to 4*s.* 9*d.* per yard (sold elsewhere at 6*s.* 6*d.*).
FRENCH and ENGLISH COTTON FABRICS.
The most complete set of Patterns of these Goods (from 4½*d* to 1*s.* 6½*d.* per yard), which embrace every quality and novelty far too numerous to set forth in the compass of an advertisement
SILKS, VELVETS, VELVETEENS, &c
Black and Coloured Satins, Duchesse Dress Satins, Black Broché Silks and Velvets, Silk Plushes Velveteens (guaranteed fast Pile), of the very highest qualities, from 1*s.* 6½*d.* to 21*s.* per yard.
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THE MOST INEXPERIENCED CAN FIX THEM.
SOUNDNESS OF JOINT A CERTAINTY.
Highest Testimonials and References.
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(LIMITED),
MANSFIELD, NOTTS.
Makers of Garden Rollers, Vases, Fountains, Seats, &c.

HORTICULTURAL SHEET GLASS
14×12 16×12 18×12 20×12 16×14 18×14 20×14
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DALSTON JUNCTION, LONDON, E.
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LIGHT WOOD POSTAL BOXES.
Suitable for Plants, Flowers, and Fruit.

Length.	Width.	Depth.	Per doz.	Per gross.
6-inch	3½-inch	2-inch	1s.	8s.
8-inch	4-inch	2½-inch	1s. 6d.	10s.
9-inch	4½-inch	3-inch	2s	12s.

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GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1s., 3s., and 10s. 6d.

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ROLL TOBACCO PAPER AND Cloth (English) for Fumigating
as the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 1 lb, 10s.; 28 lb., 20s.; carriage paid to London or any railway station in Kent. 2¾ lb., 2s. 6d.; 4¾ lb., 4s.; 6 lb., 5s.; 6¾ lb., 5s. 6d.; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8s. 6d.; 28 lb., 16s.
TRADE INQUIRIES SOLICITED.
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Buyers should apply for prices to
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MANUFACTURERS.
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COTTON WOOL and WADDING for Florists and Nurserymen.
THE TRADE SUPPLIED.

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SPECIAL LOT.
Good, useful, open, and strong texture, suitable either for Netting or Shading, 72 inches wide, 50 yards long, price 6d. per yard.
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TIFFANY, 55 inches wide, extra strong, price 4½d. per yard.
Write for Patterns to
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The "Ludgate Watch" is an English Lever for Rough Wear, of my BEST LONDON MAKE, WITH "Special Strength" Three-quarter Plate Movement.
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From Damp, Frost, and Cold Winds.
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"SUMMER CLOUD"
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For Greenhouses, Conservatories, Skylights, and all Glass Structures, that require Shading Material.
It combines EFFICACY with APPEARANCE, CONVENIENCE with ECONOMY, and its effects are LASTING.
Sold in Packets, 1s. each, with full directions for use; and in Bags, 14 lb., 28s.; 28 lb., 50s. May be obtained from all Seedsmen and Nurserymen.
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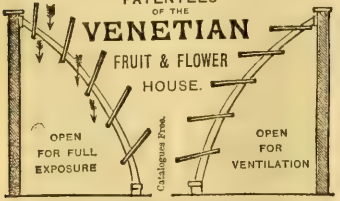
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1½ to 30 inches diam.
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LONG TOMS,
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SEND FOR
PRICE LIST.

FLAGSTONE EDGING for Kitchen Gardens, or Walks under Trees. Prices, 8*d.*, 10*d.*, and 1*s.* per yard run.
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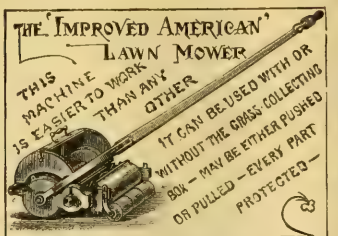


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Sold in Casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 2*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom
UNSOLICITED TESTIMONIAL.
"*Pierrefield Park, Yarm* 21, 1876.—Sirs, I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Pierrefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."
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H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
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IRON GARDEN WHEELBARROWS

With TUBULAR FRAME and HANDLES.

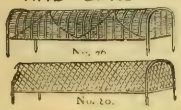
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No. 14, Japanned, 18*s.*; with Galvanised Body, 21*s.*
Galvanised all over, 26*s.*
Barrows forwarded, Carriage Paid, to any part of England on receipt of Cheque or Postal Order, payable to
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A New Reduced Price List of Shadings and Nettings for
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THE
NEW CANVAS SHADING
Sold by BENJAMIN EDGINGTON will defy the action of all weather. It is perfectly rot-proof, keeps sound under conditions where other fabrics have shown fungoid growth and incipient decay.
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THOMAS'S PEA GUARDS,

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3 feet long.
Galvanised after made.
Either Pattern.
Price, 6s. per Dozen.
Two End Pieces included with each dozen.
Four Dozen Carriage Paid, on receipt of remittance for 24*s.*



GALVANISED PEA TRELLISES in Panels.
6 feet by 3 feet, 2*s.* each.
6 feet by 4 feet, 3*s.* each.
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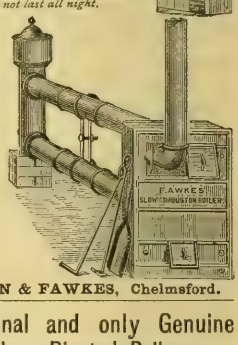
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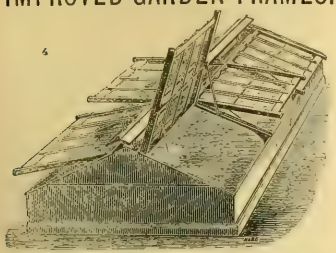


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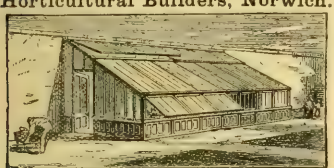


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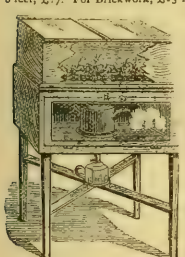
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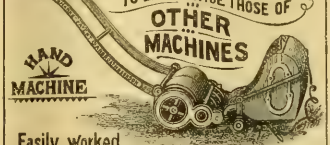
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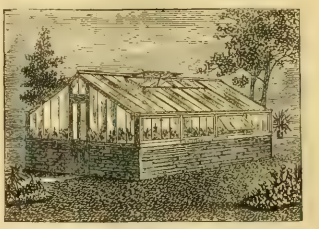


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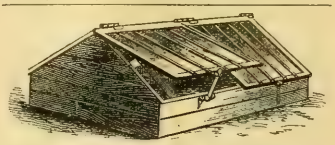
Length.	Width.	Price of House.	Heating Apparatus
10 ft.	6 ft.	£19 10	£5 5
12 ft.	8 ft.	£23 10	£5 15
15 ft.	10 ft.	£29 10	£5 5
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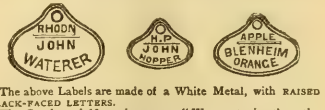
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12 feet long, 5 feet wide, " " "	6 10 0

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10 „ ...	0	6	0	21 „ ...	0	11	6
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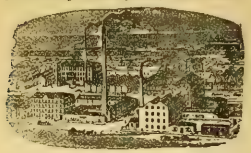
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WISE AND RIDES beg to inform Senders that they now have special facilities for the SALE of STRAWBERRIES, BEANS, CUCUMBERS, TOMATOS, GRAPES, MUSHROOMS, &c. Also for EUCHARIS, Maréchal Niel ROSES, and other CHOICE CUT FLOWERS.

WISE AND RIDES, Fruit and Flower Salesmen, Fruit Market, and 360, Flower Market, Covent Garden, London, W.C. Warehouse—37, Hart Street.

MESSRS. GREGORY AND EVANS, Longlands Nursery, Sidcup, and 285, 286, 287, 288, Flower Market, Covent Garden, W.C., REQUIRE CONSIGNMENTS of CHOICE CUT FLOWERS. Messrs. G. & E., having a ready Sale for same, can ensure good Market Prices. Account sent daily.

REGISTERED TELEGRAPH ADDRESS—"COMMISSION, SIDCUP."

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH AND BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH AND BARNHAM. ACCOUNT SALES sent daily, and CHEQUES forwarded weekly. BANKERS and TRADE REFERENCES. BASKETS and LABELS supplied.

WM. PERRY, Jun., Smithfield Market, Manchester, is prepared to RECEIVE CONSIGNMENTS of GRAPES, TOMATOS, CUCUMBERS, CUT FLOWERS, &c. Account Sales and Cash sent upon day of Sale. Bankers' and Trade references.

Floral Commission Agency.

A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of Choice CUT FLOWERS in any quantity. A. H. & Co., giving personal attention to all consignments, are thus enabled to obtain the highest market prices. All Cheques forwarded weekly. Bankers and good Trade references. Boxes and Labels supplied.

Profitable Sale of Cut Flowers.

CONSIGNMENTS carefully Disposed of. Address, Commission Department—

HOOPER AND CO., Covent Garden, London, W.C.

Good Flowers are always Wanted. Inferior qualities are useless.

WANTED for Cash, Tall PALMS. Must be cheap. Also large ASPIDISTRAS. Send description and price to

ROBERT GREEN, Floral Establishment, Crawford Street, W.

WANTED, Large PLANTS of Araucaria Cunninghami, A. Bidwilli, Dracæna terminalis, Seaforthia elegans, Cyathea medullaris, Ptychosperma Alexandræ, Gleichenias of sorts, Dracæna australis, Pittosporums, Arica sapida, A. Baueri, &c. Any one having plants of any of the above or others, that have grown too large for their Conservatories, can EXCHANGE them for other PLANTS, BULBS, or SEEDS at

Mr. WILLIAM BULL'S Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

WANTED, PINE SUCKERS. Must be clean and healthy. State price quantity, and variety, to HEAD GARDENER, Bishopsgrove, Cork

WANTED, JERUSALEM ARTICHOKES. Send Sample and Price to SQUELCH AND BARHAM, Salesmen, Covent Garden, W.C.

FRENCH BEANS are selling freely.

SUTTON'S FLOWER SEEDS. THE BEST

"I always state what I feel to be undoubtedly true that no Flower Seeds I ever got anywhere else come up to yours."—J. E. WALSH, Londonderry.

SUTTON'S FLOWER SEEDS. THE BEST

Arranged in complete Collections to produce a continuous display of the most showy sorts during the Summer and Autumn.

Collection No. 1—189 beautiful varieties	..	£3	3 0
Collection No. 2—147 ,, ,,	..	2	2 0
Collection No. 3—104 ,, ,,	..	1	11 6
Collection No. 4—77 ,, ,,	..	1	1 0
Collection No. 5—65 ,, ,,	..	0	15 0
Collection No. 6—46 ,, ,,	..	0	10 6

Free by Post or Rail.

SUTTON'S FLOWER SEEDS. THE BEST.

Collections of sorts suitable for bouquets.

12 varieties, 4s.; 6 varieties, 2s 6d. Free by Post.

SUTTON'S FLOWER SEEDS. THE BEST.

Collections of sorts suitable for Rockwork.

12 varieties, 3s. 6d.; 6 varieties, 2s. Free by Post.

SUTTON'S FLOWER SEEDS. THE BEST

Collections of Climbing Plant Seeds.

12 varieties, 3s 6d.; 6 varieties, 2s. Free by Post.

SUTTON'S FLOWER SEEDS. THE BEST.

Collections of Everlasting Flower Seeds.

12 varieties, 3s. 6d.; 6 varieties, 2s. Free by Post.

SUTTON'S FLOWER SEEDS. THE BEST

Collections of Sweet-scented Flowers.

12 varieties, 3s. 6d.; 6 varieties, 2s. Free by Post.

SUTTON'S PRIZE LAWN GRASS SEEDS.

Dip'ôme d'Honneur, Amsterdam, 1883.

SUTTON'S PRIZE LAWN GRASS SEEDS.

Special Gold Medal, Melbourne, 1880.

SUTTON'S GRASS SEEDS for GARDEN LAWNS. Per bushel, 25s.; per gallon, 3s. 3d.

"Your new plot of Grass is perfection itself. I don't think I have ever seen better."—J. C. FOX, Esq., Royal Horticultural Society, South Kensington.

SUTTON'S GRASS SEEDS for TENNIS GROUNDS. Per bushel, 22s 6d.; per gallon, 3s.

"Our Tennis Ground, from a mixture of your Grasses is greatly admired: it is so very clean."—Mr. Jos. KETTLE, Gardener to J. R. White, Esq., Leighton.

SUTTON'S GRASS SEEDS for CRICKET GROUNDS. Per bushel, 22s. 6d.; per gallon, 3s.

"The Committee desire me to say that they have every reason to be satisfied with the Grass Seeds you have supplied for this ground during the last few years."—C. W. ALCOCK, Esq., Secretary to the Surrey County Cricket Club.

SUTTON'S PAMPHLET on the FORMATION and IMPROVEMENT of LAWNS from SEED Gratis and Post free on application.

SUTTON AND SONS, SEEDSMEN by Royal Warrants to H.M. the Queen and H.R.H. the Prince of Wales, READING, BERKS.

Strong Plants.

CARNATIONS and PICOTEES.—Choice Prize varieties only, Named, True: ten, 6s.; six, 4s. Show PANSIES, selected for Exhibition, first-rate: ten, 3s.; six, 2s.; named. DAISIES, three sorts: fifty, 2s. 6d., free. WILLIAM JACKSON, Kettleshulme, Whaley Bridge Cheshire.

HAMPTON COURT BLACK HAMBURGH VINES.—Extra strong Fruiting Canes of the above, and all other leading varieties, at greatly reduced prices.

T. JACKSON AND SON, Nurseries, Kingston-on-Thames, and Royal Kitchen Gardens, Hampton Court.

Pride of the Market

PEA.—A good stock; growth 1885; sample and price on application.

ANTHONY WATERER, Knap Hill Nursery, Surrey.

ASPARAGUS, SEAKALE, and RHUBARB, for Planting and Forcing.

Special Prices on application.

JAS. DICKSON AND SONS, "Newton" Nurseries, Chester.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots, 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.

RICHARD SMITH AND CO., Worcester

ASPARAGUS (true Giant).—Special Offer to clear ground:—2 yr., 20s.; 3-yr., 30s.; 4-yr., 40s. per 1000.

NEW POTATO (Bird's Doctor Bob), 4s. per stone.

Trade prices on application.

JAMES BIRD, Nurseryman, Downham.

CHOICE STOCKS of SEED POTATOS, most of the leading varieties, in quantities of a Sack and upwards. Purchasers of large quantities treated liberally.

JOHN DAY, Jun., Sandwich, Kent.

SALES BY AUCTION.

Tuesday Next.

Mr. Edward Wallace among the Cattleyas.

MESSRS. PROTHEROE AND MORRIS have received instructions from the New Plant and Bulb Company, to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 13, at half-past 12 o'Clock precisely, over 2000 ODONTOGLOSSUM ALEXANDRÆ, in fine masses and splendid condition, from some mountains just hired by their agent in the Pacho district, whence some of the best typical. The very strong character of the bulbs and spikes show that Mr. Wallace has found the right place. A small importation of CATTLEYA SANDERIANA in fine condition with unstarted eyes; ODONTOGLOSSUM LUTEO PURPUREUM, in grand masses and splendid condition; a new form of CATTLEYA SUPERBA seen in bloom and described as a very large flowered form with enormous bulbs, collected at an elevation of 1000 feet higher than the Rio Negro district (and in consequence we infer that this form will be more easily cultivated), C. GALEANDRA, species with white lip and brown sepals, ONCIDIUM with large rosy flowers. The grand new EPIDENDRUM (Wallacei?) flowering with a pair of branching spikes, 12 to 30 inches long, pendulous from the base of the bulb like E. stamfordianum. The flowers are an inch across, and numerous, yellowish spotted rosy-purple, hanging down in large clusters like Saccolabium guttatum, also another new EPIDENDRUM with rich orange-red flowers, like a ball of fire, &c.

On view morning of Sale, and Catalogues had.

Tuesday Next.

CATTLEYA MENDELII, CATTLEYA AUREA, ODONTOGLOSSUM VEXILLARIUM,

In splendid condition.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Shuttleworth, Carder & Co. to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 13, at half-past 12 o'Clock precisely, the following imported ORCHIDS, just to hand:—Cattleya Mendelii, in splendid masses and fine condition; Cattleya aurea, a few Cattleya gigas, Odontoglossum vexillarium, grand and in excellent condition—the first importation received for a considerable time; Oncidium Weltonii (true), O. Kramerii, O. fuscatum, O. papilio majus, Odontoglossum grande, &c.

On view morning of Sale, and Catalogues had.

Surbiton.

UNRESERVED CLEARANCE SALE, the I. & S. W. Railway requiring immediate possession of the Property.

MESSRS. PROTHEROE AND MORRIS are instructed by Mrs. Rose to SELL by AUCTION (without the least reserve), at the Premises, The Oakhill Nursery, Glenbuck Road, Surbiton, adjoining the Surbiton Railway Station, on TUESDAY, April 13, at 12 o'Clock precisely, the whole of the well-grown CONIFERÆ and EVERGREEN SHRUBS, fine Standard and Dwarf ROSES, FRUIT TREES, 800 IRISES in pots, several Beds of Cyclamen, also the entire stock of GREENHOUSE, STOVE, and BEDDING PLANTS, including 4000 Maidenhair Ferns, 500 Azaleas, Camellias, 2500 Geraniums, 4000 Carnations, White Clove and Malmaison; Herbaceous Plants, and other Stock.

May now be viewed. Catalogues may be had on the Premises, or of the Auctioneers and Valuers, 67 and 68, Cheapside, E.C.

Wednesday Next.

800 First-class Standard and Dwarf Roses from English Nurseries, all named. AZALEAS, PALMS, and other PLANTS in variety; 300 CARNATIONS and PICOTEES; PHLOX PÆONIES, PYRETHIUMS, IRIS, HARDY PLANTS and BULBS, LILIUM AURATUM, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, April 14, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

CATTLEYA AUREA—grand lot.
CATTLEYA GIGAS IMPERIALIS.
CATTLEYA MENDELII.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, April 16, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA AUREA in fine condition, CATTLEYA IMPERIALIS, the free-flowering form of C. gigas; several fine species of LYCASTE SKINNERII ALBA, ODONTOGLOSSUM BLANDUM, PHALÆNOPSIS, PESCATOREI, and TRIUMPHANS; ONCIDIUM ORNITHORHYNCHUM, ONCIDIUM AURANTIACA, a specially selected and splendid batch of ODONTOGLOSSUM ALEXANDRÆ, ONCIDIUM FORBESII, and the lovely O. DASYTILE, COLAX JUGOSUS, LÆLIA ANCEPS, dark variety, and white forms; ACINETA species, yellow, with red spots; CHYSIS BRACTESCENS, and the rare and very fine CYPRIPEDIUM IRAPEANUM, in splendid condition.

On view morning of Sale, and Catalogues had.

Friday Next.

CYPRIPEDIUM CONCOLOR VAR. REGNIERI.

MESSRS. PROTHEROE AND MORRIS are instructed to include in their SALE by AUCTION, at their Central Sale Rooms, on FRIDAY NEXT, April 16, a grand lot of this splendid CYPRIPEDIUM, some with flower-spikes. It is fully described by Professor Reichenbach in the *Gardeners' Chronicle*, March 20, and *Garden*, March 27, where he writes as follows:—"It surpasses everything I ever saw of Cypripedium concolor. . . . The large flowers are of distinct yellow colour, and have on the outside of the sepals a blotch of mauve-purple, with dark purple spots." Also strong specimens and fine plants of ODONTOGLOSSUM WARSCEWICZII, O. VEXILLARIUM, O. CUSPIDATUM XANTHOGLOSSUM, CYPRIPEDIUM VEXILLARIUM, LÆLIA ELEGANS, SOBRALIA MACRANTHA (Wolley's variety), and other ESTABLISHED ORCHIDS.

On view morning of Sale, and Catalogues had.

Flowering Orchids—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their SPECIAL SALE of ORCHIDS IN FLOWER will, in consequence of the Easter Holidays, take place one week earlier than usual, viz., on TUESDAY, April 20; for which they will be glad to receive notice of entries as soon as possible.

Wednesday Next.—(Sale No. 7140.

New YELLOW ODONTOGLOSSUM PESCATOREI, heavily Spotted, flower of which has been sent to Professor REICHENBACH to be named.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on WEDNESDAY NEXT, April 14.

On view morning of Sale, and Catalogues had.

Wednesday Next—(Sale No. 7140.)

SPECIAL SALE OF ORCHIDS IN FLOWER.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, April 14, at half-past 12 o'Clock precisely, an extensive Collection of ORCHIDS in FLOWER and BUD, including a magnificent specimen of CYMBIDIUM LOWII, in splendid health, with ten fine new growths, three spikes over 4 feet long, and showing seventy-five flowers; several fine plants of PHALÆNOPSIS LEUCHORRODA, CATTLEYA LAWRENCEANUM, C. EXONIENSIS, and C. MENDELII; numerous fine vars. of ODONTOGLOSSUM ALEXANDRÆ, including a grand white form, with flowers perfect in shape, and deep crimson spots on petals; O. PESCATOREI, O. HYSTRIX, O. WILCKEANUM, O. ROSSI MAJUS, fine vars; CŒLOGYNE CRISTATA, "Chatsworth" var.; MASDEVALLIAS, DENDROBES, &c.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday next.

20 Cases of CATTLEYA TRIANÆ.—Received direct.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, April 14 and 15, 20 Cases of CATTLEYA TRIANÆ just received direct in very fine condition; many splendid masses and distinct-looking pieces will be found among them.

On view mornings of Sale, and Catalogues had.

Wednesday and Thursday Next.

10,000 splendid Bulbs of LILIUM AURATUM from Japan, in the finest possible condition.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, April 14 and 15.

On view mornings of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7141.)

ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 15, about 60 Lots of good ESTABLISHED ORCHIDS, from the collection of Samuel Searoyd, Esq., of Huddersfield, comprising fine Plants of Cattleya Mendelii, C. gigas, C. Dolosa, Oncidium Papilio, O. Kramerianum, O. macranthum, Odontoglossum Alexandræ, O. Uro-Skinneri, Cypripedium Sedenii, &c.

On view morning of Sale, and Catalogues had.

The First Portion of the Valuable Collection of ESTABLISHED ORCHIDS formed by H. Lovatt, Esq., of Low Hill, Wolverhampton.

MR. J. C. STEVENS has received instructions from H. Lovatt, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, April 28 and 29, at half-past 12 o'Clock precisely each day, without the least reserve, the first portion of his choice COLLECTION of ESTABLISHED ORCHIDS, comprising amongst other fine things:—

Cattleya Triange alba
,, Mendelii, with thirty-two breaks (grand var.)
,, Skinneri alba
,, Morganæ (very fine plant)
Dendrobium Ainsworthii
,, Schroderi
,, suavissimum (extra fine)
,, nobile, extra var.
,, Goldieana
Lælia anceps Dawsoni (true)
,, elegans (fine plant)
,, Brysiana
,, xanthoglossa
,, purpurata (extra fine plants)
Masdevallia Veitchii (fine plants)
,, Harryana
,, ,, (Bull's blood, true)
,, Lindeni
,, chimera
,, Backhousiana
Cymbidium Lowii (two extra fine plants)
Anguloa Ruckeri } grand
,, Clowesi } plants
Saccolabium guttatum
,, Holfordi (plant)
Cattleya Schilleriana (splendid
Cœlogyne Massangeana (finest plant in the country, with thirty flowers)
Cattleya maxima decora
,, Wagneri
,, Crawshayana
,, labiata
,, ,, (autumn flowering)
Odontoglossum vexillarium
,, Andersonianum
,, Chestertoni
,, Ersteadii
,, Alexandræ, in var.
Pilumna nobilis (very fine plants)
Vanda suavis Veitchianum
,, tricolor Dodgsoni
,, Sanderiana
Aerides Lobbi
Cypripedium caudatum roseum
,, Veitchii
,, Spicerianum
,, insigne macranthum
,, Lanceanum, grand variety.
Cymbidium eburneum,
Sobralia macrantha (four splendid plants)
Ada aurantiaca (grand specimen

On view mornings of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., EARLY in MAY, the Collection of ESTABLISHED ORCHIDS formed by the late J. J. Barran, Junr., Esq., of Burley, Leeds, including fine plants of C. gigas, C. Mossiæ, C. Mendelii, C. Percivaliana, Lælia anceps alba, Oncidium Rogersi, O. lanceanum, O. tigrinum, Dendrobes, Masdevallias, and Cypripediums of sorts; a quantity of Odontoglossum Alexandræ, O. Pescatorei, O. Rossi majus, &c.

Further particulars in future Advertisement.

MR. TYDEMAN will SELL by AUCTION, at the Exotic Nurseries, Waltham Cross, Herts, on THURSDAY, April 15, at half-past 12 o'Clock, a portion of Mr. TUDGEY'S valuable and well-known

COLLECTION OF SPECIMEN STOVE AND GREENHOUSE PLANTS,

including well-grown Specimens of Azalea indica, Cape Ericas, Aphelexis, Phœnocomas, Dracophyllums, Stephanotis, Allamandas, Clerodendrons, Francisceas, Specimen Palms, Anthuriums, Crotons, &c.

Also a quantity of Hardwood HEATHS and PALMS, in 4 inch and 6 inch pots.

And One EXHIBITION PLANT VAN, in good repair.

Slinfold, near Horsham, Sussex.

One of the best planted Fruit Farms in the Kingdom, with modern residence, known as Ranfold Grange, of pleasing elevation, occupying a position of singular beauty on the Billinghurst Road, 4 miles from Horsham, one hour's rail from London, containing 80 acres and 36 perches, of which about 67 acres are planted with several thousand pyramid and bush Pear Trees grafted on Pear and Quince stocks of the choicest varieties; also a few thousand Apples and Plums, all selected, and planted eight years and less ago by the owner, an experienced pomologist; also Gaskin's Dairy Farm, and 58 acres and 12 perches of rich Grass Land.

MESSRS. DRIVER AND CO. are instructed by Major Walter, who is retiring, to SELL the above valuable FREEHOLD PROPERTIES by AUCTION, at the Mart, Tokenhouse Yard, Lothbury, E.C., on TUESDAY, April 20, at 2 o'Clock precisely, in two lots (unless previously disposed of by private contract).

Particulars of Messrs. EARLE, SONS, AND CO., Solicitors, 54, Brown Street, Manchester; of Mr. ALEXANDER WILSON, Solicitor, 4, Cook Street, Liverpool; of Messrs. J. R. BRIDGFORD AND SONS, Land Agents, 28, Cross Street, Manchester; and of Messrs. DRIVER AND CO., 4, Whitehall, London, S.W.

Re Edgar Herbert Steer, in Bankruptcy.

Ford and Salisbury.

MESSRS. WATERS AND RAWLENCE have received instructions from the Trustee (Mr. W. Baker) to SELL by PRIVATE CONTRACT, in one lot, as a going concern, the valuable and well-selected stock of upwards of 5250 HOTHOUSE, GREENHOUSE, and BEDDING PLANTS, comprising Pot Roses of the best varieties, including Niphetos, Gloire de Dijon, Maréchal Niel, Madame Falcot, &c.; a fine variety of Cinerarias in bloom, Azaleas, Camellias, Arums, Lilies of the Valley, Pinks in bud, Choice Perpetual Tree Carnations, including the well known Louise Ashburton, Grenadier, and New Forest Yellow varieties; Spiræas, Viscount de Breza, Double White Violets in full bloom, Primulas, upwards of 500 African and other Tuberoses, 400 hybrid Cacti, fine Maidenhair Ferns in pots, from 4 inches to 12 inches in size, and other Ferns in pots; Begonias, and choice White and Red Double Geraniums in bloom, Eucharis, Lilies, pot-root Dahlias; Fuchsia, Dahlia, and Geranium Cuttings; Cucumber Plants, upwards of 1000 Seedling Geraniums, 70 dozen Calceolarias, 25 dozen rooted named Chrysanthemums, Seedlings, &c. Also, in a field at Ford, near the Nursery, upwards of 12 000 named Standard and Dwarf ROSE TREES, 15,000 2-yr.-old Reading Giant and Connover's Colossal ASPARAGUS; and at the shop in Salisbury, the whole of the stock of NEW SEEDS, selected for the requirements of the coming season, together with the customary assortment of HORTICULTURAL REQUISITES.

Arrangements could probably be made for a tenancy of the Residence and Nursery at Ford, and Shop in the Canal, Salisbury; and further particulars may be obtained on application to the Auctioneers, Salisbury.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

London, W.

Re Boller, Deceased.

By order of the Executors.—Important to Florists.

TO BE SOLD, the well-known Property, The WOODFIELD NURSERY, Harrow Road, W., noted for the growth of Succulents. There are numerous Greenhouses. Terms moderate.

Apply, for full particulars, to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Maida Vale.—Choice Position.—(5753.)

TO BE SOLD, by order of the Executor, with Possession, a genuine West End FLORIST'S BUSINESS, comprising half an acre of Land (valuable building site), with Eight-roomed Dwelling House, Seed Shop, Eleven Greenhouses, Pits, &c. Lease unexpired, 24 years. Ground Rent £25.

Apply to PROTHEROE AND MORRIS, Estate Agents, 67 and 68, Cheapside, E.C.

Surrey.

FOR SALE, a MARKET NURSERY. Extensive ranges of Glass, admirably heated. Rent very moderate. Terms to be arranged.

Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Middlesex, about 20 Miles from London.

TO BE SOLD, an excellent FREEHOLD FLORIST GARDEN, of more than a quarter of an Acre, with good House, having shop front to road, Fernery, Vinery, Forcing and Hothouses, Stable, &c.

Apply Mr. T. WILLIAMS, Auctioneer and Surveyor, Staines.

Through the Death of the Proprietor.

TO BE SOLD, a compact NURSERY, known as Hanwell Nursery. Lease unexpired, seventeen years.

Apply to Mrs. KRAUSE, Hanwell Nursery, Hanwell, W.

TO LET, IMMEDIATELY, a NURSERY. Suit Working Grower. Small capital only. Saleable Stock.

Apply, W., Housekeeper, 79½, Gracechurch Street, City, E.C.

Barnes.

Facing Public Road and the Common.

TO BE LET, or FREEHOLD to be SOLD, an ORNAMENTAL COTTAGE RESIDENCE, with large and convenient Stabling, Seed Room, &c., and 1 acre or upwards of Land, having a Well therein, and long open frontages for Glass.—A. H. FREND, Architect, 3 Gray's Inn Square, W.C.

To Nurserymen and Florists.

TO BE LET, in Barry Road, East Dulwich, GREENHOUSES, Large VINERY, and LAND, with long Frontage for Glass, a Small House and good Stabling, in a large and increasing neighbourhood. Suitable for a Florist.

For particulars enquire, W., 204, Peckham Rye, S.E.

Crystal Palace Company's School of Art, Science, and Literature.

ARTISTIC and ECONOMIC IMPROVEMENT of ESTATES, and LANDSCAPE GARDENING. *Principal*—Mr. H. E. Milner, A.M.Inst.C.E.

This division of the School of Art, Science, and Literature is carried on in Mr. Milner's Offices, situated on the Aquarium Terrace Crystal Palace. The Student is under Articles which secure both theoretical instruction and the advantage of Practical Outdoor Work. During the employment of the Student in Practical Work, a certain salary may be allowed. The profession which undertakes to Improve Land, and enhance its value by Artistic and Scientific treatment other than Agricultural, has two main Divisions :—

I. Creating and Arranging natural beauties of Landscape, to Adorn Land for Ornamental or Recreative purposes, Parks or Gardens, Public or Private; including the Architectural, Engineering, and Gardening Works incidental thereto.

II. The Treatment of Estates for Remunerative Purposes, such as Planning and Development for Building, with incidental Engineering and other Works, whether voluntary or public and statutory.

Students will have the benefit not only of the work in Mr. Milner's office, illustrated by Models, &c., but opportunities of actual Professional Work, in which they will practise what they learn. The term of Studentship is Three years, one year at least of which is devoted to outdoor work. The premium is £300, payable to the Crystal Palace Company in advance. During his second and third year the pupil will receive a salary of £50 per annum, if he discharge his work to the satisfaction of Mr. Milner; but this salary or allowance can be claimed only by the twelve Students standing for the time in the order of their entry the first twelve on the roll of the School, and not by any other Students, until they in turn become eligible by becoming one or more of such first twelve for the time. Gentlemen desiring to become Students must satisfy Mr. Milner as to their scholastic training, and their capacity for receiving the artistic instruction. Each Student must hold a Season Ticket to the Crystal Palace, which, however, will be issued to him at half the usual rate.

Lecturer on Architecture : Mr. R. Julian, A.R.I.B.A.
Lecturer on Physiological Botany, Soils, &c. : Mr. R. Houston, F.L.S.

Students will enter the names and pay their Premiums only at the Office of the School of Art, Science, and Literature, in the Library, Crystal Palace.

F. K. J. Shenton, F.R.Hist.S.,
Superintendent of the Educational Department.
Crystal Palace, Sydenham—April 1886.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.
115, Listria Park, Stamford Hill, N.

CYPRIPEDIUM LAWRENCEANUM, in Flower.—2000 can be seen at the Clapton Nursery. Inspection invited by
HUGH LOW and CO.

Tree Carnations.

H. B. MAY offers a very fine lot, in 60's, principally Miss Joliffe, Andalusia, and Lucifer, well established, and fit for immediate Potting. Price on application.
Dyson's Lane Nursery, Upper Edmonton.

HOLLIES of all sizes up to 8 feet, or 8 feet. —These plants have been removed yearly, consequently are safe for transplanting. An inspection of the stock is the only test of their quality to be relied on.
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PANSIES.—Now is the best time to Plant. 100 best Show and Fancy Pansies in Cultivation, in 50 finest named varieties (600 sorts of those from), my extra choice selection, for 25s., package free for cash with order. All other Florist's Flowers at equally low prices. CATALOGUES on application.
JOHN FORBES, Nurseryman, Hawick, N.B.

Carnations, Picotees, Cloves, and Pinks.

CHARLES TURNER'S New and Descriptive CATALOGUE of the above is now ready, and may be had free on application. This Collection was awarded over 30 prizes in London and the Provinces last season. The plants are strong, and the present time is recommended for planting.
The Royal Nurseries, Slough.

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CHARLES CLARK offers PELARGONIUMS in 50 best varieties, 6s., 9s., and 12s. per dozen; Double Ivy-leaved do., 3s. to 6s. per dozen; Double and Single Zonals, best sorts, 4s. to 8s. per dozen. STEPHANOTIS, fine plants, 5s. to 21s. each. TOMATO PLANTS, 4s. p. doz., 28s. p. 100. Free on rail at Narborough.

HOLLY for HEDGES (now is the time to transplant), 12 to 15 inches, 25s. ; 15 to 18 inches, 35s. ; 18 to 24 inches, 50s. per 100. Forest LIST, containing heights and prices of well-grown Quick, Ash, Larch, Spruce, Pines, Oaks, Underwood, &c., free.
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PAUL'S, WALTHAM CROSS.—SEEDS, ROSES, EVERGREENS, TREES, SHRUBS, CLIMBING PLANTS, FRUIT TREES, GRAPE VINES, CAMELLIAS, BULBS, &c., of the best quality, and low in price. See Priced Descriptive CATALOGUES, free by post.
WM. PAUL and SON, Paul's Nurseries, Waltham Cross.

Chellanthes elegans.

H. B. MAY offers beautifully furnished Plants of this elegant Fern, in 60's. Price on application. Dyson's Lane Nursery, Upper Edmonton.

NOVELTIES.
New Double Scarlet VERBENA, 1s. 9d. each (in May).
CHRYSANTHEMUMS, 1886, from Japan and China (received Four Certificates), 12 vars., 10s. 6d.
Lemoine's Double Red BOUVARDIAS, 3 vars., 3s. 6d.
IVY-LEAVED PELARGONIUMS, M. Thibaut (Double Rose), 1s. 6d. ; Lang Son (Double Vermilion), 1s. 6d. ; E. Lemoine (Double Scarlet), 1s. 6d.
Lemoine's Double ZONAL PELARGONIUMS, 1886, 6 vars., ,, ,, 6 do. of 1885, 4s. 6d. [6s. 6d.
COLEUS, 1886, 5 fine vars., 2s. 6d.
All post free. Ready now, except Double Verbena.
Descriptive CATALOGUE post-free.
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Old Ashleaf.	Fortyfold.
Rivers' Royal Ashleaf.	York Regent.
Myatt's Ashleaf.	Dunbar Regent.
Snowflake.	Paterson's Victoria.
Beauty of Hebron.	Redskin Flourball.
White Elephant.	Walker's Regent.
Early Rose.	Early Don.
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And other leading varieties. Prices on application.

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WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off :—
TRICOLORS : Mrs. Pollock, 2s. per doz., 15s. per 100 ; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s. 6d. doz., 18s. 100 ; 12 sorts, 6s.
BRONZE : McMahon, Black Douglas, The Czar, 2s. doz., 12s. 100.
SILVERS : May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.
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BEST WHITE ZONAL : Queen of the Belgians, 4s. doz., 25s. 100 ; Niphetos, 2s. doz., 15s. 100.
LOBELIAS : Blue Stone, Pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. 100, 20s. 1000.
CALCEOLARIAS : Golden Gem, 5s. 100, 40s. 1000 ; Camden Hero, 6s. 100.
HELIOTROPE : Jaun des Amours, Miss Nightingale (light), 6s. 100, 50s. 1000.
AGERATUM : Imperial Dwarf (blue), the best bedder, 5s. 100, 40s. 1000.
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IRESINE LINDENI, 5s. 100, 40s. 1000.
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Packing included. Terms, cash with order.
Cemetery Nursery, Gravesend.

Verbenas—Verbenas.

WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 6s. per 100, 50s. per 1000. Post-free 3d. per 100 extra. Terms cash, packing included.
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SEN. A. F. SARAFANA, of São Paulo, Brazil, has on hand a splendid assortment of these beautiful Plants, in good and strong specimens. Also Plants of BROMELIAS, MELASTOMADS, PEPEROMIAS, PALMS, FERNS, CYCAS, &c., all of which he offers at very moderate prices.
CATALOGUES will be sent free if desired.

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W. W. JOHNSON and SON, Seed Growers and Merchants, Boston, have choice Stocks of the annexed home-grown FARM SEEDS to offer :—

Swedes.	Carrots.
White-fleshed Turnips.	Cabbages.
Yellow-fleshed Turnips.	Kohl Rabi.
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Samples and lowest prices, stating requirements, on application.
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THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.
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One well-rooted Plant of each sent free by post for 2s. 6d. cash with order.

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250 ACRES
HARDILY GROWN
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ALL OTHER
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UNEQUALLED FOR
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HERBACEOUS and ALPINE PLANTS. One of the largest and best collections in the world. Good selections from 25s. per 100.
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TUESDAY NEXT.

MR. EDWARD WALLACE AMONG THE CATTLEYAS.

MESSRS. PROTHEROE AND MORRIS have received instructions from the NEW PLANT AND BULB COMPANY to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 13, at half-past 12 o'Clock precisely, over 2000 ODONTOGLOSSUM ALEXANDRÆ, in fine masses and splendid condition, from some mountains just hired by their agent in the Pacho district, whence come all the best types. The very strong character of the bulbs and spikes show that Mr. Wallace has found the right place. A small importation of CATTLEYA SANDERIANA, in fine condition, with unstarted eyes; ODONTOGLOSSUM LUTEO PURPUREUM, in grand masses and splendid condition; a new form of CATTLEYA SUPURBA, seen in bloom and described as a very large-flowered form, with enormous bulbs, collected at an elevation 1000 feet higher than the Rio Nigro district (and in consequence we infer that this form will be more easily cultivated); C. GALEANDRA, species with white lip and brown sepals; ONCIDIUM with large rosy flowers; the grand new EPIDENDRUM (Wallacei ?), flowering with a pair of branching spikes, 12 to 30 inches long, pendulous from the base of the bulb, like E. Stamfordianum. The flowers are an inch across, and numerous, yellowish spotted rosy-purple, hanging down in large clusters, like Saccolabium guttatum; also another new EPIDENDRUM, with rich orange-red flowers, like a ball of fire, &c.

On view morning of Sale, and Catalogues had.

TUESDAY NEXT.

CATTLEYA MENDELII, CATTLEYA AUREA, ODONTOGLOSSUM VEXILLARIUM,

IN SPLENDID CONDITION.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. SHUTTLEWORTH, CARDER & CO., to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 13, at half-past 12 o'Clock precisely, the following IMPORTED ORCHIDS, just to hand:—CATTLEYA MENDELII, in splendid masses and fine condition; CATTLEYA AUREA and CATTLEYA GIGAS, ODONTOGLOSSUM VEXILLARIUM, grand pieces, in excellent condition—the first importation received for a considerable time; ONCIDIUM WELTONII (true), O. KRAMERII, O. FUSCATUM, O. PAPILIO MAJUS, ODONTOGLOSSUM GRANDE, &c.

On view morning of Sale, and Catalogues had.

FRIDAY NEXT.

CATTLEYA AUREA—a grand lot.

CATTLEYA GIGAS IMPERIALIS,

CATTLEYA MENDELII.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. SANDER to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, April 16, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA AUREA, in fine condition; CATTLEYA IMPERIALIS, the free-flowering form of C. gigas; several fine species of LYCASTE SKINNERII ALBA, ODONTOGLOSSUM BLANDUM, PHALÆNOPSIS PESCATOREI and TRIUMPHANS, ONCIDIUM ORNITHORYNCHUM, ADA AURANTIACA, a specially selected and splendid batch of ODONTOGLOSSUM ALEXANDRÆ, ONCIDIUM FORBESI, and the lovely O. DASYTILE, COLAX JUGOSUS, LÆLIA ANCEPS, dark variety and white forms; ACINETA species, yellow, with red spots; CHYSIS BRACTESCENS, and the rare and very fine CYPRIPEDIUM IRAPEANUM, in splendid condition.

On view morning of Sale, and Catalogues had.

Spring, 1886.

CHARLES TURNER'S General and Descriptive LIST of FLORIST FLOWERS, &c., is now ready, and can be had free on application.
The Royal Nurseries, Slough.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots.
F. R. KINGHORN, Nurseryman, Richmond, Surrey.

MR. DODWELL'S GRAND CARNATIONS, the finest grown. 2000 Plants, including Seedlings of last autumn, to be sold for the benefit of the Prize Fund of the UNION CARNATION and PICOTEE SOCIETY.
Special terms to the Trade. Particulars on application.
Address—HEAD GARDENER, The Cottage, Stanley Road, Oxford.

Covert Plants.

BLACKTHORN, GORSE, and all other Fox and Game COVERT PLANTS. Special quotations on application.
JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

New Double Fuchsia.

MRS. SHORT has the largest pure White Corolla ever seen, of immense size, nearly 2½ inches diameter, and 2 inches in depth, dwarf bushy habit, and profuse bloomer. Sure to become a great favourite, on account of its enormous flowers. Price 2s. 6d. each, post-free.
G. C. SHORT, Seedsman and Florist, Stokesley.

CHOICE SHRUBS, very cheap; all well-rooted and good shape. LAUREL ROTUNDIFOLIA, 2 to 3 feet, 10s. per 100; PICEA NORDMANNIANA, 2 to 2½ feet, 50s. per 100; CEDRAS DEODORA, 2 to 2½ feet, 50s. per 100; Austrian PINE, 2 to 3½ feet, 20s. per 100, and many others. Also choice bushy SHRUBS for pots and boxes in variety, 30s. per 100.
W. JACKSON, Blakedown, Kidderminster.

OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c., on application.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

RHODODENDRONS, WHOLESALE SPECIAL OFFER.
50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.
5,000 HYBRIDUM and CATAWBIENSE.
3,000 NAMED VARIETIES, the Choicest Sorts.
GREEN HOLLIES, RHODODENDRON, BRIER, and GRIFFERII STOCKS, selected for Working.
For prices and particulars, address:—
FOREMAN, Birch Nursery, King's Thorn, near Hereford.

ORCHIDS A SPECIALTY.

The stock at the Clapton Nursery is of such magnitude that, without seeing it, it is not easy to form an adequate conception of its unprecedented extent. Inspection invited.

Three span-roofed houses of PHALÆNOPSIS in variety. The Glass Structures cover an area of 267,500 super. feet.
HUGH LOW AND CO., Clapton Nursery, London, E.

CHOICE FLOWER SEEDS for Present Sowing.
Carriage free by post or rail.
Superb strains — PRIMULA CALCEOLARIA, CINERARIA CYCLAMEN, PERSICUM, BEGONIA, AURICULA, &c., &c., each per packet, 1s. 6d., 2s. 6d., 3s. 6d., and 5s.
COLLECTIONS of CHOICE FLOWER SEEDS, for Large and Small Gardens, viz :—
Collection No. 1, 10s. 6d.
,, No. 2, 15s.
,, No. 3, 21s.
,, No 4, 30s.
,, No. 5, 42s.
These contain a complete and choice assortment of really showy and handsome flowers.
,, Hardy Annuals, 12 showy kinds, 2s. 6d.
,, Bee feeding Plant Seeds, 12 vars., 2s. 6d.
,, ,, 6 vars., 1s 6d.
TREES, SEEDS, and PLANTS of every description.
Priced CATALOGUES post-free.
JAMES DICKSON AND SONS, "Royal" Nursery and Seed Establishment, 108, Eastgate Street, Chester.

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE.
4d. per bushel; 100 for 25s.; truck (loose, about 2 tons), 40s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks 25s.; sacks, 4d. each.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. per half ton, 26s. per ton in 2-bushel bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—H. G. SMYTH, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18s.; ½-cwt., 9s. 6d. ¼-cwt., 5s.; ⅛ cwt., 3s.; Tins containing 7 lb., 2s. 6d.; 2½ lb., 1s.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool.
Can also be had from all Nurserymen and Seedsmen.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

CARTERS'
PERMANENT AND BEAUTIFUL LAWNS

SOW DURING the MONTH

CARTERS' INVICTA
LAWN SEEDS.

	Carriage Free. Per Pound. s. d.	Bushel. s. d.
CARTERS' INVICTA LAWN SEEDS	1 3	25 0
Carters' Grass Seeds .. for Town Lawns	1 3	25 0
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Sow 4 Bushels of Seed per Acre

THESE SEEDS ARE ALSO SUPPLIED IN PACKETS, Price 1*s.*, 1*s.* 6*d.*, and 2*s.* 6*d.*

The 1*s.* 6*d. packet will sow one rod of ground.*

Notice. **Carters' Invicta Lawn Seeds have beaten all Competitors in every Competition.**

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A valuable preparation for producing a permanent luxuriant growth. In Boxes, price 1*s.*, 1*s.* 6*d.*, and 2*s.* 6*d.* In Bags, of 14 lb , 4*s.* In Casks of ½ cwt., 10*s.* 6*d.*

FULL INSTRUCTIONS WITH EVERY PARCEL.

For further particulars see Carters' Pamphlet, *How to Form a Lawn and Tennis Ground,* Gratis and Post-free on application.

SEEDSMEN by ROYAL WARRANTS to H.M. the QUEEN, and H.R.H. the PRINCE of WALES,

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The Old-Established Seed & Nursery Business.

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"The Queen's Seedsmen."

Hardy Trees—200 Acres. Forest and Ornamental Trees—hardily grown. Fruit Trees—50 Acres—mostly bearing—perfectly trained. Pronounced "unequalled." Evergreens, Cover Plants, Roses, in vast quantity. All Regularly Transplanted.

Prices strictly moderate. Write for Catalogues, giving fullest information, Gratis and Post Free. Estimates given.

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LILIUM LONGIFLORUM FLORIBUNDUM.

This is the handsome free-flowering Easter Lily of Bermuda, invaluable for pot culture, its pure white flowers being borne in the greatest profusion. Good strong plants that will be in flower at Easter, £3 per dozen.

LILIUM AURATUM.—Good, plump, sound Bulbs, 6*s.*, 9*s.*, 12*s.*, 18*s.*, and 24*s.* per dozen; extra strong, 30*s.* and 42*s.* per dozen. All other good LILIES at equally low prices.

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B. S. WILLIAMS can offer well rooted suckers of the following varieties :—

SMOOTH CAYENNE, CHARLOTTE ROTHSCHILD, BLACK JAMAICA, WHITE PROVIDENCE, RIPLEY QUEEN. Early orders solicited.

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NEW EARLY POTATO,

DAY'S "EARLY SUNRISE."

An entirely New Variety, as early as the "Ashleaf," and a much heavier cropper. It is a *semi-kidney*, somewhat flat, and much resembles *in shape* the old "Fluke" or "Lapstone."

Very early, of first-class quality, and a great cropper All Gardeners, Market Gardeners, and Potato Growers should obtain a stock of this Potato. No one can have more than four sacks.

Among numerous very favourable opinions may be quoted F. WYLES, Esq , Rochester, who grew 190 varieties last year, who writes of "Sunrise" Potato :—"Early, a good cropper, excellent cooker, and likely to become a most useful variety." Mr. LAWRENCE, Gardener to Lord Northbourne, writes:—"I have grown Day's 'Early Sunrise' Potato two seasons. It is a really good early, and most prolific. I have not found any diseased."

Price 6*s. per Gallon,* 25*s. per Bushel,* 63*s. per Sack,* £10 10*s. for* 4 *Sacks, free on rail, less* 5 *per cent. Cash Discount on Sack orders. Liberal Terms to the Trade.*

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DAY'S well-known "EARLY SUNRISE" PEA should only be obtained direct from the Raiser. Price, 8*os.* per quarter, 12*s.* per bushel.

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STANDARDS, on stems of various heights, and of such kinds as GOLD QUEEN, MILKMAID (Weeping), NEW GOLDEN WEEPING, BRONZE, &c.

7*s.* 6*d.*, 10*s.* 6*d.*, 15*s.*, 21*s.*, 31*s.* 6*d.*, 42*s.* each

HANDSOME PYRAMIDS of the above, 5*s* to 21*s.*

Now is a Capital Time to Plant.

RICHARD SMITH & CO.,
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CLAY'S
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PLANT FOOD

Sold in Packets, 6d. and 1s. each, and in

Sealed Bags only,

7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

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H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.

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50,000 Tuberous Begonias.

R. OWEN offers his superior DWARF ERECT FLOWERING STRAIN. Blooms of great substance, circular, average size 4½ inches diameter. TUBERS, 3*s.* 6*d.*, 5*s.*, 7*s.* 6*d.*, and 10*s.* 6*d.* per dozen, mixed colours ; 5*s.*, 7*s.* 6*d.*, 10*s.* 6*d.*, 15*s.* and 21*s.* per dozen, in separate colours. SEED, mixed, 1*s.* 6*d.* and 2*s.* 6*d.*, or in colours ; Double, 1*s.* 6*d.*, and 2*s.* 6*d.*

PRIMULA, 20 Extra Fine Hybrid Varieties, mixed, 1*s.* 6*d.* and 2*s.* 6*d.* per packet.

R. OWEN, The Floral Nursery, Maidenhead.

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The White Jackmanni.

The Raiser now distributes the above at the Reduced Price of 5*s.* each. The value of strong 2-yr. old Plants will be well understood by all.

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A few thousand MANETTIS at a Clearance Price. Other Nursery Stock Send for prices.



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LIST of Cheap Offers in Ornamental Plants, sent on application, for the Stove, Greenhouse, and Garden. Choice quality. Healthy young plants.

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100 STOVE or GREENHOUSE PLANTS, beautiful flowering and ornamental foliage, in 100 varieties, for 63*s* and 105*s.* ; or 50 varieties, 42*s.* the 100.

12 AZALEA INDICA, splendid varieties, for 18*s.* and 24*s.*

CRINUM POWELLI, splendid hardy Lily, 3*s.* 6*d.* to 7*s.* 6*d.*

12 DRACÆNAS, 12 sorts, very ornamental, 6*s.*, 9*s.*, 12*s.*, 18*s.*

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12 kinds of Greenhouse RHODODENDRONS, sweet-scented, 9*s.*, 18*s.*, 30*s.*

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12 GARDENIAS, large, set well for flower, 18*s* , 30*s.*

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12 PALMS, Ornamental varieties, 6*s.*, 9*s.*, 12*s.*, 18*s.*

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TEA ROSE, own roots, 6*s.* per 12 choice sorts.

100 Varieties of HARDY HERBACEOUS PLANTS, strong, 21*s.* and 30*s.*

CALADIUMS, BEGONIAS, GLOXINIAS.

The following Free per Parcel Post :—

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12 BEGONIAS, tuberous, mixed, 4*s.* and 6*s.* ; named sorts, 10*s.* 6*d.*, 15*s.* Seed, 1*s.* and 2*s.* 6*d.*

GESNERA HENDERSONI, the finest of all the true Gesneras, pale green velvety leaves, with large trusses of brilliant scarlet flowers, 3 inches long, in large trusses : each 1*s.* 6*d.* and 2*s.* 6*d.* : or per dozen, 18*s.*

50 GLADIOLUS, 50 choice varieties, 7*s.* ; gandavensis, mixed, 2*s.* per dozen ; brenchleyensis, 1*s.* 6*d.* per dozen.

Seeds of Calceolaria, Cineraria, Primula, Cyclamen, Begonia, Carnation, Hollyhocks, Petunia, Mimulus, and Pansies. See first quality offered in CATALOGUE. 1*s.* and 2*s.* 6*d.* each.

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Strong healthy young Plants from single pots, true to name, and Carriage Free at prices quoted :—

	Per Dozen.—s.	*d.*	
Abutilons—In choice variety, 6 for 2*s.* 6*d.*	4	6	
Bouvardias—Sang Lorraine.—Splendid new double scarlet .. each 2*s.* 6*d.*			
Bouvardias.—Beautiful varieties to name 6 for 2*s.* 6*d.*	4	6	
Chrysanthemums — Japanese. — Six new varieties for 1886, magnificent set, 10*s.* 6*d.*			
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Dahlias—Show and Fancy.—New varieties of 1885 .. .. 6 for 7*s.* 6*d.*	12	6	
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Dahlias—Single-flowered.—Very choice sorts .. .. 6 for 2*s.* 3*d.*	4	0	
Dahlias—Juarezi (the Cactus Dahlia).—Splendid .. .. 3 for 1*s.* ; each 9*d.*			
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Dahlia—General Gordon. — Splendid new Cactus variety ; bright deep scarlet ; fine .. .. 3 for 2*s.* 6*d.* ; each 1*s.*			
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Fuchsias.—Six new varieties for 1886 (Lye's), very fine, 9*s.*			
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Fuchsia—Madame Jules Chretien.—Splendid new variety .. each 1*s.*			
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Fuchsia—General Gordon.—New, very fine .. .. .. each 1*s.*			
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Mimulus.—Large-flowered hybrids : very beautiful .. .. 6 for 1*s.* 6*d.*	2	0	
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Pelargoniums — Single-flowered Zonal.—Seven new varieties of 1885 : splendid set, 8*s.* 6*d.*			
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,, ,, Superb varieties from our fine collection .. .. 6 for 2*s.* 6*d.*	4	6	
Pelargoniums — Double-flowered Zonal.—One each five new varieties of 1886 ; very fine, 7*s.* 6*d.*			
,, New and very choice sorts, splendid varieties .. .. .. 6 for 2*s.* 6*d.*	4	0	
Pelargoniums—double-flowered Ivy-leaved.—One each six new varieties of 1885, magnificent, 7*s.* 6*d.*			
,, ,, Beautiful varieties from our unique collection .. .. 6 for 2*s.* 6*d.*	4	6	
Phlox—herbaceous.—Our own selection, including the most beautiful sorts, 6 for 2*s.*	3	6	
Pentstemons.—In beautiful variety, very choice .. .. .. 6 for 2*s.*	3	6	
Petunias.—Double-flowered, beautiful sorts 6 for 2*s.*	3	6	

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DANIELS BROS.,
Town Close Nurseries, Norwich.

WM. CLIBRAN & SON,
OLDFIELD NURSERY,
ALTRINCHAM,
And 12, MARKET ST., MANCHESTER.

NO other Nursery in Lancashire, Yorkshire, or Cheshire, has increased during the last fifteen years like ours. As an illustration we employed ONE MAN, our acreage of Nursery Stock was ONE-HALF ACRE, and the Glass about 1000 feet. We now cover *FIFTY ACRES, PAY BETWEEN £3000 and £4000 per annum in wages, and our glass exceeds 50,000 feet. We produce almost all we sell ; our Plants are not dried with long railway journeys, and they are ready to grow at once, instead of being, as is so often the case, a year or two before healthy growth commences.

BEAUTIFUL FLOWERS.
For Greenhouses or Gardens.

TO THOSE WHO HAVE
Flower Gardens, Greenhouses, or, being fond of Hardy Plants, desire the Best.

Send for our **NEW CATALOGUE** for 1886, containing descriptions, prices, and valuable hints to amateurs. Post-free, 3 Stamps

Testimonials out of many Thousands received :—

The Gardens, Herringswell House, Mildenhall, Suffolk, April 18, 1885.

"Gentlemen.—I received the plants all right yesterday, not a leaf damaged. My employer is very pleased with them, and says they are beautiful. Thanks for extra plants.—I remain yours truly, F. DODDS."

Belle Grange, by Ambleside, Windermere.

"Gentlemen.—Your Roses have been the wonder of all who have seen them—superior to any in this part. Blooms magnificent.—Yours obediently, W. CLARKE."

The Gardens, Wincham Hall, Knutsford, January 15, 1886.

"The Roman Hyacinths sent have turned out very fine, producing a large quantity of bloom.—Yours truly, J. STOTT."

The following parcels are selections from our stock, and include the finest varieties, all named. Every season new sorts are proved and added, and any inferior ones discarded.

12 Finest Abutilons, 12 sorts, 3*s.*	12 Gloxinias, 12 beautiful sorts, 6*s.*
12 Begonias, tuberous 12 sorts, 6*s.*, 9*s.*, or 12*s.*	25 Do., 10*s.* 6*d.*
12 Do., ornamental, 12 varieties, 4*s.*, 6*s.*	12 Herbaceous a'pine or rock plants, 12 fine sorts, 3*s.*
6 Do., evergreen, 6 varieties, 1*s.* 6*d.*	50 in 50 sorts, 12*s.* 6*d.*, 100 in 100 sorts, 21*s.*
12 Bouvardias, 12 vars., 4*s.*, 6*s.*	12 Hollyhock seedlings, 4*s.*; 50 for 12*s.* 6*d.*; 100 for 21*s.*
12 Caladiums, 12 vars., 6*s.*, 9*s.*	12 Iris, very lovely, 3*s.*
12 Carnations and Picotees, 12 varieties, 6*s.*	12 Lantanas, 12 sorts, 2*s.* 6*d.*
12 Carnations, Tree, 6*s.*, 12*s.*	12 Mimulus, 12 beautiful kinds, 2*s.* 6*d.*
12 Chrysanthemums, large-flowered Japanese, Pompon, or mixed as wished, 2*s.* 6*d.*	12 Pæonies, herbaceous, 12 sorts, 9*s.*
50 Do., do., 10*s.*	12 Palms, 6 sorts, 9*s.*
100 Do., do., 18*s.*	12 Pansies, show or fancy, 12 fine kinds, 3*s.*
12 Climbing Plants, hardy, 6*s.*	12 Pelargoniums, 12 very fine sorts, 6*s.* or 9*s.*
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THE

Gardeners' Chronicle.

SATURDAY, APRIL 10, 1886.

AN IRISH GARDEN AT THE END OF WINTER.

MARCH 17—St. Patrick's Day—and snow falling in large flakes like white feathers out of a sea-gull's breast, and the distant hills still snowclad from the storm of the first of March—a day that will long be remembered for the white rage of fury with which it burst over the country. Then, for a whole week, everything lay concealed beneath the snow ; and happy was it for plant life to be thus softly protected, while piercing winds from the north-east blew day and night, and keen frosts held everything bound. The poor birds, made desperate by hunger, sought shelter by any open door or window, and the blackbirds and thrushes tore away every berry from the Arbutus trees, or spent their time beneath the bushes, puffed out with cold, but fighting for the fallen booty. One Holly tree, that all the winter through, had looked on fire with scarlet berries, shared a like fate ; and marauders from a distance, in the shape of missel thrushes, came in flocks to assist at the feast, if such a word could be applied to what was eaten in cold and hunger and struggling haste. Even the sea birds, tamed by the fierce cold and hunger, came to within a little distance of the dwelling-house—green and golden plover and curlew, seeking food wherever the snow had partially melted. Skylarks, too, that one only thinks of as the embodiment of song soaring into sunshine, fell upon a fine row of early Peas, and scattering the snow from around them, devoured every green leaf.

How grateful one is to blossoms that bear the ills of life bravely. Iris reticulata went under the snow in full bloom, and emerged from it as fresh as before, and to prove that it was none the worse, has remained in beauty ever since. Not so with the Snowdrops, they looked soiled and draggled, and all their fairness was lost in the snow, beneath which their reign ended.

March 24.—Accustomed as we are in Ireland to believe that after our patron saint's day fair weather will visit our isle, we were this year almost in despair to see the world still white on the 17th ; but, lo ! the very next day came gracious rain, bringing back to sight the purple hills, and sending such a breath of warmth over the land, that when the clouds had passed and the sun shone forth, one might well fancy it May-day weather, for the life and light and gladness that quickened Nature's pulse, and seemed to thrill through every opening bud and blossom.

During the last few days the growth has been magical. The Daffodils (N. Pseudo-N.) that had been waiting for so many weeks escaped from their sheaths, but still holding their golden segments closely furled, opened out all together on the 21st, just one month later than last year, and two days after Narcissus maximus expanded ; and now the pale N. cernuus is unfolding its wings as it droops over the blue Grape Hyacinths that cluster beneath

The "Snow Glory," Chionodoxa Luciliæ, has sprung out of its dark brown scabbard, throwing back its flower-stems with that arched curve which is so peculiarly graceful. This gem from Asia Minor always recalls to me the first idea that suggested itself on seeing the flower, that there, in the blossom itself, lay pictured its far-off home on the Nymph Dagh—the snowy height that leans against an azure sky. Its companion, C. sardensis, is of a more intense blue, so exquisite as to escape the power of description; the light that gleams from the depth of a sapphire could better tell it than any words. C. Luciliæ seeds freely around the parent, the young seedlings appearing the following spring along with the blossoms. It seems to flourish well in good loam, made light by sand and leaf-mould, sending up numbers of spikes of bloom, varying considerably in tint, some being deeply blue, others of a purplish tinge, and some having their petals only tipped with blue. The greatest number of flowers on one stem to be counted this spring is fourteen delicately beautiful blossoms such as these, having rather a desolate air if planted in the wide garden border. They need a chosen spot of warmth and shelter and fitting companionship. The soft yellow of Narcissus minor now in blossom makes the blue of the Snow Glory all the more brilliant, and growing side by side or intermingled irregularly, the effect is charming. In like manner, Crocus sulphureus enhances the beauty of Chionodoxa sardensis.

The Crocuses, held back so long by constant frosts, have burst into a sudden radiance. A long close line of them looks like a wedge of beaten gold, but nowhere are they more lovely than scattered through the fresh green grass beneath the trees, where they find some slight support against harmful winds or rain. No flower seems more of a sun-worshipper or to have caught his beams with more concentrated power, than the golden Crocus. The moment they can catch a ray of sunlight, the way they open out and bask in it and seem to laugh up in one's face is delightful after long wintry days. The pure white and various painted and rich purple kinds are all the better for being mixed together when grown in the garden. Nature is even giving us lessons in enamel.

Anemone fulgens, so full of whims and fancies, is lifting up its dazzling scarlet blossoms. The harsh weather has quite bronzed (though in no way harmfully) its foliage, so that the flowers seem more brilliant than ever rising out of the dark leaves. I have not as yet learned this plant's secret of a happy life. In various situations, in different soils and alongside each other, one root will live and flourish and the other never appear; and when I search the blank spot the tuber is found in a state of soft creamy pulp. Primula cachmeriana appears all the better for the cold winter, and is sending up its soft round balls of lilac freely. Mild weather is apt to hasten its bloom-time over much, and the flower-heads frequently damp away when the impetus of its natural blooming-time is absent. The life of Myosotis dissitiflora through winter is but uncertain, often becoming black and unsightly after frosts and bitter winds. A little shelter overhead, such as an Apple tree or branch of a shrub, seems, however, sufficient to save it from this fate, and where it has had this slight protection its blossoms look now like little lakes of blue.

One is loath to cut the leaves of the Daffodil when gathering the flowers, knowing how their juices return to nourish in the bulb the embryo blossom for next year. Just now nothing can well look better with the golden blossoms than the soft silvery catkins strung along the branches of the Willow; or if they are not to be had, the dark flowering boughs of the Elm, with their little knobs of brown blossom, can be used in like manner, and in a few days the red-brown leaves of the Pæonies will be tall enough to gather, and will look admirable with the Narcissus flowers. *L. A. L.*

New Garden Plants.

ODONTOGLOSSUM ASPERSUM (*Rchb. f.*) SPILOGLOSSUM, *nov. var.*

I HAD this from Mr. F. Sander, and the receipt of one flower only makes me believe that it came from another source. It is much like the original Odontoglossum of Messrs. J. Veitch & Sons (January, 1879), but it has now a lobed lip, like O. maculatum erosum, and brown blotches on it, as in all plants of O. maculatum. This makes me believe even more in the original view of Messrs. J. Veitch & Sons (Mr. Harry Veitch) that it is a hybrid between Odontoglossum Rossi and maculatum. I know well this view has been "corrected" somewhere in these columns, but I scarcely believe with success. *H. G. Rchb. f.*

ODONTOGLOSSUM CORDATUM (*Lindl.*) KIENASTIANUM, *nov. var.*

This was first sent me by the excellent orchidist, Consul Kienast, May, 1880. An allusion to it was made in the *Gardeners' Chronicle*, 1883, vol. xix., 469. It is remarkable for the few broad blotches on the sepals and petals, those on the sepals now being nearly confluent. The lip has a very dark brown anterior part. I have now a flower sent by Mr. F. Sander, to whom it was sent by C. Dorman, Esq., The Firs, Lowrie Park, Sydenham. *H. G. Rchb. f.*

LISSOCHILUS DILECTUS, *Rchb. f.**

This is a discovery of the late Dr. Welwitsch, made in Angola. It was found later in superior varieties by Major Von Mechow at Malange, and on the Guango. Now, Mr. Michalitz, who visited the Congo for Mr. F. Sander, has found it likewise, and dried flowers as well as living splendid rhizomes lie on my table. The information given by this collector gives a fresh light how to grow the plant, and affords some hopes that we may finally succeed in growing these grand Orchids, which are, no doubt, the "Cattleyas," which were promised by some Continental admirers of the Congo.

As far as I know, every one has used the famous English yellow loam for the Lissochiluses. Mr. Michalitz, however, tells us that the plant wants fresh light wood-soil (humus), and that it never grows on loam. It is found at 1500 feet, enjoying an average temperature of 20° R. [say 75°—80° F.] in valleys. It flowers from November to January; from May to October it keeps its rest, and does not even mind the bad habits of the niggers of burning the grass over its head.

It would, of course, be nonsense to speak much in praise of the flowers. Welwitsch called it "ein prachtiger Lissochilus." The flowers he stated to be rosy with a purple lip. Mr. Michalitz calls the flowers rosy, with a yellow mouth to the gibbous spur, which is striped with purple; base of the lip dark white. The peduncle is more than 2 feet in height, and bears from four to ten flowers, which are as large as to the petals and lip as those of Brifrenaria inodora, Lindl., but the linear lanceolate, acuminate, reflexed sepals are much narrower. Petals oblong, very broad. Lip threefid, side-lacinia broad, angulate, mid lacinia prolonged, nearly square, retuse, now bilobe. Spur gibbous, short. Two bidentate calli before the mouth. The rhizomes make one remember those of ginger, and have somewhat astonishing ramifications. The shoot is finally handlike, like a Cheirotherium. One of the fingers produces a fresh hand, and so on. *H. G. Rchb. f.*

LINNEAN SOCIETY OF LONDON. — A meeting will be held on Thursday, April 15, at 8 P.M., when the following papers will be read:—1, "New Genera and Species of African Curculionidæ," by F. P. Pascoe. 2, "Notes on the Plants observed during the Roraima Expedition (1884)," by E. F. Im Thurn. 3, "Fungi from Queensland (part iii.)," by C. E. Broome.

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* *Lissochilus dilectus*, Rchb. f. (*Otia Bot. Hamb.* p. 62) — Affinis Lissochilo arenario, Lindl. Folio mutato latiori; racemo 4—10 floro, grandiflore; bracteis lanceosetaceis ovaria pedicellata non æquantibus; sepalis triangulo-lanceolatis aristatis; tepalis ellipticis obtuse acutis seu obtusis, labello pandurato, lobo antico multo productiore longiore, isthmo majori, retuso, callis geminis lamelliformibus in ostio, calcari bilobo, carinula granulosa nunc anteposita, calcari vulgo gibboconico retusiusculo brevi; anthera vertice bipapulosa. *H. G. Rchb. f.*

KUMAUN.

(*Concluded from p. 372.*)

OUR next march was to a place called Garbyang. The road for the greater part of the way keeps on the Nepal side of the valley. Whilst searching for lichens and mosses, which we noticed to be unusually abundant here on the trunks of Pines and other trees, a very interesting little parasite, a species of Arceuthobium, was discovered on the branches of Pinus excelsa. Some of the smaller branches were completely hidden by the growth of this parasite, which at first sight looked like a moss. On examining it with a lens the structure of the flowers indicated at once its affinity to some plant belonging to the Mistleto family (Loranthaceæ). The only species of Arceuthobium formerly known in India — viz., A. oxycedri—is mentioned in the *Forest Flora* of Stewart and Brandis, p. 395, as being confined to a single locality on the Upper Chenab in Lahoul, where it was discovered by the Rev. H. A. Jæschke, of the Moravian Mission, growing on Juniperus excelsa. I propose "A. nepalense" * as the name for our plant, as it is clearly a distinct species. The flowers are unisexual and dicœcious, the male and female plants growing apart in separate colonies.

Some bushes of Berberis umbellata were seen on the way down; this is a much more graceful shrub than any of the varieties of B. vulgaris, which it somewhat resembles. That curious plant, Stylophorum lactucoides, was again found on exposed shaly banks.

Shortly before reaching Garbyang the road leaves the Nepal side of the valley and crosses to the right bank of the Kali River. The camping-ground is two miles beyond the village, on a grassy knoll overlooking the river, the elevation being a little over 11,000 feet. Above the camp is a high mountain scored into innumerable ravines. The isolated rocky masses covered with rare plants, and which extend through dense Pine forests far down to the river, afforded a sight highly inviting to a botanist.

I ascended this mountain on the following day. It was very steep and slippery, the soil being clay, and the day a rainy one. The upward progress was slow, not only on this account, but because of the many interesting plants which were found all the way up, and had to be collected. A few of the more noteworthy are the following:—Aconitum ferox, Cimicifuga fœtida, Berberis concinna, Lychnis pilosa, Poterium diandrum, Saxifraga filicaulis, S. fimbriata, Sedum elongatum, Pimpinella tenera, Pleurospermum dentatum, Saussurea hypoleuca, Gerbera Kunzeana, Lactuca macrorhiza (flowers white), Triosteum hirsutum, Asplenium viride, Polypodium malacodon, P. clathratum, Woodsia lanosa.

On the next day (September 16) we had a long march to a place called Lamári, but with a descent of 3000 feet. The road through the upper part of the Káli valley had hitherto been good, and so it is all the way up to the Lipu Lekh Pass; it now becomes difficult, the marches for two or three days being exceedingly trying; water also is very scarce.

The botany all the way down from Garbyang to the Káli River is extremely interesting. Shortly after leaving the camping-ground the road passes through a portion of a fine forest composed chiefly of Pinus excelsa and Abies Webbiana. Here I found Circeaster agrestis again, the elevation being about 11,000 feet; Cimicifuga fœtida is abundant here, also Senecio ligularia and S. graciliflorus.

After this there is a steep descent to the village of Budhi, and a very striking view as you look down upon the Káli River over 2000 feet below. A fine patch of Woodsia lanosa was seen hanging from a rock by the side of the path. A handsome Desmodium (D. argenteum, Wall.) is common on this hillside. In the *Flora of British India* this plant is given as a synonym of D. tilliæfolium, but it is certainly a very distinct variety. It has thick coriaceous leaves, the under-side clothed with white tomentum. Prinsepia utilis is a very common shrub near the village of Budhi; the elevation is high for this plant. The natives here call it "Dentilli," and they use the oil which is yielded by the seeds. Onosma sp., a handsome Boraginaceous plant with bright crimson flowers, is common on the rocks above Lamári, and at about the same elevation a new species of Trichodesma (T. hypoleuca) was found;

* Previously named by Sir Joseph Hooker "A. minutissimum."

the whole plant is much more slender than T. elongata, which also grows in this valley, and is widely spread throughout the North-west Himalayas. The leaves of the former are pinnatifid and white beneath, the flower-heads more slender, florets white with purple anthers, and the pappus hairs are feathery.

The next day's march was chiefly remarkable on account of the nature of the path, which consists mainly of a series of steep stairs of stones elaborately built up against the more or less precipitous mountain side, and with long intervals between the places where water is obtainable. We encamped that night at a place called Galamla, about 8000 feet above the sea. The spot was barely sufficient for the pitching of our tents, my own being placed on the top of a flat rock overhanging the Káli River, which flows fully 1500 feet below. The views looking up the valley and across to the snowy ranges in Nepal were very fine, and some very tempting-looking valleys for botanising were seen on the Nepal side.

Fine specimens of Hippophae salicifolia were growing near the river at Lamári, their rough trunks loaded with a variety of Ferns, most abundant being Polypodium propinquum. The Box tree, called "Shibsashim" in Byans, was plentiful between 7000 and 8000 feet; also "Kabsing" (the Walnut tree). A very pretty climbing Cucurbitaceous plant, Gomphogyne cissiformis, is plentiful near the river.

The next day's destination was Shankola, about 500 feet lower than Galamla, but the path is very up and down, ascending in one part to an altitude of over 10,000 feet. The path now leaves the Byanspatti, Shankola being situated in that of Chaudans. Pinus excelsa, not a common tree in Kumaun, was observed at 9500 feet; Abies Webbiana a little higher. Associated with these were the ordinary Himalayan trees and shrubs usually found at this elevation, such as Taxus, Acer caudatum, A. cæsium, Pyrus vestita, and Pieris ovalifolia. The following plants were also observed:—Gaultheria nummularioides, Rubus nutans, R. biflorus, Saxifraga filicaulis, S. diversifolia, Potentilla fruticosa, P. Leschenaultiana (with white flowers), the new Tricholepis (T. hypoleuca), also two not very common Ferns—Nothoæna Marantæ, and Woodsia elongata. Another locality for the Circeaster was found at an elevation of 10,400 feet; it was growing in the shade amongst rocks. A new species of Arenaria (A. ferruginea), and a new species of Lactuca (L. filicata) were found growing close together on steep rocks overhanging the path. Staphylea Emodi, a sapindaceous tree, is common near Shankola; the bark of this tree is prettily marked with white blotches, and the branches are much used for making into walking-sticks. Acer villosum is also plentiful, the leaves of which were all shed when we saw it.

Near Sosa a great variety of Ferns and other shade-loving plants were observed. Some fine specimens of Lilium giganteum were seen, but not in flower. Here I had the pleasure of seeing for the first time the Nepalese Hemlock Spruce (Tsuga Brunoniana), found nowhere west of the Káli valley. It is a very handsome tree, more graceful and less sombre-looking than the Silver Fir, which is also abundant here.

The cones of Abies Brunoniana are small, not more than an inch long; they were fully formed but not ripe when we were there; I managed, however, through the kindness of Reshkar Pal, Rajwa of Askot, to obtain during the cold weather a large supply of the ripe cones, and they have been distributed to various public gardens in Europe and elsewhere. The crimson-flowered Onosma bracteatum and the new Tricholepis were found again on the way to Sosa.

At the village of Shirkha, near Sosa, we saw going on the funeral ceremonies of three Bhutias who had died the year before. They had been people of some substance; and the ceremonies, which had been going on for three days, consisted chiefly in dancing round effigies of these persons. These were set up on a flat piece of ground near the village, amid a display of goods and chattels that had belonged to the deceased. Both men and women were engaged in the circular dances, singing while they danced, the men being armed with swords, which they brandished as they circled round. Large quantities of liquor ("jau") were said to be consumed during the ceremonies, and they closed with the distribution of the goods and chattels of the deceased. Whether all that deceased Bhutias possessed is thus given away at their funeral ceremonies is not known, but the reason of the ceremonies evidently is a desire on the part of their successors to please the departed.

We halted for two days at Sosa, one of which I spent in exploring a part of one of the forests which extended up to 1500 feet above the camping-ground. Ferns of great variety clothed the trunks of the Hemlock Spruce, even to the topmost branches. More particularly abundant were Davallias and various species of Polypodium, including P. subfalcatum, also Vittaria lineata. Emerging from the forest at the top of the ridge the vegetation on the southern side is found to be quite different. The steep grassy slopes, with here and there an occasional shrub of Berberis and Symplocos and stunted Oaks, are studded with tufts of pink flowered Morinas, species of Potentilla and Anaphalis, and a few Orchids, such as Satyrium nepalense, Spiranthes, Habenaria, &c. Under a rock on the same hillside I found to my surprise some specimens of the Circeaster, a very dry locality for this species.

I returned to Sosa through the thick of the forest down the steep shady side facing the north. A large species of Ringal is abundant in this forest, but all the clumps I saw were dead, having flowered and seeded two years previously. The dry slippery stems were lying about in all directions, and added much to the difficulty of the descent. Many interesting plants were collected on the way down, viz., Anemone elongata, Schizandra grandiflora, Wulfenia Amherstiana, Rubus alpestris, R. nutans, and Tovaria sp. The lower part of the forest is less steep, and the undergrowth is almost entirely composed of a tall large-leaved Elatostemma (E. sessile). Overtopping this sea of rank vegetation were occasional plants of a very rare and remarkable looking species of Balsam described in the *Flora of British India*, vol. i., p. 482, under the name of Impatiens glauca, the only material for the description being a mutilated flowerless specimen collected by General R. Strachey at a place called Dwáli in Kumaun, and at about the same elevation as the Sosa locality, viz, 9500 feet. My specimens were also flowerless, but they had plenty of pods, some of which were ripe and were expelling the seed after the manner of Balsams. A remarkable peculiarity of this species is the presence of branching peduncles with undeveloped flowers having the form of thin hair-like tendrils. These abortive flower branches arise from the axils of the leaves along with the perfected flowers. The plant is 2 to 3 feet high, with thick stems and swollen joints about 4 inches apart. The whole plant is covered with a pale glaucous bloom; the capsules are elongate but stoutish, and the seeds are large and white. A common shrub near Sosa is Teucrium leucosceptrum, a handsome species with long stout spikes of whitish flowers; Aralia cachemirica and Piptanthus nepalensis were also found.

On the following day I examined a portion of another forest in the neighbourhood of Sosa. Abies Brunoniana was found, but not in such abundance. A handsome Hydrangea (H. vestita) was in flower close to the edge of the forest. On some shady rocks near the top of a ridge a very distinct-looking variety of Cheilanthes Dalhousiæ was gathered, both surfaces of the fronds being equally covered with white mealiness. Here also I gathered some specimens of a rare Thalictrum (T. virgatum), formerly known only from Sikkim.

On the following day (September 22) we marched to a place called Relagarh, a descent of nearly 5000 feet. Quercus lanuginosa, the "rianj" Oak, was met with between 6000 and 7000 feet. Viscum articulatum, a Loranthaceous parasite, was seen growing on the branches of the wild Himalayan Pear (Pyrus Pashia). Relagarh is on the right bank of the Káli, a few miles below its junction with the Dhauli, which latter we crossed by a bridge nearly opposite to the village of Kela. The changes in the vegetation were of course very marked during the descent. Crossing the Dhauli you pass out of Chaudáns and the Bhutia country into Kumaun proper, peopled by the ordinary mixed castes of the outer ranges.

Darchula was our next camping place, about 3000 feet above the sea. An interesting Loganiaceous plant, Mitreola oldenlandioides, was found in abundance near Darchula; this species had not been previously recorded as occurring in the Himalayan region. Some gigantic specimens of Spear-grass (Heteropogon sp.) formed a thick jungle near the river.

From Darchula we went to Chachhum, still lower down the valley. The heat at this place was excessive. The vegetation in this part of the valley is wonderfully luxuriant, especially on the Nepal side, where a great variety of trees and creepers form an almost impenetrable jungle. Phœnix sylvestris is abundant in these hot valleys, usually growing in the most inaccessible spots; the fruit ripens in May and is eaten by the natives. Epiphytes of all kinds grow profusely on the trunks and branches of the trees, Orchids and Ferns forming the larger proportion; accompanying these fine plants of Hedychium coccineum were frequently observed, also the beautiful scarlet-flowered Æschynanthus.

On the way to Kinkola, our next halting place, we passed through some very pretty bits of sub-tropical forest. The summits of the lower hills are occupied by forests of Pinus longifolia. Interspersed amongst the various trees and shrubs at the base of these hills fine specimens of the handsome pinnatifid-leaved Palm, Wallichia densiflora, are to be seen, together with a species of Musa, which has all the appearance of being indigenous in this locality. In the proximity of some of the hamlets, at low elevations, there were a few fields of Sugar-cane, a crop which I again observed at Askot, where little wooden presses in which the cane had been squeezed were left standing. The trees in these warm valleys are clothed with luxuriant creepers and epiphytes. I noticed one tree the trunk of which was completely covered with Pothos scandens, a quaint-looking Aroid. Our camping ground at Kinkola, which had been cleared of jungle growth shortly before our arrival, bore evidence of what had formed a large proportion of the rank vegetation, viz., Cucumis Hardwickii, the "air alu" of the Paháris, the fruits of which were lying about all over the ground. There had been a thunderstorm the night before with heavy rain, and the ground where our tents were pitched was like a morass.

On the following day we said Good-bye to the Káli River, and got into the Gori Valley. After crossing the Gori there is a steep ascent of about three miles to Askot.

We remained for three days at Askot, a very pretty place, and fertile, judging from the appearance of the crops and the large extent of cultivated land. The most interesting plants observed here were Quercus lanuginosa, the "rianj" Oak, in great abundance, also Castanopsis tribuloides, called "Katonj" in Kumaun. A very handsome Fern, Gleichenia linearis, forms a large part of the undergrowth in some of the more wooded spots. Close to our camp were a couple of fine specimens of the "silang" tree (Osmanthus fragrans). This tree is abundant in some parts of Kumaun, especially near villages. The sweet-scented flowers are said to be used to flavour tea.

We left on September 30, and it rained incessantly for three days, obliging us to halt at Dandihát for one day. From Dandihát we went to Karela in the Rámganga Valley. The following interesting plants were found on the way:—Corydalis chærophylla, Anisadenia axatilis, and Asplenium heterocarpum.

From Karela we descended gradually to the Rámganga, crossing it by a very rickety wire bridge. The river was in high flood, the bridge we should otherwise have crossed by having been washed away. From the river there is a long ascent to Bininág, where we encamped for the night. Hemp is largely cultivated in this neighbourhood, and on the way up we passed the village of Garhtit, inhabited by a class of people called "Boras," who prepare the fibre for the manufacture of sacks.

Ganai was our next halting-place. Two species of Utricularia were gathered on the way, also Lindenbergia grandiflora. Loranthus ligustrinus is a common parasite on Machilus trees, and Clematis Gouriana was coming into flower. Close to the village of Ganai there are some fine trees of Bassia butyracea, the "chiura" of the natives. The seeds yield an excellent kind of vegetable butter, called "phulwa," which is used as an ointment, and is a capital remedy for chapped hands.

From Ganai we went to Dolchini on the Binsar range of hills. We had to cross the Sarju River, after which there is a long weary ascent on to the Binsar ridge, mostly through forests of Pinus longifolia; Phœnix sylvestris is common on either side of the Sarju River. The natives here call it "Thákil," and the same name is applied to the rare Chamærops Martiana, from which the mountain called the Thákil to the south of Phithauragarh is named. The inner

portion of the young stems of the Phœnix is eaten by the natives in times of scarcity; it is pure white, very tender, and with a flavour like that of the sweet Chestnut.

The camping-ground at Dolchini is about 5600 feet above the sea, and is on the south-west side of a low portion of the Binsar range. Early on the following morning we sent off our tents and all our baggage by the direct road to Almora, my companion and I taking the path along the crest of the ridge to Binsar, a beautiful walk of four to five miles. We had a splendid view of the snowy ranges we had lately visited; this being our first sight of them since we had left them. At Binsar I took the opportunity of inspecting the very fine fruit orchards belonging to Sir Henry Ramsay. The site is evidently very suitable for Apple culture, especially of the Ribston kinds. This last season appears to have been a very good one for Apples throughout Kumaun. From Binsar we went down to Khâli, where we met Sir Henry Ramsay, who kindly gave us breakfast, after which we resumed our journey to Almora. *Dr. Duthie, Report of Botanic Garden, Saharanpur.*

JAPANESE FOOD PLANTS.

A LIST has been published by Herr Mueller-Beeck, Yokohama, where the compiler fills the post of Consular-Assistant of the German Empire. The list goes far to prove the omnivorous character of the Japanese in the matter of food selected from the vegetable kingdom. As with us the Brassicas come in for a large share of attention, and in all cases for the leaves only. The following may be mentioned:—B. chinensis, B. orientalis, B. campestris, B. Rapa: of the last named both roots and leaves are eaten. Of Raphanus sativus, the Radish, eleven sorts are given, of which the roots are eaten fresh, salted, pickled in Rice spirit, and also decayed.

Oranges, Shaddocks, and Lemons are found in six species.

Peas and Beans are used both for the seeds and pods; but they differ much from our new kinds. Soja hispida (the Soy Bean) is grown in twenty-four varieties, and are chiefly used for *soy* and *miso*. The roots of Dolichos hirsutus are employed for the preparation of starch and meal. In the case of D. incurvus, D. umbellatus, D. bicontortus, and D. ensiforme, the seeds and pods are used for the same purposes. The seeds of plants allied to our Scarlet Runner Bean, viz., Phaseolus radiatus, P. r. pendulus, P. r. subtrilobatus, and P. vulgaris, are used.

The fruits of Prunus tomentosa are used in the ripe state for eating raw and for jam, and in the unripe state in salt and vinegar as pickles. The petals of the flowers of P. Pseudo-cerasus are salted, and likewise used in water as a flavour to drink. The fruits of P. japonica, which were figured in the *Gardeners' Chronicle*, No. 576, p. 45, and those of P. incisa are eaten. The Pear, the Quince, the Apple, and several other varieties of Pyrus occur in the list.

Under Umbelliferæ are Fœniculum vulgare, Coriandrum sativum, and Daucus carota. Under the name of Shinu-giku the leaves and flowers of Chrysanthemum coronarium are eaten, and the flowers of Pyrethrum chinense are eaten steeped in vinegar. The roots of Tussilago japonica and the leaf-stalks of Petasites japonica are used as spices. Dandelions, Lettuces, and Thistles are used as with us. The leaves of Phytolacca Kæmpferi and three other species are used, the first as a vegetable, and the others for flavouring. Rumex palmatum and R. Acetosella are used in medicine. The fruits of Ficus Carica and F. pumila are in use as dessert, and those of Castanea vesca, Juglans regia, J. Sieboldiana, and J. mandshurica.

Amongst Coniferæ the seeds of the Salisburia adiantifolia and Torreya nucifera are eaten. In Cycadaceæ the leaves, pith, and seeds are eaten, sago being manufactured from the pith. The roots of several species of Arums and Alocasias are used as food.

The Liliaceæ furnish the Japan kitchen with many fine bulbs that are cooked for the table, and those chiefly of sorts which find their greatest appreciation as decorative plants in flower-beds with us. Apparently all the roots of Japan Lilies are eaten as vegetables, as well as many species of Allium, viz., A. Schœnoprasum, A. arenarium, A. senescens, A. odorum, A. cepa, A. fistulosum, and A. ascalonicum. Even Ferns do not escape being eaten, as we find that young fronds of Pteris aquilina and Osmunda regalis are made use of for food; and among Lichens, Bacomyces digitatus and Usnea florida share the same fate. Of fungi, Puffballs, Agaricus campestris and one other species of Agaricus, and Tremella auricula are consumed.

Two species of Algæ are in a manner cultivated in Japan; small branches, on which Enteromorpha intestinalis and E. complanata attach themselves, are stuck into sea-water in September, October, and December, and taken out in November and January, when the sea-weed has grown to a usable size.

The above is merely an extract from an interesting list published by the German Government, which intends further to supply agriculturists, gardeners, and others connected with vegetable cultivation, with seeds of the various plants named in Consul Mueller-Beeck's report.

Amongst the varied productions of Japan and China there are doubtless many plants which can be acclimatised in the milder parts of Europe, and turned to good account. Our vegetarian enthusiasts should also welcome any addition that would lend piquancy to a fare which, to say the least against it, is uninviting by its sameness.

KEW AND ITS WORK.

(*Concluded from p. 363.*)

TIMBER SUPPLY.—The burning question of forest destruction and our future timber supply it is impossible to deal with at all adequately in the space at my command. Of the importance of the matter from a financial and economic point of view an idea may be formed from the admirable series of statistics got together by Professor Sargent for the last Census Report of the United States. He estimates the annual value of the produce of the woods of the United States at 490,000,000 of dollars, the number of hands employed in the timber trade of the States at 148,000, their annual wages at 32,000,000 of dollars, and the number of persons in the States who are entirely dependent on wood as fuel at 32,000,000. The following extract, which refers to the Island of Jamaica, will give an idea of the reckless and extravagant way in which the natural forests have been destroyed in some of our colonies:—"In certain localities hundreds of thousands of acres have been converted into desert by the wholesale destruction of the forest. In other localities hundreds of thousands of acres would from the same cause now be utterly unproductive but for the planting of foreign trees, such as Logwood and Mango. In consequence of the facility with which land is everywhere available in Jamaica, the peasantry cut down annually 40,000 acres of forest land and thick bush, in which to plant Yams and other provisions. Innumerable timber trees, young and old, are thus yearly destroyed. These clearances are made in the most seasonable districts, and in many instances the excessive rainfall in such districts is perceptibly diminished in consequence of the large extent of these clearances. No conservation of the forest having ever been attempted here, the result is, as regards timber, that the resources of the island are practically *nil*. There is indeed some timber in the inaccessible hills of the interior. Nearly all the timber required for building purposes, the annual value of which amounts to about £50,000, is imported into the island. Even the sleepers lately used for laying down the few miles of tramway in and near Kingston were imported. The unproductiveness of the island in timber is to be further deplored when our luxuriant tropical resources are borne in mind, and also when it is remembered that only one-thirtieth of the island is devoted to agriculture. In the event of any considerable advancement in the prosperity of the island a very large expenditure would be entailed for the importation of timber."*

Or take the history of Sequoia gigantea (commonly known in English gardens as Wellingtonia gigantea), the prince of all the coniferous trees, as told in a recent paper by Sir J. D. Hooker (*Gardeners' Chronicle*, n.s., vol. x., p. 216).

"The Sequoia gigantea, or Big tree, the Wellingtonia of British gardens, is a plant of a cooler climate (than that of the Californian lowlands), and hence having survived the glacial cold was enabled to establish itself in the Sierra Nevada, under certain very restricted conditions. It extends at intervals along the western slope of the Sierra to a little north and south of the parallels of 36° and 38° N., that is, for nearly 200 miles in a north-west and south-east direction, at an elevation of 5000 to 8000 feet above the sea. Towards the north the trees occur as very small isolated groves of a few hundreds each, most of them old and interspersed amongst gigantic Pines, Spruces, and Firs, which appear as if encroaching upon them; such are the groves visited by tourists (Calaveras, Mariposa, &c.). To the south, on the contrary, the Big trees form a colossal forest, 40 miles long, and 3 to 10 miles broad, whose continuity is broken only by the deep sheer-walled cañons that intersect the mountains; here they displace all other trees and rear to the sky their massive crowns, whilst seen from a distance the forest presents the appearance of green waves of vegetation, gracefully following the complicated topography of the ridges and river basins which it clothes.

* * * *

The millenia during which these Sequoia trees must have remained in *statu quo*, proving the long duration of existing conditions of climate, are but as minutes compared with the time occupied by the migration of this very species or its ancestors, north and south, in the continent of America. Whatever might otherwise be the extent of the Sequoia's travels they are now at an end: man has pronounced the sentence, 'Thus far shalt thou go, and no further.' The doom of these noble trees is sealed. No less than five saw-mills have recently been established in the most luxuriant of the groves, and one of these mills alone cut in the year 1875 2,000,000 feet of Big-tree lumber. A company has lately been formed to cut another grove. In the operations of the Californian woodcutters the waste is prodigious. The young manageable trees are first felled, after which the forest is fired to clear the ground and get others out, and thus the saplings are destroyed. More destructive yet are the operations of the sheep farmers, who fire the herbage to improve the grazing, and whose flocks of tens of thousands of sheep devour every green thing, and more effectually than the locust. The devastation of the Californian forests is proceeding at a rate which is utterly incredible except to an eye-witness." The value of the wood annually wasted through fires at the present time in the United States is estimated by Professor Sargent at 25,000,000 dollars.

* Thomson, in Kew Report, 1877, p. 43.

INDIAN FORESTS.

In India, fortunately, the state of things is very different. For a long time a large area of forest has been under Government protection, and there is a regular Forest Department fully organised as a branch of the Civil Service. The results have been most satisfactory, for not only have the forests been kept up for the benefit of succeeding generations, and new trees planted where old ones have been cut down, but the Department yields a handsome profit annually. Twenty years ago its annual receipts were 36 lakhs of rupees, and the charges were 22 lakhs, leaving a balance on the right side of £140,000 a year. In 1882-3 the receipts were 95 lakhs of rupees, and the expenses 60 lakhs, leaving a balance of £350,000 on the right side. Dr. Brandis, who for nineteen years has been the Director of the Department, has lately retired. The total area of protected forest is now 35,242 square miles, about two-thirds of the area of England.

To individualise the different timber trees is of course one of the principal tasks with which the officers have to deal. Dr. Brandis worked at Kew for a couple of years in the preparation of a handbook of the timber trees of the North-West Provinces, and since then one has been written for the Madras Presidency by Colonel Beddome, and one for Burma by Dr. Kurz. A most valuable general handbook of all the Indian timbers has lately been published by Mr. J. S. Gamble, in which 906 species belonging to 432 genera are included. In the American forests there are more than 400 different species of trees, in Britain only about forty.

SUMMARY.

To sum up, then, I would say that to understand properly what is to be seen at Kew, a visitor must bear in mind that four separate and more or less distinct objects are aimed at, and that the different departments fit into each other closely and work together hand in hand along four more or less distinct grooves. Firstly, the gardens are a holiday resort for a large mass of the general non-scientific public; secondly, they aim at helping horticulture by

exhibiting, in a living state, a series of the principal types of structure, and by furnishing a means of identifying the plants that come into the country; thirdly, they aim at promoting systematic botany by furnishing a means of identifying the plants, more especially of the British possessions abroad or of those collected by British expeditions or private travellers in other parts of the world; and fourthly, the establishment has its economic sphere of usefulness on which I have already fully expatiated. About the laboratory and the picture gallery I have said nothing, but the uses of those need no explanation. I think the main drawback which all the officers of the establishment, more or less, feel is, that amidst this crowd of aims and the vast mass of details, it is impossible for them to concentrate their attention upon any one thing for any considerable length of time. *J. G. Baker.*

THE BEST VEGETABLES FOR EXHIBITION.

In my remarks on the characters of soil most suitable for the growth of different kinds of vegetables I propose to notice the varieties most desirable for exhibiting; at the same time briefly alluding to a few cultural details, the execution of which, over and above ordinary good treatment, always add finish and superiority to the productions. Taking the kinds in alphabetical order, the first to claim attention will be

Artichokes (Globe),

always a telling dish in mid-season collections. To insure a late supply of fine heads a few dozen of offsets should be planted every spring, as follows:—Mark out the positions the offsets are going to occupy in rows 4 feet apart each way, then dig out a separate hole for each one, 2 feet square and 2½ to 3 feet deep, according to depth of soil, and break up the bottom of the hole. When returning the soil add one barrowload of rich manure to each hole, placing it in layers up to within 6 inches of the top. The remaining soil displaced by the manure can be spread about on the ground between, which should be dug over after the planting has been done. During dry weather heads approaching the size for cutting should be shaded during the hottest part of the day—this preserves the green colour. When the shading is removed towards evening, the head should be well syringed. Slugs often mount up the stems and disfigure them unobserved. As a preventative, tie wadding on the stems and sprinkle with freshly slacked lime or soot. The Green Globe variety is the best.

Asparagus.

When really good, no other vegetable carries greater weight when deciding the merits of a collection than this. Fine sturdy heads cannot be obtained without years of good and careful cultivation. There has been a great deal said in praise of the rich winter dressings; but it is by summer treatment that the foundation, to a very great extent, is laid for the ensuing year's success. It is during the growing season that the roots make a great demand on the fertility of the soil, and it is then that moisture in the shape of liquid-manure and rich top-dressing are so beneficial. The thicker the stems can be induced to swell during summer growth the larger will be the following year's produce. The number of shoots left on each plant to attain their natural size must be limited, and kept in an upright position by staking, &c.

Beetroot.

This is an important dish in a collection of salads, but it is seldom exhibited in the best collections of vegetables, unless more than eight dishes are required. Medium-sized roots of fine shape and colour are of primary importance. Hoeing must be carefully done during the growing season, as the least scratch whilst the roots are swelling will cause disfigurement. Two good varieties are Pragnell's Exhibition and Sutton's Excelsior.

Broccoli.

There are not many exhibitions of vegetables held at a time of year when these are preferable to Cauliflowers. Veitch's Self-protecting Autumn is the nearest approach in colour, and the flower being better protected from frost by foliage than Autumn Giant Cauliflower, it should always be grown for late autumn shows. *G. H. R.*

PLANTS IN FLOWER AT THE PARADISE NURSERY, HOLLOWAY.

Dutch bulbs have formed for some weeks past the major part of the floral display in the large show-house at the entrance to Mr. Williams' establishment. These have consisted of Hyacinths and Tulips mainly, grown in the excellent manner for which the nursery has become well known. There is just a suspicion that Hyacinths are a little less fine than in other seasons, although there seems to be nowhere any falling off in the strength or size of the Tulips. Without mentioning old favourites that are never missed from large collections, it will be of service to specify a few of the novelties of this and last year. Amongst the scarce colour, yellow, are Grand Duc de Luxembourg, a pale tint with a nice spike of bells, but not massive—there are no massive spikes in yellows; and l'Or d'Australie, a deeper tint, and fair spike, of single form. La Neige is a good spike, white, single; and Rubra maxima, a capital spike of reddish-brown. Vuurbaak is a bright cerise, of a pleasing tint.

In Tulips, all of the Pottebakker section were found well done, but in these and all others we were only permitted to see the reverse of the petals, as the flowers were, as usually, carefully tied up with bast! They last longer, but it is not done with anything else in the garden, if we except Cardoons, Lettuces, and the like. Epaminondas is a fine red-flamed single flower of striking tints; Silver Standard is rose-flamed, and also a desirable kind; Feu de l'Empire is bright crimson with yellow flame, a choice flower, and distinct, as is Van Spandonk, a mauve feathered, with the petals tipped cream, very pretty. Queen of the Yellows is of the purest yellow, showy, and large; Purple Kroon is dark purple crimson, of velvety texture, set off by foliage having creamy variegation. The older kinds, as Roi Pepin, Lac Van Rhyn, Proserpine, Couleur Ponceau, and Artus, are evidently much appreciated, and were found in numbers.

Amaryllis.

Of these great numbers are either coming into flower or pushing up their flower-stalks. None equal those found at some other well-known nurseries for size, but for bright colours, neat, compact flowers, together with texture and substance in them, they are excelled by none. In flower were Harry Williams, a dark crimson, a bold flower with a green stripe; Prince of Teck, of the same hue, but smaller; Dr. Masters, one of Mr. Williams' best varieties, carmine-scarlet, with a purplish-crimson base. Guiding Star, a strong grower, crimson, of excellent form; Firefly, a bright thing, as denoted by its name; Marshalii, a crimson of expanded, saucer-like form; Edith, light red; Williamsi, bright vermilion; Dr. Barnack, and Joseph Broome—the two last named being novelties of last year, and about to be sent out.

Orchids.

The fog of some few weeks since made havoc with some of the early-blooming plants, and still shows its effects in a few instances in deformed, meagre blooms, but those are chiefly found amongst the Cattleyas. The Odontoglossum-house was gay with opening sprays of O. crispum, triumphans, Pescatorei, spectrum, gloriosum, and Marshallianum. Here there were innumerable spikes coming on to carry the display on to June. In the Vanda-house the tricolor and suavis sections were showing plenty of bloom-trusses, and the plants looking as if they had not passed one of the most trying of winters. Vanda Parishii Marriotiana was carrying a few of its rose-coloured blooms, but the plant had almost finished flowering. Cattleya purpurata promises a display later on, the sheaths being both many and strong.

A few Phalænopsids were in bloom after some weeks cessation in the worst weather; the varieties consisted of amabilis, Schilleriana, Stuartiana, and Sanderiana. Of Cypripediums we found insigne, Chantini and selligerum in flower; also Phaius Wallichii, with a handsome spike of flowers, light brown and white; Odontoglossum roseum, a short spike of red flowers, pretty, and rarely seen; Lycaste cruenta, deliciously scented. Oncidium sarcodes, a long spike of yellow and brown flowers; Dendrobium primulinum, D. Cambridgeanum, and two forms of Cattleya Lawrenceana—one being immeasurably ahead of the other in colour. Miltonia Warscewiczii was about to flower.

Miscellaneous Plants.

The Clivias here are very fine, especially the new General Gordon and Ambroise Verschaffelt. There is little to choose between these two varieties, the tints being of equal brightness, and the size of truss and the quality of individual blooms being all that is desirable. Old kinds are utterly distanced by these new ones. Several seedlings were observed good, but in all cases they were of lighter shades of colour than the parents.

Cyclamens and Primulas form quite a little show of themselves, especially the first-named. Heaths promise well for flower, and are wonders of good health. Jasminum grandiflorum, flowering well in 48's, seems to be a favourite here; and Cineraria alba, a very finely formed white flower with a violet eye, is a desirable kind that reproduces itself quite true from seed.

The greenhouse Rhododendron MacNabianum was observed finely in bloom in a symetrical specimen of 4 feet in diameter; the Azalea-like flower is white, with a faint tinge of red on the outside of the floral segments.

Florists' Flowers.

THE PELARGONIUM.

Now that a favourable change of weather has come, the treatment of the plants may be varied from what it has been. Ventilation should now be ample, and the plants having well filled their pots with roots, may receive alternate waterings with weak liquid manure-water. The trusses can now be seen on the early flowering varieties; and besides the attention to watering, the plants, especially those intended for exhibition, must have plenty of room, and the growths must be tied out carefully to form a good specimen, which ought to be evenly balanced and furnished throughout. It will be time enough to place the sticks to the trusses when the first flowers are within a week of opening. A grower who expects to take the highest position on the exhibition table will not need to be told to destroy greenfly, he will be careful to keep this pest out of the house altogether. I have had letters complaining of the plants not doing well this season, but when the cases are investigated, it is found that the plants were kept too warm during the cold weather, and they also received too much water at the roots. The winter is the resting period for the Pelargoniums, but disastrous results will ensue if the plants are pushed on at midwinter. The right treatment is to keep them comparatively dry at the roots, and the temperature should be about 40° as a minimum. Plants that are kept cool and comparatively dry at the roots will do much better when the time has come for them to grow, with more water and increased light and heat, in April. The above applies to the large-flowering group. The small flowered or fancy group will succeed better with 5° more heat, and except that they require rather lighter compost, the treatment is the same as the others.

Zonal Pelargoniums.

Now is a good time to put in cuttings of these to flower next winter, one in the centre of a small pot, placing the pots on a shelf in the cool-house. The old plants will now be put out-of-doors to form border specimens during the summer months.

The Cineraria.

These plants are now in full flower, and make a very beautiful display in the greenhouse and conservatory. They ought to be kept quite clean by fumigating; they are even more liable to injury from fly than the Pelargonium, and therefore it is even more essential that they be kept quite clean. The flowers soon suffer from too much sunshine; it is therefore necessary to shade during the hottest part of the day. A few of the very best varieties should be set apart, from which to save seeds, and those that do not come up to the very best form ought to be thrown away—no seeds ought to be saved from them. The plants which have done flowering and are of sufficient merit to be propagated ought to be placed in a shady part of the greenhouse, but not too far removed from the light; they will then form growths near the base, which may be removed as soon as they are large

enough to be repotted singly, or in twos and threes, according to their size, in small pots. If propagated plants are well managed they make as good specimens as seedlings; they ought to be potted in light rich compost in the first place; the subsequent treatment will be explained in due course.

Fuchsias.

The old plants were cut down in the winter, and have now made good growth in the late vinery. Cuttings taken off now and rooted in a hotbed or forcing-house will make excellent little specimens to flower in the autumn in the greenhouse or conservatory at a time when flowers are not over-plentiful. Fuchsias seem to be considered commonplace plants, and are not much esteemed; but judged by their merits as decorative plants for the greenhouse and conservatory, either in the form of large or small specimens, few plants can equal them. The old specimens, which have just started to grow, ought to be turned out of their pots, a considerable portion of the old compost ought to be removed, and the plants be repotted. The soil used for Pelargoniums or Chrysanthemums will do well for Fuchsias; a little turfy peat added is also very beneficial. The plants do better in the spring months with a little artificial heat, and to be syringed at least once daily.

Tuberous Begonias.

The plants started early in January in an early vinery are now considerably advanced. They were potted in the first place in pots just large enough to admit of a quarter of an inch of potting soil, between the edge of the tubers and the sides of the pots. The plants are now from 6 to 9 inches high, and strong in proportion, being also well furnished with roots. They may now be repotted into the flowering pots, using good rich potting soil. We use the same for them as for the Amaryllis, and it contains a proportion of turfy peat. The plants grow much more vigorously, if at this season they have the aid of a little artificial heat. The later plants may be treated strictly as greenhouse plants, which they really are; but they are also well adapted to force into early bloom, that it is a great advantage to have a long succession of such beautiful flowers, which last for a long period in good condition, foliage, bud, and flower continuing in perfect order. *J. Douglas.*

ORIGIN OF THE PERPETUAL CARNATIONS.

In the *Revue Horticole* for February a very remarkable article was published on the present state of perpetual Carnations. The writer says, "Where and how was the culture of the perpetual Carnation commenced? Who is the horticulturist who first applied himself to it? We do not know."

I think that it may interest horticulturists and amateurs to be informed of its history, which I published ten years ago in a paper which had not a wide circulation, and in consequence I copy as follows:—

According to several horticultural writers the Carnation was cultivated more than 2000 years ago. But we know no more about what was practised in horticulture in those times than in any other science, and as it is only since the beginning of this century that the facts of Nature have really been studied, we can only relate what has lately been practised.

The perpetual Carnations were created at Lyons. It was M. Dalmais, gardener to M. Lacene, a celebrated amateur and founder of the first horticultural society of our region, who obtained the first really constant-blooming Carnation, about forty-six years ago. He sent out in 1844, under the name of Atim, the product of artificial fertilisation of a so-called species known by the name of Carnation of Mahon, or St. Martin, the latter because it was blooming by the middle of November, fertilised by Carnation Bichon. This first gain was successively fertilised by the Flemish Carnations, and about 1846 he obtained a great number of varieties of all colours. M. Schmitt, a distinguished horticulturist at Lyons, followed M. Dalmais, and obtained several fine varieties like Arc en Ciel and Etoile Polaire, which were cultivated for several years but do not exist now, having been superseded by better varieties. In 1850, a disease having destroyed his collection, M. Schmitt abandoned their culture.

Soon after Alphonse Alegatière, the well known and zealous propagator, undertook the hybridisation of Carnations, and in a short time obtained great success, and enriched that series with a great many varieties, all particularly dwarf, and obtained a very great improvement by creating those with stiff flower-stems about 1866. We can thus say that Alegatière has created a new species. He has also upset the old system of propagation, that of layering, and has proved that propagation by cuttings is the best and most reasonable method, and produces the best plants, and thus justified my saying that layering is the infancy of horticultural art. And he has demonstrated that nothing is easier than propagating Carnations from cuttings. *Jean Sisley, Monplaisir, Lyons, in the "American Florist."*

BURR IN PINUS SYLVESTRIS.

Mr. O. Thomas kindly sent us from Chatsworth the specimen whence the figures (figs. 87 and 88) were taken. Unluckily we omitted to take the measurement, but we imagine them to have been some 15 inches in diameter. These curious outgrowths are sometimes the result of injury from mites or other insects, sometimes the effect of fungous growths, in which latter case they form the "hexenbesen" of the Germans, and in other cases where, in point of fact, we are not able to assign any cause, we say they are sports or "bud variations." They are interesting as showing

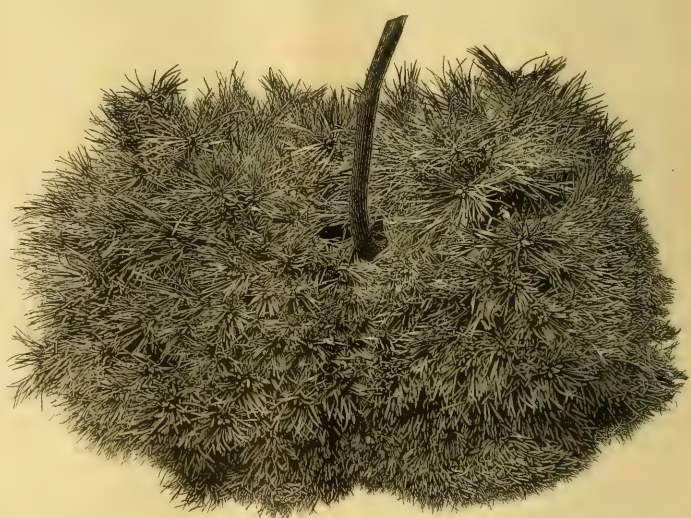


Fig. 87.—Burr on Scotch Fir in the position in which it grew.

the original source of such dwarf varieties as the Clanbrassil Fir, which are propagated by grafting on the common Spruce. For this purpose, at Kew young seedlings are grown on in pots, and after grafting are kept close in shaded frames till a thorough union is effected.

The Rockery.

EARLY FLOWERING ALPINE PLANTS.

Soldanella montana.—Scarcely had the cold, frosty days of January closed upon us, when this beautiful but diminutive alpine burst full in flower, and rarely, indeed, have we seen it in better form. Half-a-dozen stems, some with one, some with several of the deeply fringed bell-shaped flowers on each, are certainly not to be despised, and put us in mind that the extensive culture of this lovely plant gem should be enforced on all who can spare even half-a-dozen square inches for its reception. The flowers are bright blue, and produced on stems of from 3 inches to 6 inches long, which rise in a perfectly erect manner from the bright green reniform foliage. In the cultivation of this plant, we have entirely discarded the usual composition of four or five doubtful ingredients recommended in nursery lists, and adopted our old friend leaf-mould and sand, which is the secret, if there be any, of our success in its cultivation. We have this plant prone to rise out of the ground and become bare-rooted, but this is counteracted by a biennial dressing of sandy mould.

Saxifraga Burseriana.—Second on the list to relieve us of the flowerless mid-winter monotony comes this distinct, interesting, and as yet rare plant—rare in most English gardens at least. When thoroughly established in good bold patches, few alpines will at the present season be found more floriferous and beautiful, the bright ruddy flower-stems, scarcely 3 inches high and rising from the procumbent spiked rosettes of silvery-grey foliage, still further enhancing the charms of this desirable rock plant. We have found it to succeed best in rather light stony soil, and where superabundant moisture is at all times withheld. The flowers are pure white, and when full open about the size of a fourpenny piece, last for several weeks in good form, but are prettier even in the bud stage than when further advanced.

Ranunculus anemonoides, as we have it at present, with fully opened flowers, is, in the little mid-day sun we occasionally enjoy, a treat rich and rare. Why this readiest of all cultivated plants is not more frequently seen, even in first-class collections, is somewhat difficult to explain, for certainly a choicer occupant of our rock gardens it would be difficult to imagine. Perhaps rarity has something to do with its absence in gardens generally, and that when better known, and consequently better appreciated, it will have a more extended range of cultivators than at present. The flowers are of large size for so diminutive a plant, being nearly 2 inches across, white, with a suffusion of pinky-brown on the underside and just showing on the face of the bloom, and rich golden stamens, all combining to impart a rich finish, and renders the floral appearance as distinct as it is beautiful. It is of the most hardy constitution, no amount of frost seeming to injure the apparently delicate foliage and flowers; easy to propagate, and is well pleased with any ordinary soil, so as a little peat or leaf-mould be present. A damp situation suits this plant well, like most other members of the Ranunculus family, and we find it succeed admirably in a low-lying peaty bed in which North American Cypripediums are planted out.

Saxifraga ligulata.—This is at present another of our most lovely flowering plants, and whether grown

on the rockwork or associated with other small-growing subjects in the front line of the herbaceous border, will at all times, from its conspicuous foliage, command attention. The flowers are of an unusual colour—unusual at least among Saxifragas—being of a very desirable clear rosy hue, and produced on bold stout stems of from 6 inches to fully 10 inches in height. They are remarkable as regards lasting qualities, remaining, as they do, in good form for several weeks. Any good rich soil suits it well, but it is, perhaps, most floriferous in fibry loam, to which thoroughly decayed vegetable matter has been added. This plant is not unfrequently confounded with its near relative S. ciliata, from which, however, it is very distinct both in foliage and flowers, as well as being perfectly hardy, which unfortunately can hardly be said of the others.

Primula Clusiana.—In a sheltered sunny nook, sheltered from both north and east winds, the bright, rosy-purple flowers of this truly alpine Primula are now nearly at their best. This is a most desirable early-blooming species, and one that thrives well under ordinary conditions in a warm sunny border, but is perhaps improved by the addition of any brick rubbish to the usual garden soil. Being a rapid grower it soon forms tufts of considerable size, and is moreover readily increased by division, which we have found to be best effected soon after the flowering season. The leaves are about an inch broad in the middle, yellowish-green, and produced in small tufts, while the flowers are borne on flower-scapes of from 3 inches to 4 inches high. Being a very distinct, beautiful, and early flowering species, as well, indeed, as an easily managed plant, we would recommend all lovers of this interesting family to procure a specimen or two, and assign to them a warm, sheltered, but not too dry nook in the rock garden. *A. D. Webster.*



Fig. 88.—burr on scotch fir : underside. (see p. 460.)

Saxifraga Burseriana var. major.

Nothwithstanding the severity of the weather, this little alpine plant persists (during the sunny portion of the day) in expanding its pure snow-white circular blossoms, which are nearly an inch in diameter; they are borne on tiny scarlet stalks, from 1 to 1½ inch long. S. Burseriana is evidently a very variable plant, in the size of the leaves, rosettes, and also in the size and form of the flowers. Some varieties are far more floriferous than others. The variety under notice we consider the best; it has large bold foliage, and has fine large well-formed flowers. There is a very good woodcut of this plant which appeared in the *Gardeners' Chronicle*, February 2, 1884, p 141. *R. P., Holgate, York.*

The Fernery.

Pteris serrulata.

For general decorative purposes P. serrulata and its varieties are among the most useful of all Ferns; from plants in tiny pots upwards to large specimens, they are in much demand. In some of the market nurseries, where Ferns are a speciality, they are grown in large quantity; for market purposes the plants are usually restricted to 48-size pots, though, in some cases, the larger forms are grown in the next larger size. Few Ferns are more freely produced from spores than P. serrulata, and many of the varieties are reproduced comparatively true in character, yet all are inclined to sport more or less, as may be inferred from the numerous varieties to be met with.

Culture.

Although P. serrulata is a native of the tropics it will succeed well in a cool greenhouse, and is usually classed with the greenhouse Ferns; it however fully appreciates a stove temperature in heat, the plants grow more vigorously, maintain a deeper green, and more healthy appearance. A good rich compost should be used for potting—say two parts good fibrous loam, one part leaf-mould, one part well rotted manure, and a liberal addition of sand, or, if the loam is heavy, a little peat may be used. After the pots are well filled with roots a little manure may be given from time to time; almost any kind of manure may be used, but I prefer liquid manure made from cow-dung and soot, or as an artificial manure, Clay's fertiliser.

In one or two cases the varieties do not come true from spores; these may be increased by division, but seedlings make the best plants, and any that can be relied upon should be increased by that means.

Varieties.

P. serrulata.—The old form is too well known to need any description, and its usefulness is pretty generally appreciated.

P. s. major.—This is very distinct in appearance from the above; it is of more vigorous growth, the fronds have larger stipes, and the pinnæ are broader. Altogether, the plant has a bolder appearance, and is for many purposes more effective.

P. s. major cristata.—There are many variations of this form, the best of which is that usually known as the Chiswick variety, the fronds of which are very evenly tasseled. As a table plant it is certainly one of the best Ferns that can be grown; or if grown on freely, it makes a fine specimen in a larger state. Unfortunately, this variety cannot be successfully raised from spores, but being of free growth a stock may soon be obtained by division. The forms obtained from spores vary in character much more than the varieties of the compact form.

P. s. cristata compacta.—This is a very useful variety, especially in a small state; but after the plants attain a certain size they lose much of their beauty, as in most cases the stipes are too slender to support the fronds where they are heavily crested, which consequently fall over and give the plants an untidy appearance; by careful selection, however, this variety has been much improved. Mr. May's variety is one of the best I have ever seen. In this the fronds are very evenly, but not so heavily crested as in most of the varieties. The fertile fronds, which grow erect, produce terminal corymbs of multifid growths which are slightly crested at the tips. The lower pinnæ are also crested. The plant is very dense and compact in habit.

Pteris cretica.

This is another very popular market Fern. For some purposes it is used in preference to P. serrulata, for, being hardier, it stands exposure better. It is very serviceable for small pots, or for 48-size pots, but where larger plants are required P. serrulata is preferable.

P. cretica albo lineata.—This well-known variety is also a very useful decorative Fern; when grown on freely it makes a very pretty plant for a 48-size pot; but when allowed to get pot-bound or stinted in a young state, the fertile fronds are produced before they have made a sufficient number of barren fronds to provide a good under growth for the fertile ones, which are thrown up on much longer stipes.

P. c. albo lineata cristata.—A very distinct variety, of more compact growth than the above; the pinnæ of the fronds are narrower, and slightly crested at the extremities. This variety comes remarkably true from spores, and is one of the most useful Ferns for small pots.

Culture.

Pteris cretica and the varieties may be grown under the same treatment as recommended for P. serrulata, but P. c. albo lineata should not be grown in too high a temperature, or the fronds will run up and become very tall. *H.*

Grafting.

More than a thousand experiments, begun thirty years ago, and continued up to the present time, have proved to me that in all sorts of soil, in the district of Marseilles, the Peach grafted on to a seedling Peach developes itself with great vigour, and produces an abundance of fine fruits for the first three or four years; but from this time, no matter how good the soil may be, or the manures applied, deterioration ensues; each year smaller and fewer fruits are yielded, and if it is not torn up, its weak, blanched shoots become almost barren.

On the other hand, the Peach grafted on the Almond keeps vigorous and productive until its decay, and bears more and better fruits as it ages. By cutting back each year's growth it will yield a remunerative crop for twenty-five or thirty years. It is just the same with the Peach grafted on the Plum; its duration is less than that of the Peach on the Almond, but it may live fifteen or twenty years on watered lands, and be healthy and productive up to its death.

The same facts about vigour, of ever-increasing fertility, and of the improvement of the fruits, apply to the Pear grafted on the seedling Pear, whilst the Pear grafted on the Quince gives results similar to those of the Peach on the Peach. It is a rapid development, great vigour, and an extreme fertility for four or five years; but then the growth is checked, and becomes more and more feeble, the leaves take a yellow tint, and the produce dwindles to almost nothing on this blanched tree. There are, however, some varieties of Pears which do well on this stock, but the want of affinity is shown in many cases by swellings at the junction of the graft and stock. Health, vigour, fertility, and hardiness, then, are assured by grafting the Peach on the Almond or on the Plum, as for the Pear on the Pear.

After some years of successful union, deterioration, and sterility and an unhealthy condition, are observable, when the Peach has been grafted on the Peach, or the Pear on the Quince. But grafting does not always lead to bad results, for the Peach grafted on allied species prospers better than when it is not grafted, or when it is grafted on itself. As for fruit trees, there must be some American Vines which adapt themselves less than others to certain French varieties; it is not the graft, but the want of persistent affinity which leads to the weakening and the death of the scion. *P. Giraud, in "La Vigne Americaine."*

Notices of Books.

A Naturalist's Wanderings in the Eastern Archipelago: *a Narrative of Travel and Exploration, from* 1878 *to* 1883. By Henry O. Forbes, F.R.G.S. London: Sampson, Low & Co., 1885, 8vo, pp. 536, with numerous illustrations.

IN a very modest preface, the author desires that his book may be regarded in the light of an addendum to Wallace's admirable *Malay Archipelago*, for most of the islands he visited were also visited by Wallace, though in each case the routes were altogether different. No detailed account of the Timorlaut Islands had, however, previously appeared, and little was known of the inhabitants of the interior of Timor, and for these portions of his work, at least, Mr. Forbes claims greater originality. Wallace's classical work is certainly one of a high standard, and comparisons are proverbially odious, but there need be no comparisons. Whatever its merits and demerits, Mr Forbes has succeeded in writing a book which is a companion to the older work, and which will be read with pleasure and profit by all those familiar with the *Malay Archipelago*. It is a narrative agreeably interspersed with observations on natural history, geology, ethnology, &c. Mr. Forbes first went to Batavia, and thence to Buitenzorg, the botanical gardens of which he justly extols. Soon an opportunity occurred of visiting the Keeling or Cocos Islands, which he rather unnecessarily and clumsily dubs the Cocos-Keeling Islands. This group of small coral islands in the Indian Ocean is familiar to the readers of Darwin's *Voyage Round the World*, and *Coral Reefs*, and extremely interesting on account of their suggesting his early ideas on the formation of coral islands, and the distribution of plants by oceanic currents. Naturally, Forbes was greatly elated at the prospect of visiting the scene of the great master's labours between forty and fifty years before, and the additional information he is able to give is most welcome. When Darwin visited this "island sparkled ring of coral," the arboreous vegetation consisted mainly of the Cocoa-nut Palm and the Ironwood tree (Cordia subcordata), with abundance of Pemphis acidula, a shrub or small tree; and the total number of species of flowering plants collected was twenty. Of one kind of tree observed no specimen was brought home, as it was not in flower; and of another, a solitary example on the beach, he only heard. The late Professor Henslow determined the plants, and published a list of them in the *Annals of Natural History*, and it has been reproduced with some corrections in the *Botany of the "Challenger" Expedition*, in its relation to the vegetation of the remote islands generally of the Indian Ocean and Polynesia. It occupies so little space that it may be repeated here:—Hibiscus tiliaceus (Malvaceæ), Triumfetta procumbens (Tiliaceæ), Acacia Farnesiana and guilandina (Leguminosæ), Pemphis acidula (Lythraceæ), Portulaca oleracea (Portulaceæ), Guettarda speciosa (Rubiaceæ), Ochrosa parviflora (Apocynaceæ), Scævola Kœnigii (Goodeniaceæ), Cordia subcordata and Tournefortia argentea (Boragineæ), Dicliptera Burmanni (Acanthaceæ), Boerhaavia diffusa (Nyctagineæ), Achyranthes aspera (Amarantaceæ), Fleurya æstuans (Urticaceæ), Panicum sanguinale, Stenotaphrum americanum, and Lepturus repens (Gramineæ); and Cocos nucifera (Palmæ). These plants are, with the exception, perhaps, of the Dicliptera, very common in maritime districts within the tropics, especially in the Old World and Polynesia, but they are none the less interesting; indeed, their importance to man cannot be over-estimated. It is now known that their seeds—in some instances naked in others enclosed in the fruit—will bear long immersion in salt water without injury; and it has also been ascertained, chiefly from the drifted and floating seeds collected by Professor Moseley, and more recently by Dr. Guppy, that their seeds, as well as those of a considerable number of other plants, are conveyed from shore to shore by oceanic currents; and it may be safely averred that many of the groups of coral islands would otherwise have remained destitute of Phanerogamic vegetation, and consequently would have been uninhabitable. Forbes found all the plants collected by Darwin, and several others, most of which, however, had evidently been introduced, intentionally or unintentionally, by man. Exceptions probably were Morinda citrifolia and Pisonia inermis, both belonging to the same category as the bulk of those named above. Aecidental fires have, Forbes states, destroyed nearly all the Ironwood forests, and the arboreous vegetation of the islands is now almost entirely Cocoa-nut trees. To a great extent the land has been cleared of other vegetation and planted with Cocoa-nut trees, which constitute the wealth of a community now numbering 500 souls. Under the most favourable conditions the Cocoa-nut there produces fruit within four years of the seeds falling from the parent tree; and in the centre of the island the Palms are very tall, sometimes as much as 120 feet. On two or three occasions since the islands have been inhabited they have been visited by exceedingly violent cyclones, which made a clean sweep of everything in their course, the inhabitants escaping only by lying down in the hollows. The last was in 1876, and Forbes was there in 1878, when the effects were visible in many parts in the form of straight and circuitous lanes through the Palm groves.

Respecting the ways in which the fauna is doubtless sometimes increased Forbes says:—"Occasionally flying foxes (Pteropus) reach the atoll, but hitherto in too exhausted a state to survive. Once a pair arrived together, but both, unfortunately, soon died. It is not improbable that some day, through the favourable circumstances of an unusually strong and healthy pair shaping their course Keeling-wards, they may yet survive the arduous journey, and the atoll find them some morning added to its fauna. What has only just failed here has doubtless succeeded in other oceanic islands, with different volant species."

This leads to the consideration of the question how much carpophagous birds contribute to the floras of oceanic islands—a subject still awaiting thorough investigation. Both Professor Moseley and Dr. Guppy brought home the contents of the crops of various birds; and Dr. Beccari relates some marvellous facts of the swallowing capacities of the cassowaries, and the distances they travel over land and water. Supposing the successful introduction of a single plant in an oceanic island through the agency of birds to happen only once in a hundred years, or even only once in a thousand years, it is sufficient to account for much. The nuts or stones of fleshy fruits and seeds with a very hard testa are either ejected or pass through birds without the vitality of the embryo of the seed being impaired.

It has been urged by some writers who have collected evidence adverse to the theory that insular floras are largely derived from the sources indicated, that seeds cast ashore or dropped on the surface rarely grow into plants, and objection has been more especially relied upon in the case of the Cocoa-nut. But, as I have tried to prove elsewhere, there are many ways in which seed may become buried, and Forbes mentions one which is very convincing. He observed that the land-crabs, which abound in so many islands, often burrow so near the surface that the Cocoa-nuts fall into the holes, where they find the conditions favourable to germination and development. Such facts as these all help to enable us to measure the extent to which the distribution of plants has been affected by birds and ocean currents.

After about a month's sojourn in the Keelings, Mr. Forbes returned to Java, and explored the western province of Bantam. He is highly enthusiastic in praise of the intelligence and observing powers of the Malays of this part. There was not, he states, a single tree or plant or minute shrub but they had a name for, and could tell the full history of; and not a note in the forest but they knew from what throat it proceeded. "Every animal had a designation, not a mere meaningless designation, but a truly binomial appellation as fixed and distinctive as in our system. . . . Of Oaks—Passang in their tongue—they discriminate sixteen species, commencing their list with the one they consider most typical, just as we find in our own catalogues of birds, among the warblers for instance, Cisticola cisticola representing the typical species. Sundanese say Passang betul, or true Oak, for what they consider the Oak of Oaks.

It was in Java that the author first became acquainted with the singular Rubiaceous genera, Myrmecodia and Hydnophytum, whose thickened, tuber-like, galleried caudex is inhabited by ants. He gives an interesting description of the relationship between the plants and ants; but the following note on the reproduction is most assuredly the result of imperfect observation, in so far as it relates to the time occupied in the development and germination of the seed:—"The flowers are produced," he says, "in deep spine-protected pits on the axis surmounting the bulb, and are remarkable for the extreme rapidity with which the cycle of their functional changes are performed. The pellucid white flower appears and is followed by an orange, watery fruit, whose seeds ripen and often germinate in the little pits where they fall, within the space of thirty-six hours." What happens is this: several flowers are successively produced in each of the pits, and the ripe fruit of the earlier ones is pushed out before the later ones have expanded. Mr. Forbes claims to have been the first to ascertain, from plants raised from seed, that the chambers and galleries in the stock of these plants, inhabited by ants, are formed naturally and without the intervention of the ants; but he was anticipated by Dr. Treub in the publication of the details. In return the former uses the same illustration.

The fact that under favourable conditions the leaves of Bryophyllum calycinum will produce independent plants from the notches in the leaves is very well known. Forbes met with an instance of flower and fruit being produced directly from the notches.

The fertilisation of Orchids, especially in relation to the production of seed occupied our author's attention, and he devotes a number of pages to the elucidation of the results of his observations. He concludes that the fertilisation of the flowers of Orchids by the pollen of other flowers is not so universal as supposed. Unfortunately the figures illustrating the genitalia of the various Orchids examined are not all clear, and this applies to many of the other illustrations. The book, however, teems with interesting information on plant and animal life, as the extracts here made from within the first hundred, out of 500 pages, prove. Sumatra, Amboina, Timor-Laut, Buru, and Timor were visited in succession; and after nearly five years' explorations the author returned to Europe with his collections. Various lists and descriptions of new animals, birds, insects, and plants are scattered through the work; and at the end there is a list of all the plants known to occur in Timor, compiled by the botanists of the British Museum. Altogether it is a book to be recommended, though a little more care might have been profitably bestowed in the editing, as a good many misprints in the scientific names and a good many obscure sentences remain. Thus, speaking of the Keelings, the author says:—"Mr. Darwin's famous visit was made about eleven years after their colonisation. More than half a century more had elapsed till I landed there." The last sentence is not only clumsy—it is incorrect; because Darwin was there in 1836, and Forbes in 1878. *W. B. H.*

FORESTRY.

GENERAL WORK.

OSIERS for basket making may now be cut, sorted into sizes, tied in bundles, and, where water is convenient, left with the butt ends standing in it. The present is likewise a good time to plant Willows, for which purpose cuttings of from 12 to 14 inches may be used, these being taken from straight branches of two years' growth. Insert the cutting about two-thirds of its length in the ground, the distance between every pair depending on the species of Willow from 16 to 20 inches, or even more, being the usual distance for Willows of the viminalis type.

The cutting of Ivy from walls, trees, &c., should now be taken in hand, and if at once pruned closely, it will start afresh and form a compact green surface during the summer and autumn months. Where this work is annually performed, a sharp pocket-knife will be found sufficiently strong for pruning back, but where it has been neglected a stronger imple-

ment, such as a hedging-bill or the pruning-shears, will be necessary.

Arrangements for barking Oak must now be made, for if the weather keep at all favourable, this most important operation will commence, in most districts, during the last half of the month. Meanwhile, have everything in readiness—trees marked and numbered, tools looked over and repaired where necessary, squads of peelers arranged, and, where conveniently procured, a few loads of light rails conveyed to the barking-ground for the erecting of drying stands, so that once the sap is up, not a day may be lost in commencing operations. *A. D. Webster.*

The Flower Garden.

TREES AND SHRUBS LATELY PLANTED.

The planting of all kinds of trees and shrubs must now be finished for the present season. It is much better to frequently sprinkle overhead with the garden engine all recently transplanted trees and shrubs in dry parching weather than to soak the soil at the roots with cold water, as a medium state of dryness at the root is more conducive to production of roots. Let all newly moved plants be often examined to see that they are securely fastened to their supports.

Bedding Plants.

Push forward all propagating and pricking off of plants, gradually inuring them to outside temperatures, but do not allow them to be withered by fierce winds nor drenched with rains. Prick off as soon as they can be handled all seedlings of half hardy plants into cold pits. Lay a couple of inches of rough leaf-mould or short manure on a hard bottom of ashes, over this spread about 2 inches of fine sandy soil, into which prick the cuttings and seedlings. They will lift with much better balls than if pricked into a greater depth of soil, and the roots will be much more fibry. Annuals must be thinned as soon as they obtain sufficient size. If allowed to grow into a dense mass they will soon become poor attenuated objects. Let them stand from from 4 to 6 inches apart or more, according to the habit and size of the subject. Successional sowings of annuals may be made around the site of bulbs, to fill up vacancies as the foliage of the bulbs dies down.

The Hardy Plats.

Many more shoots will start from herbaceous Phloxes, Asters, Sunflowers, &c., than it will be desirable to leave; it is much better to reduce these to six or eight; and all the old protecting foliage had better be removed at once, for if allowed to remain the loss of foliage at the bottom will greatly mar the appearance of the plants. Any rapid growing subject should be provided with sticks ere they become broken down. Do not bunch them up like a bundle of reeds, but pass the tying material once round the stake, and sling the shoots loosely in twos and threes in each sling. *W. M. Baillie, Luton Hoo.*

Plants and their Culture.

THE FERNERY.

In this department the potting which is necessary should be seen to at once, most varieties being now on the move; and it will be found that the majority of them will go away much freer at this stage than when potting is done when the plants are in a dormant state. Tree Ferns of all sizes, where grown in tubs and pots, and which have attained a desirable size, will be much benefited by having some soil placed on the top of each ball, making it concave to hold and convey the water to the centre of the ball. Any plants that have uneven stems should have some fresh sphagnum moss tied on them to fill up the hollows; in this the roots will run, forming a smooth outlined stem in a short time if the syringe is kept well plied. Lomaria gibba, L. zamiæfolia, L. lanceolata, L. cycadæfolia, L. bipinnatifolia, and L. L'Herminieri, make very useful plants for the house and other places. These plants should receive an addition of sand and charcoal in the compost to that which is given to the others. The varieties of Adiantum are always favourites, being among the most useful of all Ferns for cutting purposes, they should therefore be grown in considerable numbers. By starting them in batches a regular supply can be secured through the whole year. They can be rapidly increased by laying the spore-bearing fronds on pans or pots of light open soil, sprinkling a little sand over them, and placing them in a warm shady house, covering the pans with pieces of glass so as to retain the moisture. Some of the Aspleniums will also be found very useful for general purposes; they stand well indoors in pots and also in a cut state, and where grown as a collection they give a nice contrast to the fernery. Davallias do much better in pans than pots; being shallow rooters they throw out their rhizomes and make nice objects when elevated in the centre of the pans. The different varieties of Pteris are well worth growing. P. argyrea, cretica, alba lineata, and tricolor are most telling with their variegated foliage, and most of the varieties are of use in various ways. Selaginellas make the best surface plants under tree or other Ferns, also for covering rockwork, &c., and make beautiful pans when grown, well and are then the most telling objects in a fernery. Such varieties as S. densa, S. Mertensii, also the variegated variety of this a2d S. uncinata, and S. Kraussiana, should be pulled to pieces and replanted about 2 inches apart in whatever form of objects or basket may be chosen. S. caulescens, S. umbrosa, S. Wallichii, S. grandis, S. Victoria paradoxa, S. Lyalli, S. Brownii, &c., make good pans; and after potting they should be kept close, and dewed over twice a day, never allowing them to become dry. Gymnogrammas, although of no use for cutting or furnishing, are beautiful objects when well done. The plants require to be kept well up to the light, never allowing the syringe or hose to play upon them, and to be kept in the warmest corner. They do best potted in peat, two parts leaf-mould, one part sand, and charcoal one part. The following sorts will be found to give a nice variety of colour and form: — G. chrysophylla Laucheanum, G. Pearci, G. peruviana, G. chæophylla, G. tartartea, G. schizophyllum, G. grandiceps, and G. Wettenhalliana. The temperature for the ensuing fortnight should be, for the stove, 70° to 80°; greenhouse, 55° to 60°; Rose-house, 55° to 60°; forcing, 60°; fernery 55° to 60°; pits, 50° to 55°; and conservatory, 50° to 55° with sun-heat. *A. Evans, Lythe Hill, Haslemere.*

The Bulb Garden.

FRITILLARIA IMPERIALIS, VAR. INODORA.

Collected by A. Regel in Bokhara, distributed by Dr. von Regel, and formerly described by him as F. Eduardi, is a welcome addition. It differs from the type in the flowers being erect, or horizontal, or not so completely drooping, in the flower-head being separated from the leaves below by a smaller length of leafless stalk, and, what is most valuable, in the fact that neither the bulbs nor any part of the plant possess that disagreeable odour which is so great a drawback to the typical form. It varies from yellow to what Regel calls "purpurea." My specimen, which I owe to St. Petersburg kindness, is of a colour apparently identical with that represented in the *Gartenflora*; but I should hesitate to call it purple. I would rather describe it as a fine brick-red, with just a dash of blue in it, so minute that even the most fastidious of æsthetic critics would fail to discover any suggestion of aniline. The colour is to my eyes at all events a very pleasing one, and forms a very charming background to the creamy hue of the large anthers, and contract to the light green leaves. The plant is perfectly hardy.

By-the-bye, I am sure all English gardeners will rejoice to learn that the *Gardeners' Chronicle* was misled in announcing Dr. Regel's retirement. He has certainly earned any repose he may desire; but I, and many others I am sure, earnestly hope that he may still long continue in a position which enables him to gratify his generous impulses, and enrich English and other gardens, with the floral treasures of Central Asia. I myself feel most deeply indebted to him for the many Irises and other plants which he has from time to time given me. *M. Foster.*

Triteleia uniflora conspicua.

This hardy spring and early summer blooming plant is quite a gem in its way, and should be far more generally cultivated. Its habit of growth is peculiar, as the leaves are more or less recumbent in form, and lie apparently twisted one in the other. The flowers, which vary in tint between white and light mauve-coloured, are of long duration, and, compared with the size of the plant, abundant. They rise well above the foliage, and not, as is the case with the better known T. uniflora, mixed up therewith. Not only is this plant well suited for the open border, but it also makes a pleasing object grown in pots—a few bulbs in a pot. Being a very free-rooting plant, it requires a good rich and somewhat stiff soil, with abundance of root moisture, during its season of growth. *William Earley.*

The Kitchen Garden.

GLOBE ARTICHOKES.

The remainder of the protecting material around the old stools of these should now be entirely removed, and the ground between the plants forked over and cleaned, and, if necessary, manured, with a good mulching of rotten dung. When the young suckers are from 6 to 8 inches in height three or four of the strongest on each stool should be retained, and the others removed.

Making Young Plantations.

The site selected must be an open one, and fully exposed to the sun, the ground well manured and trenched. For planting, suckers with a heel to them and that have a few young shoots attached are the best; these should be planted in rows 3 feet apart each way, and if the soil be at all dry receive a good watering. In seasons like the present, when the young growths are much retarded, it is a good plan to take young suckers off in a similar manner to those described above, but of a small size; and to plant them into 6-inch pots, placing them in gentle heat until rooted, and the young plants growing freely, when they may be hardened off and finally planted out on the site prepared to receive them. Where a great demand exists for this esteemed vegetable plantings should be made annually, as the young plants flowering late, and after the older established ones are over, produce a succession of heads far into the autumn, until destroyed by frost. The after treatment consists of keeping the ground between the plants clear of weeds, and if extra-sized heads are required a portion of the flower-buds should be removed as soon as they show, retaining the largest only.

Seed Sowing.

The final sowing of Brussels Sprouts and late Broccolis should now be made, which should include Snow's, Veitch's Autumn, and Self-protecting Cauliflowers for autumn and winter supplies. The different varieties of Borecole, Savoys, &c., can also be sown, and the necessary quantities to meet requirements, of Radishes, Mustard and Cress, Lettuce, Cabbage, &c. A border facing south is best for this purpose; it should be divided into 4 feet beds, with an alley sufficiently wide to allow of moving between them, and the surface of the beds should be made firm and even before sowing the seed, which should be raked in and lightly covered; a dusting over of sifted wood-ashes should be applied occasionally, after the young plants show above-ground, which will keep them free of insects and also act as a stimulant. The seed-beds should be made secure from birds by being hooped over and netted. If the seedling Broccoli, Cauliflower, &c., from this sowing be thinned and pricked out at intervals a sufficient succession will be obtained for all purposes.

Silver-skinned Onions.

Sow these broadcast on beds, made very firm and smooth, the seeds lightly covered, and on rather poor soil.

French Beans and Scarlet Runners.

A few rows of the former may be sown on a warm sheltered border, and towards the end of the month a larger one, and also a row or two of Scarlet Runners; for the main sowings the first week in May will be early enough. Sow also Asparagus and Seakale for stock in rows 18 inches apart; Peas in trenches for summer use, and a final one of Broad Beans. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

Tuesday,	April 13	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Imported Orchids, at Protheroe & Morris' Rooms Clearance Sale of Nursery Stock and Greenhouse Plants, at Rose's Nursery, Surbiton, by Protheroe & Morris.
Wednesday,	April 14	Second show of Spring Plants of the Royal Botanic Society, Regent's Park. Sale of a Collection of Orchids in Flower, 5000 Lilium auratum, &c., at Stevens' Rooms. Sale of Roses and Plants, at Protheroe & Morris' Rooms.
Thursday,	April 15	Meeting of the Linnean Society. Show of the Royal Horticultural Society of Ireland. Sale of about 300 lots of Established Orchids, including 60 lots from the collection of S. Learoyd, Esq., of Huddersfield; 5000 Lilium auratum, &c., at Stevens' Rooms. Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.

THE event of the week. What is it? Is it a thirty-pound bunch of White Nice Grapes? Hardly, at this season of the year. Is it the appearance of Gigantaioamorphophallus teratodes—neither Messrs. VEITCH nor Mr. BULL, nor any other of our new plant importers have delighted us with any such prodigy. No Orchidomaniacs have invaded our sanctum with a blue-flowered Lycaste Skinneri, no raiser of early Peas has disturbed our serenity by placing a peck of "New Time Wonder" before our eyes. Even the extraordinary Gooseberry, which in some seasons we have had not much later than this, has not yet made its appearance. What is it then? All this cackling surely means something?—and it does. For the event of the week (the gentle reader will excuse the anachronism that the event really took place on March 30) we must look, not to South Kensington or Regent's Park, not even to Westminster, but to the *Ultima Thule* of south-western Britain—the isles of Scilly. Before this our columns have borne witness to the Agaves, the Fourcroyas, the Dracænas, the Phormiums and other plants which in these favoured islands disdain to be considered greenhouse plants. The illustrations in our columns have shown how we have in our own domains, a few hours sail from our Cornish coast, a climate which permits of a Riviera vegetation—a climate where Southern Japan and China, New Zealand and Tasmania, may be reproduced, so far as their vegetation is concerned. Our readers may, perchance, have heard of Broccolis and early Potatos from these islets. It may have been some consolation in these times to know that one corner at least of our land could, so far as its means allowed, compete with the more favoured South. But now, such is the progress of civilisation, that we have to record the occurrence of the first flower show in the island. If it were a mere flower show we should not look upon it with very favourable eyes. Here in London we are satiated with these things. We have got into a circle, and we seem only to go round and round, but a flower show in the Scilly Isles is quite a different matter. It speaks of difficulties overcome, it speaks of new sources of prosperity for the islanders, of the banishment of famine, of the establishment of industry, of the promotion of happiness. How all this has been brought about would be a long story to narrate here. It has been often alluded to, moreover, in these pages, and those who were present at the recent shows of the Royal Horticultural Society and Royal Botanic Society will not be surprised to learn that the special testimony on this occasion was borne by the Narcissus.

The Narcissus cult, which has assumed such large proportions of late years, may be laughed at by the profane—may they enjoy their mirth!—but here is a practical proof that the "fads" of a few may furnish the food for the "many," and if so, the reply to the *cui bono* people—a despicable race, by the way—is complete.

After this lengthy prelude, it is time to let "our special reporter" speak for himself:—

"The first flower show on the Scilly Islands was held on Tuesday, March 30, in the infant school, St. Mary's, Scilly, under the auspices of the Scilly Islands Bulb and Flower Association, of which the President is T. Algernon Dorrien Smith, Esq.; the Secretary, Mr. Clement W. Mumford; and the Treasurer, Mr. William R. Mumford. The exhibition to these islanders was one of unusual interest, the exhibits consisting mainly of well grown Daffodils, of which the three groups were well represented. The competition for the numerous prizes was very keen, and the inhabitants of the little town of St. Mary's took a lively interest in the show. The prizes, which were distinguished by ribbons—1st, blue; 2d, pink; 3d, yellow—were easily distinguished, and gave occasion for many friendly congratulations, not only by the visitors, but by the exhibitors amongst themselves. The weather being somewhat stormy, the off-islanders could not put in an appearance on the first and second day; but on Thursday the storm abated, and some few additional exhibits came in, and were awarded prizes according to merit. The exhibition of 1887, it is expected, will be double or triple the size of 1886, and speculation is rife as to where accommodation can be had. Each exhibitor will want more space, and there will be many additional competitors.

"One end of the room was occupied by Mr. T. A. Dorrien-Smith's exhibits, consisting of upwards of 160 varieties of Daffodils tastefully arranged, on a groundwork of green moss, and as the exhibitors generally may adopt this mode of staging their flowers in 1887, it is not unreasonable to expect that even our metropolitan Daffodil shows will be put in the shade, as enterprise is one of the characteristics of the natives of Scilly, and it is very likely that some of the growers from these islands will come up to one of the April Daffodil shows to take notes, so that under these circumstances the London exhibitors will do well to make good preparations for 1887, so as to maintain their position. The prize of the day was £5, offered by the Earl of Mount-Edgecumbe for the best exhibit of marketable flowers; this was carried off by Mr. W. P. Mumford, with an assortment of fifty varieties of Daffodils. The same prize will be offered in 1887, and possibly others, as many who visited these islands and enjoy the hospitality of Mr. T. A. Dorrien-Smith may desire to follow the spirited example of the Earl of Mount-Edgcumbe.

"In August there will be an exhibition of dry Narcissus bulbs, grown on the Scilly Islands, of the most marketable sorts: prize by T. Algernon Dorrien-Smith, Esq., £10; and again, 1887, prize £25."

The long list of the names of the prize winners which our correspondent kindly sent us is, to our regret, not included in our report, owing to the pressure on our space, but the islanders have our earnest sympathy, and we believe we do but echo their sentiments when we speak in high terms of the enlightened foresight of Mr. DORRIEN-SMITH.

—— PODOCARPUS VITIENSIS (Seemann, *Journal of Botany*, vol. i., p. 33, t. 2; *Flora Vitiensis*, t. 77).—The genus Podocarpus is a large and very variable one; more than sixty species have been enumerated, but it is probable that not more than about forty are entitled to specific rank. It is well represented in the extra tropical regions of the Southern Hemisphere and in the mountains of Tropical and Eastern Asia; in the mountains of Tropical America it is much less frequent, and is altogether absent from Europe, Western Asia, North Africa, and North America. The accompanying figure (fig. 89) represents a portion of a branch from a specimen in the Elvaston Nursery of Mr. W. BARRON, of Borrowash, and as far as can be judged from the material sent it seems to agree well with SEEMANN'S plant, of which there are several examples in the Kew Herbarium. Mr. BARRON writes:—"Hitherto it has had no care beyond being in a pot with its roots cramped, which I mean now to rectify. Its singular beauty arrested my attention this season—hence my inquiry. It is now 6 feet 3 inches high, diameter of branches 5 feet 2 inches, and width of one frond-like branch 2 feet 6 inches. On the whole it is a most elegant plant. I cannot say now where we had it from, but shall try and trace it." In 1879 a specimen found its way to Kew under the name of Torreya bogotensis, but the plant now growing under that name in the winter garden at Kew is evidently distinct; it has rounder leaves, and only resembles that here figured in the distichous arrangement and in the colour of its foliage. SEEMANN describes his Podocarpus vitiensis as one of the handsomest of Conifers. "It attains 60 feet in height and 9 feet in circumference; produces timber of the finest quality, and has drooping, extremely graceful branches, which would render the plant a highly desirable acquisition to our hothouses. . . . . My principal reason for publishing this plate is to obtain, if possible, more complete materials of the plant than I was able to collect. It is one of the finest Coniferæ I have ever seen, and in habit so unlike any other, that I am convinced we have here a new genus, closely allied but differing from Podocarpus, with which genus I have provisionally placed it. That was also the opinion of Professor PARLATORE, who is working up the Coniferæ for DE CANDOLLE'S *Prodromus*." PARLATORE'S monograph contains no mention of P. vitiensis, neither does CARRIÈRE'S *Traité General des Conifères*, nor the second edition of GORDON'S *Pinetum*. In all probability other plants of this handsome Conifer are to be found in British gardens. If any reader of the *Gardeners' Chronicle* can send flowering specimens, the doubt which must attach to sterile branches of such critical plants as so many of the Conifers could be readily dispelled. In colour the leaves of P. vitiensis are a bright lively green, and their symmetrical arrangement is shown by the accompanying illustration, which is about two-thirds natural size.

—— ROYAL HORTICULTURAL SOCIETY.—We publish the following note from Mr. C. R. SCRASE DICKINS, Hon. Sec. of the Narcissus Committee, *à propos* of the above meeting. The second meeting for the season will be held on Tuesday next, April 13, in the conservatory, South Kensington, when the committee will be glad to receive and report upon any specimens of interest which may be submitted to them. Attention is called to the following:—The flowers sent should have been grown in the open air, except in the case of such sorts as are not hardy in this country. A specimen of the foliage should accompany each variety. Full information should be given as to the history, habitat, or peculiarities of each specimen, together with the name of the sender, and the question asked of the committee, or the point on which they are to decide. (Printed forms for this purpose may be obtained from the Secretary, or will be filled up by him on receipt of the flowers at South Kensington.) It is requested that the flowers may be sent so as to arrive in good time, addressed to the Hon. Sec., Narcissus Committee, Royal Horticultural Society, South Kensington; and attention is called to the fact that boxes, &c., sent by the parcel post usually take a somewhat longer time in transit than those sent by letter post, and therefore due allowance should be made in their despatch. If received before the day of the meeting, the flowers will be taken care of and put in water.

—— POTATOS CERTIFICATED AT CHISWICK.—At a meeting of the Fruit and Vegetable Committee of the Royal Horticultural Society, held at Chiswick on March 30, Mr. George Bunyard in the chair—present Messrs. J. Burnett, W. Miller, S. Ford, G. T. Miles, and G. Norman—First-class Certificates were awarded to the following varieties of Potatos, as especially useful for late work:—Chiswick Favourite (Veitch), white round, rough skin, heavy cropper, white flesh, of good flavour; Bennett's Surprise (Bennett), white kidney, white flesh, good cropper, and of fine quality; King of Russets (Lye), large round, pink, with a somewhat deep eye, white flesh, rough skin, good cropper, and good quality.

—— PURVEYOR OF GRASS SEEDS TO THE METROPOLITAN BOARD OF WORKS.—Messrs. CARTER PAGE & Co., 53, London Wall, E.C., have been appointed by the Metropolitan Board of Works to supply them with Grass seeds for their parks and open spaces for 1886.

—— HORTICULTURAL CLUB.—The usual monthly dinner and *conversazione* will be held on Tuesday, the 13th inst., at 6 o'clock P.M. The discussion will be opened by the Rev. C. WOLLEY DOD, on Daffodils.



Fig. 89.—Podocarpus vitiensis. (see p. 464.)

—— Lent Lilies. — There is a very readable article on Daffodils in last week's *Guardian*. If it were not that we are more than overwhelmed with "copy" just now we should be inclined to take the liberty of extracting it, but in the present state of plethora it is impossible. The *Daily News*, too, recently had a good article on pin-eyed and thrum-eyed Primroses.

—— "A Rose from Homer's Grave" is the title of one of the shortest of Hans Andersen's fairy tales. The nightingale sings to the flowers; they, proud of the still greater singer, above whose grave they bloom, treat her with contempt, and she sings herself to death. A compassionate traveller buries her in "Homer's grave." When night comes, the flowers rest. One dreams herself gathered and taken far away to the "Fatherland." Next morning comes the fulfilment of her dream; the poet plucks and bears her away to his home. Even now, when he opens his *Iliad*, she hears him say, as in her dream, "Here is a Rose from the grave of Homer."

It would be too much to assert that this was the origin of the rose known to the National Rose Society as "Homer."

—— Hybrid Daffodil.—We are indebted to the kindness of Mr. B. Hartland, of Cork, for some flowers of two new forms of what he calls Princess' hybrids, but which we take to be those known as bicolor Trumpet Daffodils. As in Narcissus Horsfieldi and N. Empress the perianth is of a paler colour than the corona, and of about the same length. In one of the flowers sent the perianth segments are of a pale lemon colour, and acutely acuminate, and the corona is frilled, and in the other the segments are broader and more obtuse, and of a yet paler colour, the corona being similar in colour and form to the first mentioned. They are pretty varieties.

—— The Primula Conference and National Auricula Society (Southern Section).—Mr. James Douglas, the Hon. Secretary of this Society, sends us the following:—"Now that the weather has changed, the promise of a successful exhibition of Primulas has greatly increased. Amateur and professional growers are anxious to make it a great

success. This I have no doubt it will be, if all persons interested in the Primula will do what they can. It is not given to every one to make an exhibition of scores of distinct species, but many persons could exhibit one, two, or half a dozen, and any interesting or curious forms of the common Primrose would be both interesting and instructive. Notice of intention to exhibit, and also the nature of the exhibit, should be sent to Mr. BARRON, Royal Horticulture Society, South Kensington, S.W., at least a week before the exhibition; the dates are April 20 and 21. The National Auricula Exhibition is to be held at the same time—the 20th only; but the Primula Conference Committee would be glad if exhibitors would kindly leave their plants for the two days. It may remove some misunderstanding if I may be permitted to say that the prizes offered for Auriculas are freely open to any one who will come forward and win them. The society is supported by the voluntary contributions of admirers of the Auricula, and the subscribers think it best to leave the the classes open, except so far that there are classes for large and small growers. Entries must be sent to Mr. BARRON as above. I shall be pleased to send schedules to intending exhibitors, and may further be allowed to add that the Treasurer, Mr. H. A. ROLT, 170, Hartfield Road, New Wimbledon, informs me that the subscription list for this year is not yet complete. That gentleman will be greatly obliged if members will kindly forward their subscriptions before the 20th. We may add that dried specimens of interesting species have been sent from Canada, Turkestan, and Hungary, drawings from Bavaria, and seeds from North-west India.

—— CRYSTAL PALACE: SCHOOL OF ART, SCIENCE, AND LITERATURE.—The Directors of the School of Landscape Gardening and Estate Improvements initiated at this place intend to make an addition to the subjects already embraced in its teaching, inasmuch as the study of estate management will include the improvement of land by treatment other than agricultural. According to the prospectus, this will mean—(1) the creating and arranging natural beauties of landscape to adorn land for ornamental or recreative purposes, including the architectural, engineering, and gardening works incidental thereto; (2) the treatment of estates for remunerative purposes, with the incidental engineering and other works. Students will, in addition to the theoretical information gained in the schools, enjoy the advantage of actual professional work, in which they will be able to practise what they learn.

—— "MIDSUMMER SHOOTS" IN ORCHIDS.—All Apple and Pear growers know how occasionally a second crop of flowers is produced on the tree, not from spurs or from the old wood, but from the young wood of the year. Precisely the same thing happens in some Orchids, especially in Dendrobium nobile, a specimen of which is now before us from Swinfen Hall Gardens, Lichfield, in which the flowers proceed from the young shoot. This precocity is not desirable, as the flowers are usually poor and misshapen.

—— ROYAL GARDENS, KEW.—A list of seeds of hardy herbaceous plants grown in the gardens has been published and may be had on application to the Curator. The list is a very rich one, and will be serviceable for reference, and as a guide to gardeners in the correct spelling of botanical names. As might have been expected, the list before us is generally accurate in this respect, but one or two slips may be pointed out. "Turtch" is hardly correct if, as we suppose, the abbreviation be intended for Turczaninow; Kettellerii, Hort., applied to a garden form of Delphinium, should probably be Keteleerii; Willo, p. 9, should be Willd. In the list of abbreviations used only three are inserted, those indicative of annual, biennial, or perennial plants respectively. It would be a great help to gardeners and amateurs if an explanation were afforded of the abbreviations of botanists' names—F. et M., Set. 3, Raf., Bbrst., and many others—must necessarily be mysterious symbols to most gardeners. Similarly it would be advisable if the names of the native countries were written in full.

—— ROYAL MICROSCOPICAL SOCIETY.—The next meeting of this Society will be held on Wednesday, the 14th inst., at 8 o'clock precisely, when Mr. G. MASSEE will read a paper on "Structure and Evolution of the Florideæ."

—— FEDIA CORNUCOPIÆ VAR. FLORIBUNDA.—A dwarf annual Valerian, with dense heads of pink semi-double flowers. The plant, according to the figure (*Gartenflora*, t. 1218), must be very attractive, while the interest of a double flower in this family is very great. Unfortunately, the illustration does not give a good idea of the manner in which the flowers become double, but as the plant is in the hands of DAMMANN & Co., of St. Giovanin a Teducco, near Naples, we shall doubtless have an early opportunity of satisfying our curiosity.

—— SOLANDRA GRANDIFLORA.—The four or five known species of this genus are natives of tropical America, and in the foliage and flowers remind one of the well known arborescent Daturas of our greenhouses except in habit, being of a climbing or rambling character, with long slender branches requiring support. The two genera, however, belong to different tribes of the Solanaceæ. Solandra is characterised by having flat more or less imbricated lobes to the corolla, while in Datura they are folded or plaited. The species under notice has huge flowers of a pale dusky yellow or rather buff colour, with a long cylindrical tube and revolute, bell-shaped limb, consisting of five broad somewhat fimbriated lobes. These flowers have a bold striking appearance, constituting the species a desirable one to cultivate, provided it flowered as freely as the more popular Daturas, or, as they are often called, Brugmansias. The segments of the corolla are broader than that of S. viridiflora, with included or hidden declinate stamens, whereas in the latter they are strongly exserted and prominent. There is a figure of S. grandiflora in JACQUIN'S work, *Plantarum Rariorum Horti Cæsarei Schœnbrunensis*, 1, t. 45. A large plant has just flowered in the Palm-house at Kew, trained to wires near the glass.

—— PARA RUBBER. — From Messrs. HECHT, LEWIS & KALM'S Caoutchouc Report for 1885 we learn that an increase took place in the crop of Para rubber, the imports into London and Liverpool amounting to 4800 tons against 4610 tons in 1884—the total exports from Para to all parts for 1885 being estimated at 12,500 tons, against 10,900 tons in 1884. Of Ceara scrap rubber, from Manihot Glaziovii, the imports into Liverpool amounted to 85 tons, the quality being most satisfactory. Of Central American the imports were 100 tons, and of other kinds the imports and sales were good.

—— SCIENTIFIC VALUE OF GARDENERS' EXPERIENCE.—At a recent general meeting of the Birmingham and Midland Counties Gardeners' Mutual Improvement Association, Professor HILLHOUSE, M.A., F.L.S, Professor of Botany and Vegetable Physiology at the Mason College, gave a lecture on "The Scientific Value of Gardeners' Experience." After congratulating the gardeners and the city on the formation of the Society, and expressing his own desire to do all that lay in his limited power to help it, he said that the formation of such a Society implied that the gardeners not merely were willing to improve themselves, but felt that improvement was desirable. In no part of their work could this need be more keenly felt than on its scientific side. In gardening, as, indeed, in most work with which the average Englishman had to do, there was too much of the "rule of thumb" principle in use; ancestral ideas too strongly held them captive, to the exclusion of individual reasoning power. This has been felt and shown most strongly in agriculture, where the innate conservatism of the farmer has much to do with his inability to keep his head above water, but has not been realised in the case of the gardener, although the work of both is so largely alike. In both cases the cause of comparative failure has been the same; methods have been learned, and learned most carefully and well, but reasons have been left out of the calculation well nigh altogether. We have, it is to be feared, as a nation, too far forgotten that a method is only of value for its direct results, while a reason is far more wide-reaching. Without reason new methods come only by lucky accident; with reason new methods arise naturally; the very failure of one is, with the aid of our reasoning powers, often the key to another; and that man will be most fertile of resource who has most thoroughly trained himself to look for the reasons for everything he does. There is a world of difference between a PRIESTLEY groping about in unknown regions, and coming across grand discoveries by accident, and a FARADAY doing everything upon a solid groundwork, and keenly alive to the probable results of everything he does. The lecturer illustrated his ideas on this point by an analysis of the theory of "Rotation of Crops," and by discussing the object of working the soil for gardening purposes. He used these as proofs that reasons do not always lie upon the surface but often have to be sought for with all the knowledge and skill of which we are capable. He further illustrated the value of reasoning by plants of very rapid growth during a short period requiring food in the most digestible form. From this and other evidence the lecturer drew the conclusion, that for a gardener to use his experience with effect he needs at least a training in the principles of botanical science. With ability to work fully with his head a gardener would have enormous advantages in scientific investigation particularly in connection with the external phenomena of plant life, such as their relations with insects, their capability of adaptation to new circumstances, their general variability, and the power to produce varieties of greater economic importance and many other such lines of research. He urged upon every gardener not to dissipate his energies over a wide space, but to take up some limited sphere of experimental work, giving cautions as to the need of absolute accuracy and abundant evidence, and the danger of hasty conclusion and inaccurate observations. In conclusion he recommended them above all to study the methods of some master in the art of experimenting such as CHARLES DARWIN, as laid down in his published works, expressing the opinion that nearly every line of investigation which DARWIN followed was open to the fruitful labours of any clear-headed, patient, observant gardener.

—— EVOLUTION AND THE STUDY OF SYSTEMATIC BIOLOGY. — Mr. M'LACHLAN, as President of the Entomological Society, lately delivered an address in which he alluded to the tendency to neglect systematic zoology and botany for the more fascinating speculative aspects of the science. Taking as his text a passage from the *Standard*, which we extract, Mr. M'LACHLAN proceeded to recommend to the young student the preparation of a monograph of some special group. To this we entirely assent, for if only done as a preliminary to other work no training can be better than this. The result of the course too often followed now is that the work done is deficient in clearness, grasp, method, and historical completeness. The quotation is as follows:—

"Naturalists of the new school are showing less interest in collecting than their predecessors. They half-despise the 'species-maker,' and are all for development, anatomy, and the philosophical bearings of the study. So far this is well. It raises zoology and botany out of the rut of mere museum work—preserving, labelling, cataloguing, and classifying. But it is mischievous in so far that it makes every acquisition simply subsidiary to Darwinism, without taking into account the fact that without the knowledge of species by which DARWIN arrived at his first results any further advance is dangerous. The botanist who philosophises on distribution, or the zoologist on the connection between extinct and recent faunæ, is apt to blunder if he is not familiarly acquainted with modern species, which may be theoretically mobile, but which for all practical purposes are permanent. To compare fossil forms without knowing the living ones is simply courting error. Yet, for the moment, this is the peril which the younger school are encountering in their haste to grow rich in sweeping conclusions. In this country biological science is in a state of transition. The old style is passing away; the new has not yet fully developed itself."

Mr. M'LACHLAN proceeds:—

"I take it that the broad principles of Evolution are safe from any attacks that may be made upon them; the days of ridicule are long past, and the opponents that remain admire while they doubt or dissent. But, for the sake of argument, supposing the principles to be vulnerable, the damage will be done, not by opponents, but by too-enthusiastic admirers, who seek to make every acquisition subsidiary without having had DARWIN'S training. And I make bold to say that not the least important item in DARWIN'S early training was that of a systematist; for, if done well, systematic work in natural history requires an amount of diligence, of research, and, above all, of care, that, while it leaves room for the scientific use of the imagination, prevents everything being made subsidiary to the imagination. Just as DARWIN, in the early part of his career, was a specialist and a systematist, so also have been most of our most celebrated philosophical naturalists, and so some of them continue. To my mind there is no subject so adapted to prove the capabilities of an aspirant in any

part of natural history as a monographic treatise on some special group, and to me there is nothing easier than to detect in works of this nature, on a subject with which I am acquainted, the amount of care taken by the writer—how much is original and how much second-hand, how much is solid and how much scamped: and, if my observations be correct, the lasting reputation of most naturalists will be gauged in direct proportion to the extent to which their systematic work stands the test of time. In systematic work not only do the animals themselves need careful and exhaustive examination, but, what is as much to the point, the whole literature relating to the subject must be carefully studied, and this alone must result in an amount of training for subsequent and perhaps broader studies that cannot fail to be beneficial. Therefore, I recommend to those younger Fellows of this Society with aspirations for future fame, to take up some special group, and work it out thoroughly, and publish the results. It may be said that the literature of every group has now become so appalling in extent as to be deterrent in comparison with that of years gone by. I do not share that opinion. In times gone by it was difficult to be able to consult the literature known to exist; at present there is scarcely any work that is not to be found in one or many of our great natural history libraries; and, though the amount of current literature may be, and no doubt is, enormous, the student, if possessed of sufficient acumen to avail himself of them, has so many aids in the way of what may pardonably be termed 'keys' and 'cribs,' that any alarm on that score speedily dissipates on closer acquaintance.

"But systematic work, if carried out too exclusively, can scarcely fail to have a narrowing influence, the one thing to be avoided of all others; and I earnestly recommend to *débutants* that while they seek to show their power of work by attacking some special subject, they should not lose sight of the surroundings.

"ALL SYSTEMATIC (including descriptive) WORK SHOULD AIM AT BEING EDUCATIONAL; if it be not so I fail to see the necessity for it. And it should be so far educational as to be intelligible, in the majority of instances, to those who have not the identical materials before them; otherwise what can be the use of descriptions and figures? We might just as well, in museums and private collections, announce that we have a certain number of new genera or species, publish their names, label the specimens, and then invite workers in all parts of the world to come and see them if they wish to identify their own materials with them."

—— ARDISIA JAPONICA.—It is more than surprising that this species had not been introduced to British gardens many years ago, and cultivated for the sake of its berries as its almost universally popular congener, A. crenulata. It is figured in SCHNIZLEIN'S *Iconographia*, ii., p. 157, fig. 1; where not being coloured, the figure in question may be interesting and useful botanically, but fails to convey an adequate idea of the real beauty of the plant. The flowers are produced in short axillary racemes and not in umbels as in the better known species. They are white and by no means conspicuous, but followed by deep scarlet berries about the size of large Peas that hang on the plant for many weeks in excellent condition. The leathery, oblong serrated leaves are densely arranged on the short branches, imparting to the whole plant a fresh and healthy appearance. From numerous specimens in the garden at Kew; this species is evidently a dwarf one, of bushy evergreen habit, 10 to 15 inches high and well furnished with berries. Another redeeming feature of this plant is its hardiness—an intermediate or greenhouse temperature being sufficient to grow it to perfection, while the other species or the majority of them require warm stove treatment. Fruiting specimens may be seen in the greenhouse.

—— HEREFORD AND WEST OF ENGLAND ROSE SOCIETY.—The date on which this meeting will be held is fixed for July 8, instead of, as at first announced, on July 9.

—— AMERICAN VINES.—We are so accustomed to consider COLUMBUS as the original discoverer of North America, that we are apt to overlook the fact that the Norwegians had previously made the discovery in 1001. More than this, M. ROMANET DE CAILLAND, in a paper read before the Geographical Society of Paris, and cited in the *Vigne Américaine*, reminds us of the details given in SCHÜBELER'S *Die Pflanzenwelt Norwegens*, wherein one ERIKSON and thirty-four of his compatriots landed in Massachusetts and found there the so-called wild Rice (Zizania aquatica), and the wild Vine (Vitis Labrusca) in such abundance that the country was named by them Vine Land.

—— GARDENING APPOINTMENTS.—Mr. J. A. JOHNSON, for the past eight years Foreman at Englefield Gardens, Reading, has succeeded Mr. HILL as Head Gardener to S. C. UMFREVILLE, Esq., Ingress Abbey, Greenhithe, Kent.—Mr. HAYTER, formerly Head Gardener at St. Giles, Cranbourne, Dorset, is now Gardener to Lady HENRY, Somerset Priory, Reigate.—Mr. A. B. WADDS, late Foreman with Mr. HOPE, Middleton Park, Bicester, has been appointed Head Gardener to the Earl of JERSEY, Osterley Park, Southall, Middlesex.

THE ORCHID HOUSES.

THE EAST INDIAN HOUSE.

VANDA TERES will want attention, as it will now be pushing its flower-spikes. I find it to be the best plan to put this Vanda into a little cooler and more airy house when the flower-spikes are about 3 or 4 inches long. The Lælia or warm Cattleya-house suits it well. If the buds are grown and the flowers expanded in these cooler and more airy houses, the flowers will acquire more substance, and will last much longer. Of course this does not mean a very cool or draughty house, as then the buds would turn yellow, and not come to maturity.

THE PHALÆNOPSIS.

The long and severe winter has taxed the energies of the Phalænopsids, so that they will require every attention to keep them in a healthy state. Syringe them frequently (but not their foliage) now we have a change to sunshine, and by no means allow the roots to get dry. If a bed of sphagnum is placed on the stage beneath the plants it will aid in keeping a moist atmosphere. I think it wrong to allow the Phalænopsis to flower twice in one year, and I therefore cut off all second flower-spikes as soon as they are seen; by so doing much in strength to the plants is gained. Oncidium Lanceanum, which does best in this house, is now growing very freely, and will well repay attention. When the foliage of this Oncid is clean and free from objectionable black spots, it is a pretty Orchid even when not in flower. It ought to be staged with the Phalænopsids, and grown with them, as the shade and moisture given suit it well. The Vanda Hookeri will still do with a small amount of syringing (say twice a day) till active growth begins, when they must have it in abundance; but never be shaded, however bright the sun may be. I consider that the practice of watering Orchids (such as Oncidium Papilio, &c.) that are grown on wood blocks with a can and rose ought to be discontinued, as it is too unsatisfactory, especially if the wood block be at all dry, it being better to dip them into a bucket of warm water. Calanthe Veitchii has now started into growth, and has been potted, and has a good position in the East Indian-house, quite close to the glass on the south side. After a while it will do better on the south side of the Cattleya-house, where there is more air to strenthen its growth.

THE LÆLIA-HOUSE.

In this house Lælia elegans and purpurata are now in full growth, making plenty of roots, and pushing forth their flower sheaths. In this state they require much water at the root and a moist atmosphere. These Orchids thoroughly enjoy an atmosphere laden with moisture and abundance of fresh air. The lovely Odontoglossum citrosmum is quite at home in this house, and should be grown on the south side of it close to the glass. It should now be growing freely, and showing its flower-spikes. If there are any slugs in the house they must be trapped, or damage will certainly be done to the young spikes; these, and all other such enemies of the Orchids ought to be watched for in the evening and destroyed. Pleiones of the maculata, Wallichiana, and lagenaria type succeed very well in the Lælia or warm Cattleya-house. It is a mistake to grow these in any out-of-the-way place, for unless they get plenty of light and air, they fail to ripen their growth properly. A shelf near the glass on the south side and to be well supplied with water suits them. A little weak liquid manure-water will help them to swell their bulbs. *A. Bradshaw, Waddesdon.*

GERMAN METHOD TO GRASS A BANK. — For each square rod to be planted take half a pound of lawn-grass seed and mix it intimately and thoroughly with 6 cubic feet of good dry garden earth and loam. This should be placed in a tub, and liquid manure diluted with about two-thirds of water added and well stirred in, so as to bring the whole to the consistency of mortar. The slope must be cleaned and made perfectly smooth, and then well watered, after which the paste just mentioned should be applied with a trowel, and made as even and thin as possible. Should it crack from exposure to the air, it must be again watered and smoothed up day by day until the grass makes its appearance, which will be in from eight to fourteen days, when the whole declivity will soon be covered with a close carpet of green.

SCOTCH NOTES.

THE ROYAL BOTANIC GARDENS, EDINBURGH.

THE rock garden in these gardens is in spring and early summer always a source of interest to lovers of alpine and bulbous plants, but owing to the exceptionally prolonged winter there are comparatively few of these early floral gems yet in bloom. Among those noted on April 2 were Chionodoxa Luciliæ and C. sardensis, the latter a deep lovely blue, relieved only by the white of the stamens and pistil; Bulbocodium vernum, Draba aizoides and D. aizoon, Helleborus colchicus, Iris reticulata, Leucojum vernum and L. carpaticum—the latter with large flowers and taller stature than the former, and slightly in advance also in point of earliness of flowering; Narcissus pallidus var. præcox, N. minor and N. Pseudo Narcissus var. pallidus; Primula denticulata, the only Primula with the exception of Primroses in great variety in bloom; Puschkinia scilloides, Saxifraga oppositifolia in variety, Podophyllum emodi in the interesting stage of throwing up its single leaves and flower-buds; Scilla bifolia and its fine sturdy variety taurica, with flowers slightly paler than those of the type; also S. b. alba in great profusion, establishing itself everywhere on the rockwork; S. sibirica and S. præcox—the last-named being quite a week behind the others in date of flowering; Sisyrinchum grandiflorum and S. g. album.

In some frames we observed the following:—Draba Maweana, a small, neat cæspitose species, with masses of white flowers not exceeding 2½ inches high; Saxifraga Burseriana, a very fine companion to the several varieties of S. oppositifolia blooming freely beside it; S. Burseriana var. Boydii, a perfect gem, with the habit and general character of the type, but with fine pure primrose-yellow flowers, often produced in pairs on the dwarf flower-stems. It was raised by Mr. Boyd, of Cherrytrees, Berwickshire, from seed saved from S. Burseriana, without any known agency having been at work in the process of hybridising, which is suggested by the result. Another form, the result of the same seed-saving, but having a somewhat different habit to the typical form of the species, and red flowers, stood close by, and seemed to confirm the impression that hybridisation alone could account for such extraordinary departures from the characteristics of so well-marked a species. We may have something to say on the red-flowered form on another occasion.

In the houses were comparatively few rare plants in bloom, but we noted the following:—Rodriguezia fragrans, with very beautiful rose-tinted white flowers having a delicious fragrance; Acacia discolor, a most distinct species with large pinnate coriaceous leaves and large compound racemes of globular flower-heads; Rhododendrum ciliatum × Edgworthii, and excellent first cross partaking of the general features of both parent. The flowers are fully larger than those of R. ciliatum, and of better substance. *X.*

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 364.*)

THE DWARF MEXICAN SECTION.—This includes some of our prettiest and neatest Odontoglossums, the show of flowers which they produce being very great in proportion to the size of the plant. Its members, too, are among the easiest to manage provided they be kept strictly cool, shady, and moist all the year round, and are accommodated with quarters at a reasonable distance from the glass, or at all events where they are in a good light. If carefully potted, well drained, and with little peat and sphagnum about them, it is not easy to overdo these Odontoglossums with water, although judgment must be used to slacken the supply when the pseudobulbs are developed. Nevertheless the most recklessly profuse waterer could not injure them so irremediably as one who allows them to alternate between very wet and very dry, or keeps them supplied with only just sufficient to sustain life without giving vigour. Differences of opinion exist as to the hardiness of these plants, but I have found them to be among the hardiest of Odontoglossums—O. Cervantesi and the varieties of O. Rossi having with me made very fine bulbs on a shelf near the glass, and with

their leaves not half an inch off the ice inside the glass in winter. Mr. Bateman, who received some of the first importations, also informed me that he lost a large quantity of both these Orchids by placing them in heat before he found that the coldest quarters in the Orchid-houses were the only safe ones for them. In general practice, however, no matter how much cold the plants will stand, it is not advisable to aim to let them go below 45° Fahr. Dr. Lindley, in arranging this section, which he calls "leucoglossum," and of which he says they "never show the least tendency to produce a yellow colour in their lip; yellow, indeed, is unknown among them, except in the two plates that surmount the unguis of the lip," proves that he little expected those undoubted intermediate forms, with more or less yellow in them, which we now have between O. Rossi, O. cordatum, and O. maculatum; which two last he places under "xanthoglossum," the barrier between which and "leucoglossum" is broken by O. aspersum and O. Humeanum.

O. CERVANTESI.—This is a very neat little plant, with four-angled pseudobulbs bearing one leaf. Its flowers, which are produced from three to twelve on a spike, vary in colour from white to pale pink, the sepals and petals being marked near the column with concentric lines of reddish-brown colour; lip cordate, and generally smooth at the edge, more or less pointed, white, and variously marked with reddish lines and dots. Flowers produced in winter and spring, and very fragrant. This is a very variable plant, and there seems to be no new feature to mark that called "membranaceum" as a species. Introduced from Mexico in 1845.

O. C. DECORUM is a very fine and distinct form, having much larger flowers than the type, the main distinction, however, being in the peculiar enlargement of the labellum, which is deeply and irregularly notched and toothed, and decorated within the serrature with irregular crimson blotches.

O. ROSSI.—The original species has tufted, ovate, two-angled pseudobulbs. Its flowers are like those of the major form now so plentiful with us, but sepals greenish-yellow barred with brown, petals white with a few purplish marks near the column; white with light yellow mark at the base.

O. R. MAJUS.—This is now a well-known plant, and so well does it bear out the correctness of its name that its flowers, which are borne from two to six on a spike, frequently measures 3 inches across. Sepals and petals white, the former marked the whole length with dark brownish-crimson blotches, and the latter having a few bars of a similar colour at the base only. Lip pure white, often crimped at the edge.

O. R. RUBESCENS is a very fine form, with a flush of rose or rosy-lilac over the whole flower.

O. R. PALLENS.—Sepals white, freckled with pale olive-green; petals white with a few pale brown marks at the base, lip white, slightly tinged with sulphur-yellow.

O. DAWSONIANUM (fig. 91, p. 469) resembles a pigmy O. Rossi; sepals yellowish-white barred with brown, petals white with purplish marks at the base, lip white, yellow at the base.

O. EHRENBERGI.—This, as we have it in gardens, is very near to O. Dawsonianum, but according to Lindley's description the true plant is intermediate between O. Rossi and O. stellatum, and he mentions as a distinguishing feature, that the processes at the base of them are white, not yellow, as in O. Rossi, and that the stems are one-flowered.

O. STELLATUM.—The least showy of the section, but pretty enough in a good plant. Sepals and petals narrow, yellowish-green, clouded with purple, lip white, all these have the O. Rossi habit of group growth, and the two-edged pseudobulbs as distinguished from the four-angled ones of O. Cervantesi. Mexico. *James O'Brien.*

(To be continued.)

POLYMORPHISM OF ORGANS IN NARCISSUS TRIANDRUS.

IF your readers are not already tired of Narcissus triandrus, perhaps you will engrave the enclosed outlines of dissected flowers (fig. 90), to show the remarkable variations of the organs. No. 1 represents a flower of what I believe to be N. triandrus var. pulchellus. It is grown by Mr. Ewbank in the open air at Ryde; and he gave it me four years ago, but I can grow it only in a greenhouse. This year I have about forty flowers, all of which I have carefully examined. They exhibit perfect constancy and uniformity of dimensions and proportions in all their parts and organs, the style in every one is exserted from the tube to about one-third the length of the crown. The uprightness and colour and form of the leaf are entirely distinct from those characters in the varieties I have from Portugal.

These varieties, of which many flowers were sent to me last spring from Oporto, and about 800 bulbs in summer, 200 of which have already flowered in my greenhouse, are most inconstant. Figs. 2, 3, and 4 are exact representations of dissected flowers selected as examples, but by no means exhausting the forms. About 20 per cent. have the stigma included within both series of anthers as in No. 2. About 10 per cent. have it between the two series as in No. 3, and the remaining 70 per cent. have it exserted beyond both series as in No. 4; but not always, as there shown, beyond the crown. Other examples have all the six filaments of nearly equal length. The age of the flower makes hardly any perceptible difference in the length of the style and filaments. I have as yet found no example in which all the six anthers are exserted beyond the crown, though in many cases all are outside the tube. The leaf and tube form an additional

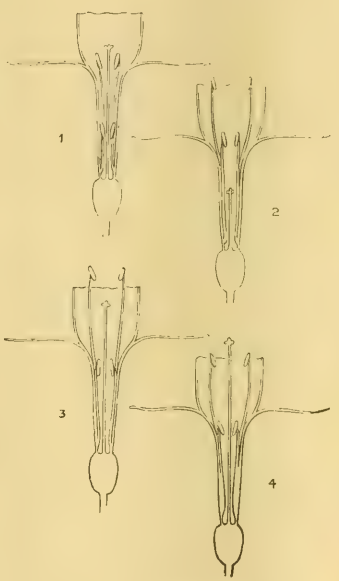


FIG. 90.—NARCISSUS SECTIONS.

contrast to N. t. var. pulchellus. *C. Wolley Dod, Edge Hall.*

HOME CORRESPONDENCE.

Garden Education.—I should like to be permitted to say, in reference to this interesting topic, both in the position of a gardener and a school manager, that the great need in relation to gardening education is that we should begin with our elementary schools by using in them school books of a simple technical character, the which would in a cheerful, plain, gossiping way, such as should attract the attention of the little ones, embody the elements of gardening knowledge. Of course, in carrying out such a proposal it would be equally important, as well as useful, that books of a technical character relating to the most important trades and vocations in the kingdom should also be used in schools, the managers, in conjunction with the inspectors for the districts having power to select their own themes or vocations for local teaching. Thus, throughout the whole of the purely rural districts, gardening and farming fraternity might constitute a special subject in elementary schools, and the books should include elementary instruction in bee culture, poultry management, &c. Again, in mining districts, or in those specially devoted to pottery, to the manufacture of hardware or of woollen or cotton goods, &c., the class subjects with school-books should have special relation to those special local subjects. And we should begin technical teaching in this country in a truly elementary yet practical fashion. We have but to displace the study of history somewhat or perhaps geography from their present positions as special subjects in our elementary schools to find room for valuable technical instruction, with which is indissolubly bound up the livelihood of the people. Dealing with gardening school books alone we may easily, by means of plain illustrations, with simple explanatory text, make them not only entertaining and attractive, but replete with valuable information. It may be useful for a boy to be able to answer intelligently a query from an examiner as to the number of rivers in Canada, or which is the highest mountain in Scotland, but certainly the knowledge of common things which are so intimately associated with his future life and the prosperity of the nation, as is found in gardening, for instance, is immensely more valuable. The foundation of technical knowledge thus laid would give the learner an impetus to erect upon it a practical structure of knowledge, such as must prove of the highest moment. When all our lads in the rural districts have become elementary gardeners they will soon become, either in cottage gardens or through allotments, practical ones. Without doubt the introduction of garden books into our schools would operate advantageously upon the future welfare of those youths who, later in life, devoted themselves to the pursuit of gardening in its higher branches. Young gardeners as a rule, though intelligent and yet good practical instructors, yet have far too little of that literary knowledge found in theoretical and scientific study; that an acquaintance with these elements, even in the simplest form in school-books, would stimulate in them farther inquiry and study there can be no doubt. It is less the opportunities for study of this kind which is needed than the taste for it that is wanting. If the proposed competition can lead to that result very much good will be done. Going back to the subject of garden teaching in schools, it is well to understand that local managers have their hands tied by the Education Department in reference to choice of school-books and subjects; still farther, the inspectors so far, as a rule, have been drawn from the University ranks rather than from those of trades and vocations, hence their sympathies rather lie with literary than with technical teaching. Only a complete revolution in the present system of national education can bring about changes in elementary teaching so desirable. *A. D.*

Salvia Heeri.—This useful early spring-flowering Salvia is so seldom met with, that I beg to offer a remark or two in its favour. There are a few plants of it in full flower here just now which are well worth seeing. They measure 5 feet high by 3½ feet across, and are furnished with hundreds of spikes of bright scarlet flowers. It is invaluable as a cut flower, both on account of its bright colour, and also on account of its feathery, graceful habit. I give it exactly the same culture as our Chrysanthemums, with these two exceptions—first, I never pinch it but once; and secondly, I invariably flower it in 9-inch pots, having found these preferable to a larger size. Wintered in a vinery at rest, or other cool structure, it generally commences flowering about the middle of February. *Chas. Comfort, Broomfield Gardens, Midlothian.*

Patching Vines.—In the *Gardeners' Chronicle* for January 31, 1885, appeared a note of mine under the above heading, detailing briefly a simple and, so far as I knew, new method of furnishing Vines which have failed to break at regular intervals with fruit-bearing shoots the same year that they are operated on, and at the same time giving a promise to supply the readers of the *Gardeners' Chronicle* in due time with the results of last year's experiments in this direction. These have been perfectly satisfactory in every respect, but I purposely deferred saying so until the present time in order that those of your readers to whose Vines the remarks herein made apply may, as soon as they have read them, put them forthwith into practice. For the information of those who may not possess the number of the *Gardeners' Chronicle* indicated above, I will recapitulate the method of procedure to be pursued in stopping "gaps" on Vines. It is as follows:—From the spur immediately below the "gappy" parts of the individual Vines allow two shoots to grow—one to be trained in the ordinary way, at right angles from the Vine, and the other up the stem, and inarched thereon at the point where it is desired to establish a shoot, having in each case the lower bud of the shoots so treated as close to the base as possible. They should then be bound together with matting, after which a little moss should be tied round at the point of contact for the purpose of retaining moisture, which should be applied three or four times a day with the

syringe for as many weeks, to insure a more rapid and perfect union of shoot and stem being made; and with this object in view the ties should be removed at the end of five or six weeks, to allow the wood full freedom of expansion, but they should afterwards be rebound and mossed, though not so tightly as before. Where there is a blank space of 2½ or 3 feet on a rod the same lateral may be used to supply two separate shoots at from 15 to 18 inches apart. For the information of the uninitiated in the art of grafting, I may be permitted to state that the process of inarching is effected by making a smooth face on the sides to be united, and tonguing, cutting the shoot to be inarched half through in an upward direction to the extent of 1¼ inch, and by making a corresponding cut in a downward direction in the stock, or main stem of the Vine, and into this incision placing the tongue (so formed by the upward cut) of the scion shoot, and then binding together in the manner indicated above. From shoots of Vines thus treated last and previous spring I cut as good bunches of Muscat of Alexandria, Mrs. Pince's Black Muscat, Lady Downe's, &c., as I did off shoots not so treated of the same varieties, and which I pointed out to several gardeners visiting here last summer and autumn. In conclusion, I may state that the inarched shoots are severed immediately below the point of union with the stem at pruning time. After which operation is performed, it would require an expert in such matters to distinguish the engrafted spurs from the natural ones. *H. W. Ward, Longford Castle.*

Broccoli.—I quite agree with Mr. G. H. Richards, that the present is a good time to compare notes about Broccoli, as any one may now profit by making sowings of such sorts as proved to stand the severe winter the best. For my part, I should be sorry to be without Snow's, but, unfortunately, it is difficult to get a pure strain of it, else, when this can be done, it is, in my opinion, the best of its season. My choice for first cutting is Veitch's Autumn, which, like their Cauliflower, is one of the finest acquisitions ever sent out, and fills up the void in the supply that, previous to its introduction, was seldom bridged over. To succeed Snow's, we always grow the Penzance Early White, and this I see is also a favourite with Mr. Richards, and though I have tried many others, I can find none to stand and turn in so well. To follow on, we depend chiefly on Veitch's Spring White and Model, the latter being the perfection of a Broccoli, as the heads are handsomely formed and very white, close and compact, besides which the leaves fold over closely and protect the heart from the frost. In habit the plants are remarkably dwarf, and have thick, hard, woody stems which enables them to stand the winter better than others that are less compact in their growth. The most useful, perhaps, of all Broccolis is the Purple Sprouting, which, bad as the weather has been, has afforded us daily gatherings for months past, and will yet go on giving us a supply for some time to come. Not only is this good old Broccoli the most hardy and enduring of all the sorts, but it is also the most tender and delicious, the heads, when properly cooked, being rich and marrow-like, and of exquisite flavour. To have fine plants that will yield abundantly, the seed should be sown early in April, and the plants dibbled out as soon as they are large enough, and before being drawn, in deeply dug or trenched land, giving them a yard or more between the rows, as it is only by having plenty of room that they can develope and reach a good size. It is much the same with other kinds of Broccoli, and the best way of managing with all is to have them wide apart, and to plant early Potatos or other low-growing crops between that will be cleared off the ground before autumn. Favoured in this manner the Broccoli are well exposed to sun and air, and instead of rushing up with weak soft stems they remain dwarf and stocky, and become close and firm in the fibre. To help to keep them in this desirable condition they should not stand thick on the seed-bed, but be sown in rows and pricked out as soon as they are large enough to handle, after which they will lift well, and may be planted safely under any state of the weather. *J. S.*

Libonia penrhosiensis × in Small Pots.—I read with much pleasure Mr. Smyth's remarks on Libonias in the *Gardeners' Chronicle* of the 13th inst., as these plants are not nearly so much grown as they deserve to be. Mr. Smyth treated chiefly of L. floribunda, which is well worth growing; but I heartily agree with him when he says L. penrhosiensis × is an equally elegant plant with much brighter flowers, and, I would add, with much brighter foliage. It makes very nice little plants flowered in 5-inch pots, and these will be found very useful for front rows in the conservatory. I grow several such plants every year, and my mode of culture is as follows:—Having previously placed an old plant or two in heat I take cuttings early in March, and strike them in soil similar to that recommended by Mr. Smyth. When rooted I pot off into 3-inch pots, and return to bottom-heat till they are well established in their pots. I then shift into the 5-inch pots, still keeping them in an intermediate-house till established. I then remove to a cold frame, keeping it rather close for a time, but gradually admitting more air, and ultimately the light is removed altogether. Plants managed thus commence flowering, and that profusely, in the middle of October, just at a time when flowers are really scarce. *C. Comfort, Broomfield, Midlothian.*

Spring Gardening at Belvoir.—With persistent and severe frost and heavy falls of snow, continued from February, but intensified in March, prevailing uninterruptedly until the 18th of that month, there seemed very little prospect of securing a display of spring flowers at the accustomed time in the early days of April, and even when a welcome change came on the 19th, it was sufficiently discouraging to see the maimed and half-withered look of some of our very hardy plants, even Russian Violets, Aubrietias, Hellebores, and Wallflowers, bearing signs of severe injury; a week's genial weather and refreshing rains speedily changed the aspect of the spring garden; Snowdrops, Crocus, Aconites, appeared, but rapidly passed away; then Scilla bifolia, Anemone blanda, exhibited their delayed but charming blossoms, and in the second week Iris reticulata and Scilla sibirica,



Fig. 91.—Odontoglossum dawsonianum. (See p. 468.)

with Narcissus nanus and minimus, and the golden N. obvallaris, and others burst out fresh and bright and uninjured, and now in the third week since the snow-covered ground, we have Primrose, Heath, Violets, Hyacinths, Rhododendrons, and that lovely bulb, Chionodoxa Luciliæ, Primula rosea, P. denticulata, Saxifraga ligulata, S. oppositifolia, and S. Stracheii, and a host of other gay flowers; and, spite of untoward weather, spring gardening is again a success, so great is the revival of the plants that belong to it. *W. Ingram, Belvoir, April 6.*

Monochætum Lemonianum. — Notwithstanding the showy character of the flowers of a large percentage of this order, a favoured few only enjoy that popularity they deserve, while a more numerous body probably are cultivated for the beauty of their foliage. The species under notice is a neat, bushy shrub, about 18 inches or 2 feet high, and is neither difficult to manage nor shy in flowering. The individual flowers are about the size of a half-crown-piece, and in a cool greenhouse temperature last for some time. Their longevity is favoured by the season of the year, and being freely, or even abundantly, produced at the ends of the numerous twiggy shoots, a long succession of bloom is kept up. The large rounded petals are of a warm rosy-purple hue, one of the prevailing colours of the order, and provided the flowers were more serviceable for cutting purposes, many members of the order would soon become popular. For the decoration of the greenhouse in winter, however, this plant might be more generally employed. A plant in the Cape-house at Kew has never been out of flower for several months. *J. F.*

Improved Florists' Flowers.—Mr. J. Tailby, Wellesley, Massachusetts, has been at work hybridising the old varieties of Polyanthus for a number of years, trying to produce a strain of flowers with distinct markings, and flowers thrown well above the foliage. He has certainly been successful, as the result of his labours will show, for he has produced flowers twice as large, and more decided in colour than the parent plants growing side by side. The flowers are as large and as distinct as in the Cineraria. We noticed some fine Cyclamens with semi-double flowers formed like a rosette, which will be very useful to florists on account of their productiveness and their colour (white). Mr. Tailby is also a very successful raiser of new Carnations; Grace Wilder, one of his seedlings, was awarded the Prospective Prize of 40 dollars by the Massachusetts Horticultural Society, who commend it as one of the best seedling Carnations they have ever seen. It is a very free bloomer, and the colour of the Baroness Rothschild Rose. *D. M.*

Extraordinary Snowdrops. — Last week I gathered from a new locality Galanthus nivalis, the average length of leaves 22 inches, some being as much as 28 inches. Several flower-stems were 24 inches long. The bulbs were very large, and there was less green in the flower than is usually the case, also being more of a lemon-green. An example is enclosed. *E. J. Lowe, Shirenewton Hall, Chepstow.* [The stem of the bulb was blanched for quite half the length, showing how deep in the soil the bulb had got inserted. Ed.].

Sarracenia Patersoni and Todeas at Dr. Paterson's, Bridge of Allan.—A very fine specimen of Sarracenia Patersoni, a hybrid of Dr. Paterson's rearing, is very striking in its mass of highly coloured pitchers, the rich crimson of which was positively glowing in its brilliancy. A frame full of large Todea pellucida and T. superba placed in the cold on the north side of one of the houses was in rare luxuriance, yet the plants had only had the protection of mats during the severest weather, and were often, Dr. Paterson informed me, covered with hoar frost. Not a frond was injured thereby. *W. S.*

Damage by Hail in Cornwall.—About 11 A.M. on Wednesday, March 31, a very severe hailstorm, lasting about eight minutes, passed over this place, leaving these gardens a complete wreck, smashing several thousand feet of glass, not a single house escaping, and none being able to withstand the destructive missiles, which smashed by hundreds panes a quarter of an inch thick. Hailstones were measured and found to be 3 inches in circumference. *W. F., Porthgwidden, Truro.*

The Past Winter.—We have had one hundred frosty nights here during the late winter, which is enough for any gardener, especially after so much rain. Cabbage, Lettuce, Spinach, and Broccoli suffered severely. Other things have escaped pretty well; everything is very backward. Peas sown in 60-sized pots in January and planted out the middle of March are 10 inches high, and the tendrils are fastening themselves to the sticks. Cauliflowers were kept in pits under glass, and are thus saved, and are doing well now under hand-glasses. It has been quite a task to raise in heat the stock of young Cabbages, Lettuces, Onions, Parsley, Cauliflowers, Brussels Sprouts, &c., and to harden them off, so as to be fit to plant in the open quarters towards the end of this month. Where much forcing has been done, the bill for fuel must be a large one. Market gardeners must have suffered very much. *J. Perkins, Thornham Hall Gardens, Suffolk.*

Eucharis amazonica Planted Out.—Mr. Denning's advice—let well alone—I mean to follow, nor can I think the planting is either so profitable or so expedient after all that is said in its favour. It may do for Mr. Denning and others who can afford to plant them in a stove by themselves, and so have a grand display at certain seasons, but I and others of your readers have other things to grow in our stoves besides Eucharis, hence we are forced to adopt methods for growing a quantity in a small space, and I find the system I have adopted certainly the best. I am no admirer of huge blooms, as I consider medium-sized ones best, and more serviceable in bouquets, glasses, and wreaths. Mr. Ward certainly deserves eredit for giving publicity to what I was ignorant of, after twenty years' experience of gardening, viz., that the Eucharis will grow and bloom well underneath plant stages, and I cordially agree with him that, as that is so, he could not put the space to better use. Mr. Denning seems to be rather inclined to think that I have given an exaggerated account of my plants, judging from the tone of his letter, so that I have much pleasure in sending the testimony of one of our leading florists and exhibitors in

this district, who has lately observed our collection, and should any one doubt my success in flowering them so often as to be nearly continuous throughout the year, I would refer to our lady superintendent here, who can testify how seldom her tables are without Eucharis bloom throughout the year. *A. Macdonald, The Gardens, Royal Asylum, Cheadle.*

—— I have lately visited the gardens at the Royal Asylum, Cheadle, and I can safely affirm that the Eucharis seems to lead a charmed life there. They were in the best of condition and health. *T. Miller, The Nurseries, Edgeley Road, near Stockport, April 3.*

Bulbous Plants at Mr. H. R. Wright's Nursery, Lee, S.E. — With the average trade grower "hobbies," so to speak, must not be indulged in, for reasons too well known to need mention here, hence the reason why there is such a limited number of competitors in the classes open to the trade at spring shows. There are, however, a few exceptions. Mr. H. R. Wright, of Turner Road Nursery, Lee, S.E., is one. This grower makes the culture of spring flowering bulbs in pots a speciality not only for market purposes but also for exhibition, and with great success. Hyacinths are grown here in variety to the extent of 10,000 or more, the majority being grown as decorative plants for market. A few hundreds of the newest and finest varieties are however, specially grown for exhibition. These we had the pleasure of inspecting a few days ago, and a most beautiful sight it was, the massive spikes and the brilliancy of colour being most striking. We jotted down a few of the finest examples, conspicuous for size of truss, but they are too many to mention. Tulips are grown to a greater extent even than Hyacinths, and like them the choicest single varieties are grown for exhibition. Single Narcissus are specially well grown here; both proprietor and manager may be congratulated on the possession of such well grown and choice collection of flowering bulbs, and on their success in securing so many leading prizes again this season. *S.*

Spring Budding of Maréchal Niel Rose.—It may not be generally known that this grand Rose may be budded at the present time, if under glass, on last year's wood. I saw at a little market grower's just lately an instance of this. Buds were put in at the same time on the last year's growth of half an inch in thickness, and also on the same year's growth, an ordinary shoot, about the thickness of a penholder. The growth from the older shoot is over 5 feet long and stout in proportion; that from the younger shoot is scarely 2 feet long. It would be interesting to know the result. *T. W., Harrow.*

Salvia Gesneræflora.—Of all the Salvias now grown in gardens this fine old variety still holds its own as being the best and brightest for use in the spring; its pleasing green foliage and bright scarlet flowers being unsurpassed amongst Salvias. I strike the cuttings in this month, the earlier the better, and grow carefully until the end of May, shifting them into larger pots as the plants require it. They are subsequently grown out-of-doors with the Chrysanthemums, and, like them, they are gross feeders. We pot them in the same sort of soil as for the Chrysanthemum, and give them almost the same treatment through the summer, but being less hardy than these they must not be left out-of-doors after the middle of the month of September. Some gardeners plant them out in the open borders after all danger of frost is past, and it is a very good plan if large plants are required, but the pot system is the best suited for small conservatories. Our plants in 10-inch pots are about 4 feet high and 3 feet through at the bottom—beautiful pyramids. The plant supplies showy scarlet flowers from February until April. *D. Elkins.*

Cyclamen persicum.—Few things have come more to the front of late years in the floral world than the above and its varieties, especially with the market growers. For several years past we have grown a batch of about 200, and I know of no plant which gives such a good return for a little extra trouble, seeing that it can be had in good condition eight months in the year. I am looking forward to the time when I hope to produce good flowering plants in the summer months, as it is always admired when seen in good condition. Our three-year-old plants have been and are extra fine this season, the largest are in 10-inch pots. Early in January the best plant measured 2½ feet in diameter, and carried 105 perfect blooms, also a quantity of buds, but having to do duty in the mansion it was very soon shorn of its beauty. Our sixteen months-old plants are in from 4-inch to 6-inch pots, and carry from thirty to eighty blooms, and are very handy for vases and tables for room decoration. We sow seed every autumn, so as to keep up the stock, as a few plants refuse to start at all or start badly every season. We find the Cyclamen should never be allowed to approach dryness at the root, and that planting them out in an east aspect in a cold frame after the first season is preferable to keeping them in pots, and repot in September. *W. Kettlewell, Balrath Burry Gardens.*

Pruning and Trimming Evergreens.—The present is the best time in the whole year for these operations, as shrubs pruned or thinned out now bud and break again almost immediately, and soon hide the cut parts and become refurnished again. Laurels, both common and Portugal, may be taken great liberties with, and if thought desirable, may be headed quite back or cut down, after which they will soon start afresh and form close bushes, if the strong shoots are stopped at midsummer or have the tops snipped off in the spring. Conifers, of nearly all kinds, may also have the straggling branches shortened, and most of them, especially when growing on lawns or in pleasure grounds, are much improved in appearance by being thus made more symmetrical, but formality and stiffness should be avoided, or the natural beauty of the trees will be spoiled. At one time the clipping of evergreens was common, but nothing looks worse than to see them with sides faced up like a wall; and where they are by the sides of walks, and must be kept to certain bounds, shears should not be used, but the cutting effected with a knife, and the branches thinned to let light and air to the young shoots that will then come in the heart of the plants. With hedges the case is different, as they look best closely shaven, and especially is this so with Yew, Holly, and similar plants, and close cutting with these is necessary to keep them thick and impenetrable. Ivy on buildings should also be shorn closely every year, the right time for doing it being now, as every leaf may be taken off without harm to the plants, and by doing this the face of them will be bright and fresh-looking the whole of the season, as the disfigured old foliage is all got rid of and the new comers, free from red-spider and insects that often make it look shabby before the summer is over. Where it can be got at easily, as on low walls or buildings, a scythe is the best tool for trimming Ivy, but where there are projections or irregularities of surface, garden shears are preferable for the work, and as soon as the trimming or clipping is done, it is a good plan to give a brush down by using a birch broom, which will get rid of any *debris* or rubbish there may be in or on the Ivy or wall. *J. Sheppard.*

Diosma ericoides.—A pretty greenhouse shrub from South Africa, with Heath-like foliage and small white flowers, hardly ever met with in cultivation, excepting in certain ancient gardens, although it is difficult to fully understand the reason. In the text-books it is recorded that this species, as also all the other Diosmas, are natives of South Africa, and that this one was first known in this country about 130 years ago, so perhaps it is considered to be antiquated. Probably this is why its culture has been neglected, and it is to be feared that, in the race now-a-days for "recent introductions," this argument applies with equal force to other old favourites, some of which have been from time to time referred to in my notes; for instance, the Datura suaveolens, Clianthus puniceus, Cantua dependens, Cestrum elegans, Centradenia rosea, Erythrina Crista-galli, Mitraria coccinea, and Luculias, &c. To grow the Diosma ericoides successfully is a very easy matter; it simply requires the shelter of the ordinary greenhouse or conservatory, and a compost of sandy peat with a little loam. It is particularly valuable where nosegays are much in request, especially so with scentless flowers, where a few sprigs of its delightfully fragrant leaves have a charm for the olfactory nerves. I remember a huge specimen in the conservatory at Marina, Torquay, which continually furnished a supply for this purpose. *W. Napper, Marsh* 1.

Eupomatia laurina.—The plant described at p. 338 of the present volume as flowering at Kew is correctly named E. Bennettii. It is likewise the same species which flowered in Mr. Henderson's nursery, Pine-apple Place, and both figured and described as stated in the *Botanical Magazine* under the name of E. laurina. This name it had no right to, either then or now. Its identification with E. laurina was a mistake, and the *Botanical Magazine* recognised and acknowledged a difference between it and the figures of Mr. Bauer and the description of Mr. Brown, but did not consider it sufficiently distinct to constitute a new species. The true E. laurina is described in Mueller's *Fragmenta Phytologiæ Australiensis*, i., 45, together with E. Bennettii. Both are figured in *Adansonia*, 9, 2—fig. 1 representing E. Bennettii, and figs. 2 to 5 E. laurina. The latter is also described in Flinders' *Voyage*, ii., 597, published in 1814, and figured in the Atlas appended, t. 2. In all these cases the distinctions between the two species are quite evident. E. laurina does not appear to have flowered in this country, and is a taller, more robust plant than its congener. The solitary flower is axillary, not terminal, and the petaloid staminodia are here much shorter than the fertile stamens, and without the curious glandular hairs and papillæ so characteristic of E. Bennettii. The receptacle has more completely upgrown, enclosing the fruit in the same manner as Victoria and Euryale amongst the Water Lilies, or that of Calycanthus, and has a narrower orifice than its near ally. From a garden point of view E. Bennettii is superior to the other, both on account of the singular, interesting, fragrant, and showy flowers produced on plants not exceeding 1 or 2 feet high. *J. F.*

Spring Bedding.—Unless an extra quantity of bulbs was planted last autumn the spring display this year will be inferior to that of former years. The unusually hard winter has made sad havoc among the Wallflowers, and in any case we shall miss the abundance of rich brown crimson with the delightful fragrance so suggestive of early spring. Scarcely enough is thought of the Crocus as an early spring bedder. I saw at The Cedars, Harrow Weald, last week, quite a grand display of this old-fashioned favourite. The corms were put in singly about three years ago, 4 inches apart, just within the Box edging of a geometrical series of beds. There are now tens of thousands of blooms expanded, of three colours, Cloth of Gold, Mont Blanc, and a large deep blue variety. The effect of the blaze of cheerful colour when the sun is shining is very fine indeed. In Mr. Kingsmith's beautiful little garden at Eastcote there is a zone of white Crocus, about a foot wide, planted within 6 inches of the margin of a sloping lawn, and left undisturbed from year to year; the dying leaves simply are removed early in May. The brilliance of the opening petals and golden anthers when a gleam of sunshine smites them is quite remarkable—the effect is strikingly beautiful. *T. W., Harrow.*

Figs: Young Trees Unfruitful. — The general experience of most cultivators with Figs that are planted out in borders and growing under glass, is that for the first two or three years the young trees bear little or no fruit, owing in a great measure to their vigorous growth, consequent on unrestricted root-space, and the unexhausted material of which the border is composed and which is more conducive to the production of wood than fruit. There are also certain varieties, such as Negro Largo, Brunswick, and White Marseilles which, although they may have been planted out some few years, are very shy bearers, indeed it is mostly owing to this fact that they are seldom to be met with under cultivation in any condition other than pot culture. As a remedy for this state of things I would commend the following plan: Pinch out all terminal wood-buds, and also the lateral ones as fast as they appear; by so doing the young fruit, which is in an embryo state and for the time being invisible, will soon make its appearance, *i.e.*, if last year's wood was thoroughly ripened. When a sufficient number of young fruit for a crop has been secured, the succeeding wood-buds which will push forth in due time may be allowed to grow. To many of your readers this course of treatment may appear to be unusual, if not original; I may add, however, that a three years' experience of it, justifies me commending it in these columns. A young tree of Negro Largo planted against a back wall in one of the vineries last year is at the present time showing fruit freely, but which, I would venture to say, would hardly have been the case if the terminal wood-buds had been allowed to grow. *J. Horsefield, Heytesbury.*

Anthracite Coal.—Your correspondent, Mr. Ray, in your issue of April 3, says Mr. Rust's note is not satisfactory because he omits the price of coke and anthracite. No doubt Mr. Rust will reply to his note, but at the same time I should like to give Mr. Ray and others my experience of anthracite, having given it a fair trial. I find it far superior to any other fuel I can get for horticultural purposes. I am not going to recommend it for tubular boilers, for I have not tried it in them, but for saddle boilers in any shape, I believe it to have no equal. The boilers I have here are three of the "Lankester" saddle, one checkback saddle, and a small common saddle. Before I used anthracite I used sometimes steam coal, and sometimes coke. I made it a practice of getting two trucks of steam coal on the first of each month—that is, winter and spring months—15 tons at 15*s.* 6*d.* per ton; this would amount to £11 12*s.* 6*d.* per month; if coke, 16 tons per month, at 16*s.* per ton, this would amount to £12 16*s.* per month. Now, one truck of anthracite will last the month, 9 tons 14 cwt. at 17*s.* 8*d.* per ton only amounting to £8 11*s.* 4*d.*—a saving of £3 1*s.* 2*d.* over steam coal, and £4 4*s.* 8*d.* over coke. Of course, some can get both steam coal and coke at much cheaper rates than I can here, but I am sure if they once give anthracite coal, as raised and sold by Mr. Pascoe, Swansea, a fair trial, they will always use it. It wants but very little stoking—in fact, it is much best not to poke it about. Draw a pointed bar through the fire bars to let the ash through, and you will find it burn freely, without smoke, with very little

dust, and keep up a uniform temperature. I have recommended it to several, and they all seem highly pleased with it. I believe there exists a prejudice against its use. But put prejudice on one side and give it a fair trial is the advice of one who has derived great benefit from its use for horticultural purposes. *F. Jennings, Roselands, Woolston, Hants.*

—— In answer to Mr. Ray (p. 437). I have to say that coke delivered into the gardens here costs 19*s.* per ton (not chaldron), which is not dear; but even at this price the coal has much the advantage, after being carried all the way by rail from Swansea, some 250 miles; and, notwithstanding what your correspondent says, I affirm that it is much the more powerful fuel of the two, and after a fair trial we find that 13 cwt. is equal to a ton of coke in heat-giving, and thus 5*s.* cheaper. The price of the coal, of course, entirely depends upon the distance it has to be carried from the pit. Our boilers are all of the various forms of the saddle. Anthracite suits them admirably. *J. Rust, Eridge Castle, Sussex.*

American Blackberries.—Replying to Mr. Culverwell, I wish to say I too purchased a dozen plants, and after waiting a considerable time they came to hand—poor objects indeed. I potted them in 32-size pots, and they all made a shoot averaging 1 foot; they have been kept in these pots till just recently, when I planted them out (having withstood the 26° of frost registered here on the 6 h inst.), and was glad to see some very strong breaks at the bottom of each shoot. Of course there were no fruit last season or will be very little this. I purchased two seasons ago two dozen of the Parsley-leaved Bramble; these bore well last season, but then they were established plants. I hope to give more information respecting the American imported plants at the end of the season. *J. Scouse, Stapleford Park, Melton Mowbray.*

—— Presuming that we are the firm in question to which your correspondent, "T. W. S.," refers (p. 431) in your last week's issue, we are assured that even he will at least allow us to bring forward the correct facts of the case. When we introduced the Blackberry, Wilson Junior, from America last spring the plants had just undergone an exceptionally severe winter—even for their native habitat; consequently, not only was their hardiness unduly tested, but they further suffered the disadvantage that when the weather permitted of their being shipped the season was far advanced. The plants thus arrived here at a very late period, and we can but think that even "T. W. S." will allow that under these circumstances the Wilson Junior did not receive the fair chance that should be accorded to introductions in general. In the ensuing autumn —taking into account all the contingencies of the case—we intimated to all those who had purchased this variety from us that we should be pleased to replace all plants that had failed to grow; and had "T. W. S." made us acquainted with the fact that only two out of his dozen plants had survived, we should have supplied him with ten more gratuitously, as we have done in all cases where we have been advised of their failure. If "T. W. S." will make inquiries upon the subject in America he will certainly find, as we have seen with our own eyes, that when he compares Kittatiny to the Wilson Junior it is like comparing an infirm old man with a young giant; he need only institute inquiries among American horticulturists to be at once enlightened upon this point. Kittatiny, as is well known, is a good variety, but it is tender, is a mid-season cropper, and very liable to rust. Whereas Wilson Junior, on the other hand, is exceptionally hardy, very early, and decidedly the largest of all the American varieties. To corroborate our statement upon this point, and also as to its unparalleled cropping qualities, we will refer him to the annexed testimonial, furnished by the eminent American horticultural artist, Mr. Blanc, who as a competent authority, could enlighten "T. W. S." upon the superiority of the Wilson Junior.

Extract from Testimonial.

"I can safely testify that the size of the berries is not exaggerated in the least, for I have measured at least twenty-five berries that averaged over 4¼ inches around lengthwise, and 3¾ inches around crosswise. As to the number of berries on a single branch I can simply say that none were added, and that no figure could do justice to the specimen brought to me, which measured nearly 3 feet in circumference. I showed the branch . . . to several interested parties, and they all said it was the finest thing of the kind they had ever seen, and would not have believed the truthfulness of the figure if they had not been the branch itself. As to the quality of the fruit every one who tasted them pronounced them to be exquisite. *A. Blanc, Artist.*"

We have undergone enormous expense in introducing the Wilson Junior, and, in common with other English houses who recommended this grand Blackberry to their customers, shall take our stand by this variety with every confidence; and are assured that when the Wilson Junior is once established in this country it will be accorded one of the highest positions among the hardy fruits. We may further mention that within a mile or so from where we write, this magnificent variety astonished persons who were previously quite as prejudiced as "T. W. S." *Viccars, Collyer & Co.*

American Pear Blight.—In a notice of fruit diseases in New Zealand, in a recent number of the *Gardeners' Chronicle*, the term "American blight" is used to indicate a disease apparently due to insects. In Eastern United States this name is applied to a prominent disease of Pear trees, also well known as "fire-blight" and "frozen-sap blight." The most characteristic feature of this disease is the death of the branches, subsequent to the appearance of the foliage, without obvious cause, and usually with apparent suddenness. In the Pear it affects the limb and the leaves, both of which turn blackish, and usually exhale a peculiar but not very strong odour. From the softer stems there exudes a viscid whitish substance, forming small drops on the surface of the bark. This gummy matter has been found to consist of bacteria imbedded in a viscid substance, which they produce by their activity. These bacteria (Micrococcus amylovorus, B.), are known to be the cause of the disease. The proof of this was given in a late number of your journal. This is one of the most destructive diseases of plants known in America, and has received a great deal of attention from fruit growers, and more recently from scientific men. It would be very interesting to know if this disease occurs in England or anywhere in Europe. So far as writers on the subject in this country (United States) know at present, it has not been reported outside of Eastern North America. It is hoped that some correspondent of the *Gardeners' Chronicle* who knows will state the facts in regard to the matter. *J. C. Arthur, Botanist, Geneva, New York Agricultural Station.*

ROYAL CALEDONIAN HORTICULTURAL.

The spring flower show of the above Society was held on the 7th and 8th inst. in the Waverley Market, Edinburgh. Notwithstanding the weather the show was, taking it as a gathering of horticultural merit, one of the best that the Society has brought together at this season of the year. There were fewer of the large tables of plants usually contributed by the nursery trade of Edinburgh, yet all the leading nurserymen were represented, and well represented, too. Their contributions in every case were suggestive that for once they had given their minds to making a selection of the best things that they individually make specialties of, and the result, as regards this feature of the show, was very satisfactory. The entries for the professional and amateur classes were in point of numbers somewhat below those of former years, but the exhibits were fully up to the standard of merit usually seen at the Society's shows, which is a high one.

Looking over the exhibits in the order of the schedule one of the most striking features in class 1 (plants) was a table of plants 20 feet by 5 feet, arranged for effect. There were but two exhibitors, and the 1st prize table was a very meritorious one, put up by Mr. Glossari, gr. to James Buchanan, Esq., Oswald Road. It was very light and graceful, and composed of remarkably choice materials; a carpet of Adiantum cuneatum and Selaginellas formed the groundwork, from which arose in rich array spikes of Odontoglossums, Oncidiums, Dendrobiums, Cattleyas, light feathery Palms and Ferns of the same character, and masses of Cyclamens, Primulas, and Mignonette, making a very pleasing and elegant group.

Hardy spring flowers, for which a table 10 feet by 5 feet for each exhibitor was provided, brought forward three competitors. All were meritorious, but the 1st place was easily secured by Mr. Robertson Munro, of Abercorn Nursery, whose collection exhibited great distinctiveness, and contained many rare and choice species and varieties of spring flowering alpine herbaceous and bulbous plants.

Azaleas, though rather numerous, were an indifferent lot, the best being four fairly well bloomed and well formed specimens from Mr. John Paterson, gr. to Jas. Syme, Esq., Millbank.

In the class of six stove and greenhouse plants the last named veteran exhibitor made an easy 1st with good plants of Erica Bothwelliana superba, E. profusa, Tremandra ericoides, Rhododendron Princess Alice, Acacia armata, and Epacris Kinghornii.

In the class devoted to Orchids, that for six plants brought only one competitor—Mr. R. Glossart, who tabled very well-flowered and healthy specimens of Vanda suavis, Ada aurantiaca, Dendrobium Wardianum, Cœlogyne cristata, Cymbidium Lowii and C. eburneum. Mr. J. Curror, gr. to George Douglas, Esq., Eskbank, was 1st in the class for three Orchids, the most notable plant in the three being Dendrobium Ainsworthii, the healthy condition of which and its rich display of bloom reflected the highest credit on Mr. Curror as an Orchid cultivator. A class for four Pitcher-plants brought only one exhibitor, Mr. J. McIntyre, Darlington.

Ferns made a rather large display, having eight classes devoted to them and they were on the whole well represented, filmy Ferns being particularly well cultivated and set up—those from Mr. A. W. Anderson, which took the 1st prize, being the production of an amateur were especially fine samples of successful culture.

Table plants were a numerous class and well represented as regards quality, elegance of foliage, and grace of habit, evidently forming the ideal that all competitors had set up for themselves in making their selection.

Mignonette were particularly fine, both standard and dwarf plants.

Hyacinths were a grand display, but generally not up to the quality we have seen at this Society's shows in former years. The twelve staged by Mr. A. Kerr, Sunlaws, Kelso, were, however, very superior in the gardeners' class; while the twenty-four put up by Mr. McKenzie, of Glasgow, in the nurserymen's class which took the 1st prize, where above average merit.

Cut flowers were well represented by Camellias, Roses—Maréchal Niel figuring largely among the latter those from Messrs. Laird & Sons in the nurserymen's class being remarkably fine, as were also those from Messrs. Greive & Bowman.

Fruit was meagre in quantity, but generally speaking of good quality. Mr. W. McIntyre, of The Glen, Innerleithen, was a good 1st in Pine-apples, and was followed closely by Mr. McIndoe, of Hutton Hall, Guisborough, who took the 2d prize.

Mr. Dow, Newbyth, exhibited an excellent six pots of Strawberries, and Mr. McIndoe a marvellously fine dish of Keens' Seedling Strawberry, in such size and finish as is rarely seen.

Vegetables were not numerous, but a very excellent show as regards quality. The collection from Mr. Potter, North Berwick, was very excellent, both as regards the quality and the variety presented—spring Peas and Carrots and Potatos, magnificent Brussels Sprouts, Celery, Seakale, grand Leeks, Broccoli, Kidney Beans, Rhubarb, Savoys—all in the most fresh and presentable condition, and well set up, were a most cheering sight so soon after the recent months of snow and frost experienced in these northern parts.

Turning to the nurserymen's tables arranged for effect the palm must be given to that of Messrs. Laird & Sons, which was composed of a rich variety of flowering plants, such as Azaleas, Cyclamens, Lilacs, Hyacinths, Mignonette, and choice Palms and Ferns—the materials few, and comparatively simple, but the effect most pleasing.

Messrs. Ireland & Thomson had a very attractive table of choice stove and greenhouse plants, including many fine Odontoglossums and other Orchids. Messrs. Dickson & Co. put up a very tasteful table of miscellaneous stove, greenhouse, and hardy plants. Messrs. Methven & Sons a gorgeous and well-arranged mass of Rhododendrons, for which they are famous; Azaleas, Cyclamens, and other flowering plants, relieved by outstanding plants of Japanese Maples, which had a charming effect. Messrs. J. Dickson & Son also exhibited a tasteful table of miscellaneous flowering and foliage plants; and Messrs. Cunningham, Fraser & Co., of Comely Bank, brought together a miscellaneous group of greenhouse and hardy plants, interesting especially to the lovers of old-fashioned types of greenhouse plants. All we can at present specify are splendidly flowered samples of Grevillea lavandulacea rosea, Kennedya monophylla, and Acacia grandis.

Specialties not provided for by the schedule were not numerous, but were important. First among these was a small group of Orchids from Messrs. Thomson & Sons, of Clovenford. The principal interest was centered on their new Dendrobium Leechianum, raised by hybridising D. nobile with D. heterocarpum by Mr. Swan, of Fallowfield, Manchester. It is an immense advance on any Dendrobe of the type, having flowers of large size and great substance, with the fragrance of the violet, and withal a free, healthy, vigorous habit of growth. To Orchid growers and decorative caterers in the horticultural way it will prove indispensable above all other species or varieties of the tribe at present known. A First-class Certificate was awarded it, and the general interest the fine plant exhibited attracted was remarkable.

Fortune's Yellow Rose.—A fine display of flowers of this fine Rose was made by Mr. Inglis, Howick Hall Gardens, created some comment. They had a fine rosy-bronze tint in the bud, which ill-accorded with the idea of a yellow Rose; nevertheless, they were the veritable Roses they were represented to be, the foliage and the form of the flowers being incontestable evidence of its identity. And as further proof of this, Mr. Inglis told the writer that the cuttings from which he raised his plants were received from Mr. Holford, of Westonbirt, Gloucestershire, and that the blooms of his plants are always pure yellow. Mr. Inglis cannot account for the high colour of his blooms in any other way than that the compost used contains a pretty liberal allowance of peat.

Obituary.

The death is announced of the Right Hon. Lord Penrhyn, on the morning of March 31, at Penrhyn Castle, North Wales. Lord Penrhyn had considerable connection with arboriculture, not only as the owner of one of the finest collections of Coniferæ in the country, but as an extensive planter as well. His love of trees was not merely a superficial one. The Corsican Pine (Pinus Laricio) was an especial favourite with him, as he recognised in it a tree well adapted for general estate purposes, and in view of which it was extensively planted as a general forest tree—notably eighteen years ago, when a 30-acre plantation, at 600 feet altitude, on the Snowdon range was, by his express wish, planted with the Laricio as standards, at 16 feet apart all through. The Cornish Elm (Ulmus cornubiensis) was another tree of which he had formed a high opinion, the semi-fastigiate habit, stately growth, and neat though by no means stiff appearance, rendering it as a single specimen well adapted for gracing the more conspicuous positions on the lawn or grounds. Lord Penrhyn was not only a lover of the picturesque, but fully alive to the necessity of extensive planting, and by his enterprise and forethought he clothed, with a fair proportion of carefully laid-out plantations, many of what fifty years ago were dreary, treeless stretches of hill land in Carnarvonshire.

—— Edward Solly.—The death of this gentleman, in his 67th year, is announced. There are few now who remember this gentleman as connected with the Horticultural Society, yet for some years he acted as Professor of Chemistry to the Society, and conducted elaborate series of experiments in the garden at Chiswick on the effects of manures, on the Potato disease in its chemical aspect, on the continued cultivation of Wheat on the same soil, and other matters. At that time there was a Chemical Committee to watch over the chemical interests of horticulture, and Solly and Daniell and Royle were among the luminaries of the day who took part in the deliberations. Professor Solly was also the author of a series of articles on rural chemistry, which were published in the earlier volumes of this journal, and which were afterwards republished in book form under the title of *Rural Chemistry*. The book is of course out of date now, but at the time it was an excellent handbook.

The Weather.

State of the Weather at Blackheath, London, For the Week ending Wednesday, April 7, 1886.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 18 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall
April	In.	In.	°	°	°	°	°	°			In.
1	29.95	+0.20	53.0	37.5	15.5	45.6	+ 1.4	33.8	64	S.W., S.S.W.	0.00
2	29.63	−0.12	57.5	41.0	15.6	51.1	+ 6.7	44.0	75	S.S.W.	0.19
3	29.74	−0.01	52.8	45.2	7.6	48.1	+ 3.5	38.5	70	S.S.W.	0.00
4	29.73	−0.01	50.3	40.0	10.3	45.2	+ 0.4	43.5	94	S.W., S.S.W.	0.00
5	29.71	−0.03	57.2	42.3	14.9	49.5	+ 4.6	39.1	67	S.W.	0.00
6	29.57	−0.17	52.1	45.5	6.6	48.3	+ 3.3	35.7	62	W., W.S.W.	0.01
7	29.70	−0.04	46.8	33.9	12.0	41.0	− 4.2	33.5	75	S.S.W.	0.02
Mean	29.72	−0.03	52.8	40.0	11.0	47.0	+ 2.2	38.3	72	S.S.W.	0.22

April 1.—Very fine day.
— 2.—Very fine from early morning till 10 A.M.; slight rain at 10.15 A.M.
— 3.—Fine day, sun shining occasionally.
— 4.—Dull day.
— 5.—Dull morning; fine afternoon.
— 6.—Dull morning; fine and bright in afternoon.
— 7.—Dull day, slight rain falling at times during the day.

London: *Atmospheric Pressure.*—During the week ending April 3, the reading of the barometer at the level of the sea increased from 29.84 inches at the beginning of the week to 29.88 inches by 9 A.M. on the 28th, decreased to 29.61 inches by 1 P.M. on the 29th, increased to 30.08 inches by 9 A.M. on the 30th, decreased to 29.66 inches by 9 A.M. on March 31st, increased to 30.15 inches by 1 P.M. on April 1st, decreased to 29.79 inches by 5 P.M. on the 2nd, and was 29.94 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29 87 inches, being 0.13 inch lower than last week, and 0.06 inch lower than the average of the week.

Temperature.—The highest temperature in the shade in the week was 58°.1, on March 28th; on the 30th the highest was 48°. The mean of the seven high day temperatures was 53°.2.

The lowest temperature was 36°, on March 30th; on the 28th the lowest temperature was 48°. The mean of the seven low night temperatures was 41°.2.

The greatest range of temperature in one day was 15°.6, on April 2nd; the smallest, on the 3rd was 7°.6. The mean of the seven daily ranges was 12°.

The mean temperatures were, on March 28th, 15°.9; on the 29th, 44°.3; on the 30th, 42°.9; on March 31st, 46°.4; on April 1st, 45°.6; on the 2d, 51°.1; and on the 3rd, 48°.1; and these were all above their averages (excepting March 30th, which was 0°.8 below), by 8°.9, 1°., 2°.4, 1°.4, 6°.7, and 3°.5 respectively.

The mean temperature of the week was 47°.2, being 3°.1 lower than last week, and 3°.3 higher than the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 107° on April 2d. The mean of the seven readings was 100°.2.

The lowest reading of a minimum thermometer placed on grass was 34°.2, on March 30th. The mean of the seven readings was 36°.3.

Rain fell on five days, to the amount of 0.58 inch.

England: *Temperature.*—During the week ending April 3, the highest temperatures were 63°.5 at Cambridge; 61° at Hull; 60°.3 at Liverpool; the highest at Brighton was 54°.3, at Newcastle 55°, at Plymouth 55°.7. The general mean was 58°.1.

The lowest temperatures were 40°.1 at Plymouth, 38° at Truro and Brighton; the lowest at Wolverhampton 31°.6, at Hull and Sunderland 35°. The general mean was 36°.3.

The greatest ranges were 28° at Cambridge, 26°.0 at Hull, 25°.2 at Wolverhampton; the least ranges were 15°.6 at Plymouth, 16°.3 at Brighton, 18° at Newcastle. The general mean was 21°.8.

The mean of the seven high day temperatures was highest at Cambridge, 57°.6, at Sheffield 54°.8, at Leeds 54°.4; and was lowest at Newcastle, 50°.5, at Wolverhampton 51°.1, at Bradford 51°.2. The general mean was 52°.8.

The mean of the seven low night temperatures was highest at Plymouth, 43°.7, at Truro 43°, at Bristol and Cambridge 41°.5; and was lowest at Hull, 38°.4, at Sunderland 39°.3, at Bradford 39°.6. The general mean was 40°.4.

The mean daily range was greatest at Cambridge, 16°.1, at Hull 15°.6, at Sheffield 15°.2; and was least at Plymouth, 8°.3, at Truro 9°.9, at Bristol 10°. The general mean was 12°.4.

The mean temperature was highest at Cambridge, 48°.3, at Blackheath 47°.2, at Truro 46°.6; and was least at Wolverhampton, 42°.3, at Newcastle 43°.7, at Bradford 44°.1. The general mean was 45°.3.

Rain.—The largest falls were 2.20 inches at Bristol, 1.84 inch at Nottingham, at Wolverhampton and Sheffield 1.80 inch; the smallest falls were 0 12 inch at Newcastle, 0.18 inch at Sunderland, 0 48 inch at Liverpool. The general mean fall was 1.07 inch.

Scotland: *Temperature.*—During the week ending April 3, the highest temperature was 55°.8, at Aberdeen; at Greenock the highest was 53°.2. The general mean was 54°.6.

The lowest temperature in the week was 22° at Greenock; at Glasgow and Leith the lowest temperature was 34°. The general mean was 30°.3.

The mean temperature was highest at Leith 43°.5, and lowest at Greenock, 41°.3. The general mean was 42°.5.

Rain.—The largest fall was 2.02 inches at Greenock; and the smallest fall was 0.42 inch, at Aberdeen. The general mean fall was 0.97 inch.

James Glaisher, F.R.S.

Summary of Temperature, Rainfall, and Duration of Bright Sunshine in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, April 5, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been cloudy or dull generally, with frequent and rather heavy rain. Some clear and bright intervals, however, have prevailed at times. Thunderstorms were experienced in some localities during the early part of the period, and in the west and north aurora was observed.

The *temperature* has been 1° or 2° above the mean over southern, central, eastern, and north-eastern England; but 1° or 2° below it in most other parts of the kingdom. The highest of the maxima, which were recorded on April 2, ranged from 53° to 59° in Scotland, from 58° to 60° in Ireland, and from 59° to 62° in England. The lowest of the minima were generally registered either on March 30 or April 1, and varied from 27° in "Ireland, N.," to 35° in "England, N.E.," "England, E.," and "England, S.,"and to 40° in the "Channel Islands." A minimum of 23° was reported at Nairn ("Scotland E.,") on April 2, but its accuracy appears doubtful.

The *rainfall* has been more than the mean in nearly all districts.

Bright sunshine has been more prevalent than it was last week, the percentages of the possible amount of duration ranging from 20 in "England, N.W.," and "Ireland, S.," to 43 in the "Channel Islands," and 48 in "Scotland, E."

Depressions observed.—The distribution of barometric pressure continued cyclonic, the barometer being highest over France, with numerous depressions passing over or skirting our western and northern coasts. Some of these disturbances were very deep, and the southerly to westerly wind which prevailed in all parts of the kingdom was fresh to strong, occasionally increasing to the force of a gale. The gale experienced over our north-western districts on March 30 was unusually severe.

Variorum.

Wild Silk in Nicaragua.—In connection with the subject of spider silk, which has attracted some attention of late, the following paragraph, from a report of the British Consul at Nicaragua, will be read with interest. Consul Jessel says:—"There is one product I omitted to mention in my last report, and which, although known to naturalists, has never received the attention it deserves. I refer to a species of wild silk, which is found in considerable quantities on the trees in the Segovia mountain range. The Indians of that neighbourhood collect and spin it into string and rope, from which reins for mules are made and other ornamental and useful articles manufactured. Such articles are generally dyed with bright red and yellow colours prepared by the Indians. From all accounts the worm (for it is not spider silk) which spins this silk is exceedingly similar to the genuine silk-worm; the trees from which the material is gathered appear to be a species of Fir tree, upon which the threads extend from bough to bough like gigantic cobwebs."

Trinidad Tobacco.—Two samples of Tobacco have recently been received at the Kew Museum which were grown and cured at Chaquanas in the Island of Trinidad. The Tobaccos consist of the kinds known as Havana leaf and American. Upon submitting these samples to one of the principal Tobacco brokers in London for their opinion they report upon them respectively as follow:—*Havana Leaf.*—Rather short and narrow, brown and dingy brown in colour. Very small part thin, remainder coarse, and all with very thick veins, rendering it useless for cigar purposes, bad burning, mild flavour, and not objectionable. 2. *American.*—Longer leaf, but narrow; brown, part dark, very large midrib, and part coarse veins; bad burning, and poor flavour. In their general remarks on the Tobacco samples the brokers say that they are unable to give a specific value to the article in its present state, but they think that, with attention to the growth and fermentation, it might be made a saleable article. The breadth of the leaf must be increased, and the coarseness of the veins reduced, when, by [proper [fermentation, the burning properly might be improved.

Answers to Correspondents.

*** Our Telegraphic Address.—*Our correspondents are requested to bear in mind that our Registered Telegraphic Address is* "Gardchron, London." *Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

Apple Trees : *E. F.* Standard Apple trees, if young when planted, should be cut back severely the next year after planting, so as to form a good well-shaped basis for the future tree. After this not much more pruning should be attempted beyond annually cutting clean away the barren shoots which spring up in the centre of the head. Any strong shoots likely to monopolise too much of the strength of the tree must be shortened back one-third or half, or else be bent downward and secured in that position for several years. If the leading branches of standard trees are cut back the head rapidly becomes a tangle of shoots, and the crop is inferior in size if large in numbers. Bush and dwarf trees, espaliers, and cordons, subjected to periodical root-pruning and lifting, must be induced to form fruit-buds by hard pruning in addition. In old trees not vigorous enough to furnish wood abundantly, fruitfulness may generally be maintained by pruning alone—at least, in medium soils of no great depth.

Asparagus : *A. F.* Conover's Colossal is one of the best, but much will depend on cultivation. Distance 3 feet between the rows, and 2½ feet from plant to plant in the row. The beds will, therefore, be 9 feet broad, and an alley of 2 feet. There will be 3 lines in a bed, and the beds should be 11 feet from centre to centre.

Aspidium falcatum Fronds : *J. W. O.* The frondlets seem to be eaten by some kind of leaf-miner, but we found no insect. Send better examples secured in damp moss.

Correction.—I have to correct an error which I made in last week's issue (p. 431) regarding Apple Wareham Russet. I find that this variety is included in the catalogue of Messrs. James Dickson & Son, also of Chester. *Edward Ward, Hewell Gardens, Bromsgrove.*

Croton Leaves Disfigured : *J. S.* Due to exposure to the sun whilst wet and very young. Hard water may have had something to do with it. Rain-water is always the best for plants.

Degeneracy of Apples : *X.* A very old notion. Virgil has—

"Pomaque degenerant succos oblita priores;"

but the notion is not accepted at the present day, the degeneracy being accounted for by other causes.

Dendrobium : *T. H. A.* A very good form of D. nobile.

Diseased Bulbs : *Croton.* The bulb of the Eucharis is sound, but that of the Vallota had both the fungus disease figured in our issue for last week and the Eucharis mite. If you retain your present stock of bulbs matters will go from bad to worse. It would be better to destroy all, and wait a year or two before recommencing bulb culture.

Florist's Business : *W. Y. D.* As regards the locality, the best parts are those in the best thoroughfares. Rent is high there, but so also are the profits. In the suburbs less business is done, and it is less remunerative. Strict attention is not the all-in-all, as you would find it necessary to have an intimate knowledge of the working of the trade. If you or your wife could get employment in a good florist's for one year it would be of much service. You can lose your money just as easily by not knowing how to trade as by dealing with swindlers. We know of no books treating of the subject.

Glazed Flower-pots : *X.* We cannot advise you to use them for other than temporary purposes. However good the drainage may be, there is a want of proper evaporation from the soil, which becomes sour and sodden. We have had an excellent illustration of this this winter in which some Euonymus grown in glazed pots were much injured by frost, while others in ordinary pots, under the same circumstances, were relatively uninjured.

Hyacinths and Tulips : *J. C.* These are not greenhouse plants, properly so called, but hardy bulbs grown in pots for early decoration in such structures. We think you were properly disqualified.

Insect : *F. R.* It is Otiorhynchus sulcatus, a method of catching which will be found in our issue for February 27 this year.

Manures : *F. N.* All three manures that you mention are good for causing rapid and vigorous growth, but their tendency is to favour the development of leaves and wood rather than of flowers ; you should therefore be careful to use only small quantities, and not to use them before the flower-buds are formed. When formed, you may use either of them with advantage to the size, colour, and substance of the flowers. A tablespoonful to 2 gallons of water will be ample.

Names of Plants : *J. Morton.* Anemone hortensis var. pavonina.—*C. C. J. G.* By sending two or three bits of half-dry mutilated leaves, and requesting us to give the name of the plant from which the scraps were taken, the sender must certainly credit us with an amount of knowledge bordering on the supernatural. We regret to say he is by no means a solitary exception.—*W. Lewis.* Kennedya monophylla.—*J. H. C.* 1 and 2, both Primula viscosa ; No. 2 is the typical form, No. 1 a slight variation from it.—*A. Chalmers.* 1, Vanda tricolor ; 2, V. suavis, Veitch's variety.—*W. B.* Cymbidium aloefolium.—*M. M. R.* A species of Podocarpus, we cannot tell which.—*Sender of three Ferns.* 1, Aspidium capensis (Polystichum) ; 2, Polypodium Catherinæ ; 3, Lepycistis sepulta.

Names of Fruits : *Veronica.* 1, Golden Reinette ; 2, Duck's-bill of Sussex ; 4 and 5, Northern Greening ; others not recognised.—*J. G. I.* Bess Pool.

Plant Forms as Applied to the Decorative Arts : *T. Milroy.* There are several such books. Apply to the Secretary, Science and Art Department, South Kensington.

Rosa pomifera : *J. E. B.* (our correspondent at p. 441) can procure plants of this species from Messrs. Rodger M'Clelland & Co., Newry, Ireland.

CATALOGUES RECEIVED.

R. B. Laird & Sons, 17, South Frederick Street, Edinburgh, N.B.—Florists' Flowers, &c.

Jacob W. Manning, Reading Nursery, Reading, Mass., U.S.A., Trees and Shrubs.

W. Paul & Son, Waltham Cross, Herts—New Roses.

M. Rozain-Boucharlat, à Cuire-lès-Lyon, Rhone, France—General Plant Catalogue for 1886.

S. A. Elliot, 95, London Road, Ipswich—Baskets, &c.

Communications Received.—F. N.—G. N. (with thanks).—Canon Ellacombe (with thanks)—W. S.—Rev. F. D. Horner.—Sendtner, Munich.—W. E. G.—A. F. B.—J. R. J.—G. H.—Baron von Mueller, Melbourne.—D. D.—O. T.—W. S. M.—J. V. & Sons.—C. Bros. & Co.—Wild Rose.—W. C.—R. D.—J. F.—W. F. (next week).

Markets.

COVENT GARDEN, April 8.

Trade steady at last week's quotations. A few samples of new Grapes to hand, but fetching low prices, consequent upon the supply of old Grapes being well maintained. *James Webber, Wholesale Apple Market.*

Fruit.—Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0	4 0	Pears, per dozen	12 0	15 0
— Canadian, barrl.	8 0	21 0	Pine-apples, Eng., lb.	1 0	..
Grapes, per lb.	.. 3 0	8 0	— St. Michael, each	2 6	8 0
Kent Cobs, 100 lb.	40	..	Strawberries, per lb.	4 0	12 0
Lemons, per case	.. 8 0	10 0			

Vegetables.—Average Retail Prices.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mint, green, bunch	1 0	..
Asparagus, Eng., 100	10 0	..	Mushrooms, punnet	1 0	1 6
— French natural, per bundle	3 0	8 0	Mustard and Cress, do.	0	4 ..
— Spanish natural, per bundle	4 0	..	Onions, per bushel	5 0	..
Beans, Kidney, lb.	3 0	..	Parsley, dozen bunch	2 0	3 0
Beet, red, per dozen	1 0	2 0	Parsnips, per dozen	1 0	..
Broccoli Sprs., bush.	5 0	..	Potatos, per cwt	4 0	5 0
Carrots, per bunch	0 6	..	— kidney, per cwt	4 0	5 0
Cauliflowers, per doz.	3 0	4 0	Salsafy, per bundle	0 9	..
Celeriac, per root	0 4	..	Savoys, per dozen	3 0	5 0
Celery, per bundle	1 6	..	Scorzonera, p. bundle	1 0	..
Coleworts, doz. bunch	8 0	..	Seakale, punnet	2 6	..
Cucumbers, each	0 9	1 0	Shallots, per pound	0 3	0 9
Endive, per dozen	1 0	2 0	Spinach, per bushel	4 0	6 0
Herbs, per bunch	0 4	..	Sprouts, per pound	0 9	..
Leeks, per bunch	0 6	..	Sprue Asparagus, per bundle	1 0	..
Lettuce, per dozen	1 0	1 6	Tomatos, per lb.	1 6	2 6
			Turnips, bunch	0 6	..

Potatos.—Market all lower than last week by 5s to 10s. per ton.

Plants in Pots.—Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0	18 0	Ferns, in variety, per doz.	4 0	18 0
Arum Lilies, dozen	9 0	..	Foliage Plants, various, each	2 0	10 0
Azaleas, per doz.	24 0	42 0	Genistas, per dozen	10 0	15 0
Begonias, per dozen	6 0	12 0	Hyacinths, per doz.	6 0	9 0
Bouvardias, doz	12 0	18 0	Lilies in clumps, or pots, per dozen	18 0	30 0
Cinerarias, per doz.	10 0	12 0	Marguerite Daisy, per dozen	8 0	12 0
Cyclamens, 12 pots	9 0	24 0	Myrtles, per dozen	6 0	12 0
Cyperus, per dozen	4 0	12 0	Palms in var., each	2 6	21 0
Daffodils, per dozen	9 0	12 0	Pelargoniums, doz.	18 0	24 0
Dracæna terminalis, per dozen	30 0	60 0	— scarlet, per doz.	6 0	9 0
— viridis, per doz.	12 0	24 0	Primulas, single, 12 pots	4 0	6 0
Ericas, various, per dozen	12 0	24 0	Spiræas, per dozen	12 0	15 0
Euonymus, in var., per dozen	6 0	18 0	Tulips, 12 pots	6 0	9 0
Evergreens, in var., per dozen	6 0	24 0			
Ficus elastica, each	1 6	7 0			

Cut Flowers.—Average Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Acacia (Mimosa), Fr., per bunch	1 0	1 6	Marguerites, 12 bun.	6 0	12 0
Anemone, French, 12 bunches	3 0	6 0	Mignonette, 12 bun.	3 0	9 0
Arum Lilies, 12 blms.	0 8	0	Pelargoniums, per 12 trusses	1 0	1 6
Azaleas, 12 sprays	0 6	1 0	— scarlet, 12 trusses	0 6	1 0
Bouvardias, per bun.	0 6	1 0	Primulas, double, per bunch	0 6	1 0
Camellias, 12 blms.	1 0	6 0	— single, per bunch	0 4	0 6
Carnations, 12 blm.	1 0	3 0	Roses (indoor), doz.	2 0	6 0
Cyclamens, doz. blms.	0 4	0 6	— Tea, per dozen	2 0	3 6
Daffodils, per bunch	0 3	1 6	— red, French, doz.	2 0	4 0
Epiphyllums, 12 blms.	0 6	1 0	Tropæolums, 12 bun.	2 0	3 0
Eucharis, per dozen	4 0	6 0	Tuberoses, 12 blms.	2 0	3 0
Gardenias, 12 blooms	6 0	12 0	Tulips, doz. blooms	0 9	1 0
Lapageria, red, 12 blooms	1 0	2 0	Violets, 12 bunches	0 9	1 6
Lilac, French, bunch	2 0	7 0	— Czar, Fr., bunch	1 0	2 0
Lily-of-the-Valley, 12 sprays	0 6	1 6	— Parme, French, per bunch	4 0	6 0

SEEDS.

London : *April 7.*—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report business quiet for the time of year ; indeed, the present season promises to be a late one. Of English red Clover seed the quantity offering proves larger than was expected, and, the demand for same being small, values tend in favour of buyers. Alsike, white and Trefoil, are now selling in London on remarkably low terms. Perennial and Italian Rye-grasses are also exceedingly cheap. Spring Tares keep firm, available stocks on the spot being in narrow compass. There is no change in Hemp and Canary seed. Peas and Haricots are steady. Feeding Linseed is depressed.

CORN.

Mark Lane : *April 5.*—Good red English Wheats were very firm to-day, and were quoted 6*d.* higher on the week. English white Wheats met a very limited demand. Flour was more difficult of sale at previous rates, but holders did not entertain lower bids. Malting Barley engaged very little attention, and grinding sorts were very quiet, without being quotably altered in value. Beans and Peas were quiet at late rates.

April 7.—The grain trade in general was dull, without much change in prices. For flour stocks the market was slack, and prices unchanged. In the stock of Oats there is a large falling off as compared with last year's, but there was not much movement in the trade to-day. Prices are at the same time fully steady. Beans and Peas have sold in retail quantity without change in value.

Average prices of corn for the week ending April 3 :—Wheat, 30*s.* 5*d.* ; Barley, 27*s.* 10*d.* ; Oats, 19*s.* 4*d.* For the corresponding period last year :—Wheat, 32*s.* 6*d.* ; Barley, 31*s.* 6*d.* ; Oats, 20*s.* 9 *d.*

FRUITS AND VEGETABLES.

Columbia (East London) : *April 7.*—Fruit trade dull. Good supplies of vegetables ; prices fair, trade brisk. Quotations : — Apples, 3*s.* to 6*s.* per sieve ; Cauliflowers, 2*s.* to 3*s.* per dozen ; Beetroots, 6*d.* to 9*d.* do. ; Parsnips, 1*s.* to 1*s.* 6*d.* per score ; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve ; Sprouting Broccoli, 2*s.* to 3*s.* do. ; Turnip-tops, 2*s.* to 2*s.* 6*d.* per sack ; bunch Rhubarb, 2*s.* to 3*s.* per dozen ; do. Greens, 3*s.* to 5*s.* per dozen bunches ; do. Turnips, 2*s.* 6*d.* to 3*s.* 6*d.* do. ; do. Carrots, 2*s.* to 3*s.* do. ; do. Parsley, 1*s.* 6*d.* to 3*s.* do. ; Celery, 1*s.* to 1*s.* 6*d.* per roll ; English Onions, 4*s.* 6*d.* to 7*s.* per cwt. ; foreign do., 2*s.* 9*d.* to 6*s.* per bag ; Carrots, 26*s.* to 45*s.* per ton ; white Turnips, 5*s.* to 6*s.* do. ; Swede do., 16*s.* to 30*s.* do. ; Mangels, 17*s.* 6*d.* to 22*s.* 6*d.* do.

Stratford : *April 6.*—Supplies have been good during the past week, as also the attendance of buyers, consequently a fair trade has been done at the following prices :—Savoys, 10*s.* to 12*s.* per tally ; Greens, 2*s.* to 3*s.* per dozen bunches ; Cauliflowers, 2*s.* per dozen ; do,. 10*s.* per tally ; Turnips, 3*s.* per dozen bunches ; do., 5*os.* to 6*5s.* per ton ; Carrots, household, 40*s.* to 45*s.* per ton ; do. cattle feeding, 20*s.* to 26*s.* do. ; Parsnips, 1*s.* 9*d.* per score ; Mangels, 20*s.* to 22*s.* per ton ; Swedes, 22*s.* to 24*s.* do. ; Onions, 5*s.* per cwt. ; Apples, 2*s.* 6*d.* to 6*s.* 6*d.* per bushel ; Rhubarb, 2*s.* per dozen.

POTATOS.

Borough and Spitalfields : *April 6.*—Fully adequate supply, and trade slow.—Regents, 80*s.* to 110*s.* ; Magnum Bonums, 50*s.* to 95*s.* ; Champions, 55*s.* to 65*s.* per ton.

Columbia (East London) : *April 7.*—Demand slack, excepting for good samples. Quotations :—Champions, 40*s.* to 55*s.* ; Victorias, 50*s.* to 60*s.* ; Regents, 50*s.* to 70*s.* ; and Magnums, 50*s.* to 75*s.* per ton.

Stratford : *April 6.*—Quotations : — Magnums, 50*s.* to 70*s.* ; Heros, 55*s.* to 65*s.* ; and Champions, 50*s.* to 60*s.* per ton.

Imports.—The imports last week consisted of 2444 bags from Hamburg, 100 from Boulogne, 48 from Harlingen, 5 bags 2 baskets from Rotterdam, 4 bags from Bremen.

HAY.

Whitechapel : *April 6.*—With short supplies trade was brisk all round, and the best qualities were somewhat dearer. Quotations :—Clover, prime, 90*s.* to 105*s.* ; inferior, 70*s.* to 85*s.* ; hay, prime, 70*s.* to 92*s.* ; inferior, 50*s.* to 65*s.* ; and straw, 27*s.* to 36*s.* per load.

Cumberland (Regent's Park) : *April 6.*—A larger supply with trade firmer for meadow hay, but still dull for Clover and mixture. Quotations :—Clover, best, 90*s.* to 105*s.* ; seconds, 75*s.* to 85*s.* ; hay, best, 84*s.* to 92*s.* ; seconds, 70*s.* to 80*s.* ; and straw, 28*s.* to 36*s.* per load.

Stratford : *April 6.*—Hay, 70*s.* to 80*s.* ; Clover, 50*s.* to 70*s.* ; and straw, 28*s.* to 35*s.* per load.

Government Stock.—Consols closed on Monday at 100⅞ to 100⅞ for both delivery and the account. Tuesday's and Wednesday's final prices were 100⅞ to 100⅞ for both transactions. The closing figures on Thursday were 100⅞ to 100⅞ for delivery, and 100 $^{7}/_{16}$ to 100 $^{11}/_{16}$ for the account.

STANDEN'S MANURE.

ESTABLISHED OVER 20 YEARS.

THIS OLD-ESTABLISHED MANURE is acknowledged by most of the leading practical Gardeners in the United Kingdom and the Colonies to exceed all others in general fertilising properties and staying powers. It promotes a rapid, healthy, and robust growth in plants generally. It is a clean and dry powder, with very little smell, which renders it particularly adaptable for ladies interested in plant culture.

The highly fertilising properties of this Manure render its money value, in comparison with other manures, at least double, as users will find that very small quantities will produce favourable and lasting results.

Sold in TINS, 1s., 2s. 6d., 5s. 6d., and 10s. 6d. each; and in KEGS, at reduced prices, 28 lb., 12s. 6d.; 56 lb., 23s.; 112 lb., 42s. each.

May be obtained from all Nurserymen and Seedsmen in the United Kingdom and the Colonies.

SOLE MANUFACTURERS:

CORRY, SOPER, FOWLER & CO.

(LIMITED),

18, FINSBURY STREET, LONDON, E.C.

GARDEN REQUISITES.

TWO PRIZE MEDALS.

Quality, THE BEST in the Market. (All sacks included.)

PEAT, best brown fibrous .. 4s. 6d. per sack; 5 sacks for 20s.
PEAT, best black fibrous .. 3s. 6d. „ 5 sacks for 15s.
PEAT, extra selected Orchid .. 5s. 6d. „
LOAM, best yellow fibrous ..
PREPARED COMPOST, best
LEAF MOULD, best only ..
PEAT MOULD, „ ..
} 1s. per bush., sacks included.
SILVER SAND, coarse, 1s. 9d. per bush., 12s. half ton, 22s. ton.
RAFFIA FIBRE, best only .. .. 1s. per lb.
TOBACCO CLOTH, finest imported .. 8d. lb. 28 lb. 18s.
TOBACCO PAPER „ (Spécialité) 8d. lb., 28 lb 18s.
MUSHROOM SPAWN, finest Milltrack .. 5s. per bushel.
SPHAGNUM MOSS, all selected, 2s. per bush., 6s. per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1s. each; 10 sacks, 9s.; 15 sacks, 13s.; 20 sacks, 17s.; 30 sacks, 25s.; 40 sacks, 30s. Truck-load, loose, free on rail, 25s. Limited quantities of G., special quality, granulated, in sacks only, 2s. each. Terms, strictly Cash with order.

CHUBB, ROUND & CO.,

WEST FERRY ROAD, MILWALL, LONDON, E.

NATIVE GUANO, price £3 10s. per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4s. per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5s.

Extracts from Tenth Annual Collection of Reports.—Native Guano for Potatos.—H. S. EASTY, Great Totham, Essex:—"Used for Potatos. Good. Never had this manure about the best for Potatos. Very economical. Took about twenty prizes." Native Guano for Vegetables and Fruit Trees.—J. SMITH, Head Gardener to the Right Hon. Lord Rosebery:—"Used for Pears, Onions, Lettuces, Cabbages, Potatos, Turnips, and Fruit Trees Onions a splendid crop. Other crops most satisfactory." Native Guano for Vines, Roses, Strawberries, Pot Plants, &c.—J. TOWNSEND, Florist, Putney:—"Used for Celery, Roses, Cucumbers, Tomatos, Chrysanthemums, Pelargoniums, Fuchsias, &c. Excellent results. Best and safest manure I have tried." D. WILLIAMS, Gardener to Lord Wimborne:—"Used for Vines, Strawberries in pots, Peaches, Asparagus, Onions, &c. Very good on all kinds tried." A. F. BARRON, Royal Horticultural Society, Chiswick:—"Without doubt a very valuable manure, and easy of application."—Orders to THE NATIVE GUANO CO. (Limited), 29, New Bridge Street, Blackfriars, London, E.C., where Pamphlets of Testimonials may be obtained.

12-oz. Sample Packets, free by post, 12 Stamps.

FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton per Truck. Sample Bag, 5s.; 5 Bags, 22s. 6d.; 10 Bags, 45s. Bags included. Fresh SPHAGNUM, 12s. 6d. per Bag.

SILVER SAND, Coarse or Fine, 22s. per Truck of 4 Tons.

WALKER AND CO., Farnborough Station, Hants.

SALT for MANURE and DESTROYING WEEDS, in any quantities. Prices, &c., on application.

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J. JENSEN & CO.'S NORWEGIAN FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash.		Herring and Potash.
Per Cent.		Per Cent.
7·0	Ammonia	8·30
20·0	Phosphates	9·0
15·0	Potash	15·0
10·0	Magnesia	10·0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 „ of Dried Fish Bone—Phosphates.
3 „ Sulphate of Potash.
2 „ Sulphate of Magnesia.
1 „ of Moisture, and ingredients not of manurial value.
—
20

The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.

IN TINS.—2 lb. for 1s.; *and*
IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6d.; 56 lb., 10s. 6d.; 1¼ CWT., 20s.; 2 CWT., 30s. Bags free.

☞ Apply to all Nurserymen and Florists, or to

J. JENSEN & CO.,

10, ST. HELEN'S PLACE, LONDON, E.C.

PEAT.—Finest quality Hampshire Brown Fibrous, 11s. per yard, in trucks free on rail in London. Special for Orchids.
YELLOW FIBROUS LOAM, 15s. per ton.
COCOA-NUT FIBRE REFUSE, bags, 1s. each; 30 bags, 22s.; trucks free on rail, 22s. Special quotations for large quantities.
ROLL TOBACCO CLOTH and PAPER, best quality. Samples and prices from
C. FOULON AND CO., 109, London Wall, E.C.

GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1s., 3s., and 10s. 6d.

GISHURSTINE keeps Boots dry and soft on wet ground. Boxes, 6d. and 1s., from the Trade. Wholesale from PRICE'S PATENT CANDLE COMPANY (Limited), London.

PURE WOOD CHARCOAL FOR VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES, AND GENERAL HORTICULTURAL PURPOSES.
HIRST, BROOKE & HIRST, Manufacturers, Leeds, YORKSHIRE.

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ROLL TOBACCO PAPER AND Cloth (English) for Fumigating

is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb., 10s.; 28 lb., 20s.; carriage paid to London or any railway station in Kent. 2¾ lb., 2s. 6d.; 4¾ lb., 4s.; 6 lb., 5s.; 6¾ lb., 5s. 6d.; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8s. 6d.; 28 lb., 16s.
TRADE INQUIRIES SOLICITED.

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DARLINGTON BROS.,

NEW ROAD, CHATHAM, KENT.

Post-office Orders, &c.—DARLINGTON BROS., Chatham.



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Garden Engine and Water Barrow combined.—This implement is specially suited for Amateur Gardeners, as it can be used for a variety of purposes. CASH PRICES (carriage paid,—15 gal size, £1 15s.; 20 gal., £1 5s.; 25 gal., £1 15s. Every requisite for the Garden and Pleasure Grounds manufactured by ourselves. New General Catalogue sent free.

HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite.
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SILVER SAND, coarse, 24s. per truck of 4 tons; PEAT, 60s. per truck of 10 yards; LOAM, 45s. per truck of 4 tons. Orchid and best Peats, Orchid and Decorative Mosses, &c. Terms cash. Sent to all parts at the lowest rates.—W. SHORT, Horticultural Depôt, Midhurst, Sussex.

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Specialty, White-glowed FLOWER-WIRE of first quality. Samples and prices from
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UNIVERSAL PLANT PROTECTOR, PATENT ADJUSTABLE CLIP, will hold Glass &c., in an endless variety of ways Illustration, one Stamp. Sample Clip 9d., 6s. per dozen.
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MARENDAZ AND FISHER can offer the above at lower prices than any firm. To the Trade only.
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EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½d. per yard; 4 yards wide, 3d. per yard; or 2 yards wide, 20s. per 100; 4 yards wide, 20s. per 100 yards. New TWINE NETTING, 1 yard wide, 2d. per yard; 2 yards wide, 4d. per yard; 4 yards wide, 8d. per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7d. per yard run.
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PROTECTION for FRUIT and FLOWERS,
GARDEN NETTING, 2 yards wide, 1¾d., or per 100 yards, 10s.; ditto, 4 yards wide, 3d., or per 100 yards, 20s.
SCRIM CANVAS, 1 yard wide, 3d.; 1½ yard, 4½d.; and 2 yards, 6d. per yard.
TIFFANY, 38 inches wide, in 20-yard pieces, 3s. 6d. per piece.
SHADING BLINDS made up any size.
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SPECIAL LOT.

Good, useful, open, and strong texture, suitable either for Netting or Shading, 72 inches wide, 50 yards long, price 6d. per yard.
Also Special Lot, commoner quality, 42 inches wide, 83 yards long, price 1¾d. per yard.
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TIFFANY, 55 inches wide, extra strong, price 4½d. per yard

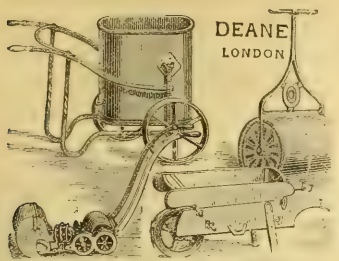
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ORIGINALLY COMPILED BY THE LATE SIR JOSEPH PAXTON, M.P.

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Lawn Mowers.

20 PER CENT. FOR CASH OFF MAKERS' PRICES. Carriage paid.
All the Best Makes in Stock.

Garden Rollers.

DOUBLE CYLINDER	SINGLE.
20 by 18 in. 50s.	16 by 12 in. 32s.
22 by 20 in. 55s.	18 by 18 in. 35s.
24 by 22 in. 65s.	20 by 20 in. 45s.
28 by 24 in. 80s.	22 by 22 in. 52s.

Swing Water-Barrows.

15 Gall... 30s | 32 Gall... 46s.
20 Gall... 36s. | 40 Gall. . 54s.

Wood Barrow

Well made and cheap .. 24/6
With loose top, as shown.. 32/0

LAWN MOWER REPAIRS.

DEANE & CO. have SPECIAL FACILITIES for Grinding and Repairing Lawn Mowers of all makes, a large staff of EXPERIENCED WORKMEN being employed for the purpose. THOROUGHNESS in REPAIR and MODERATE CHARGES guaranteed.
Estimates given in all cases before commencing the work.
DEANE & CO.'S ILLUSTRATED GARDEN CATALOGUE (the most complete published) free by post.

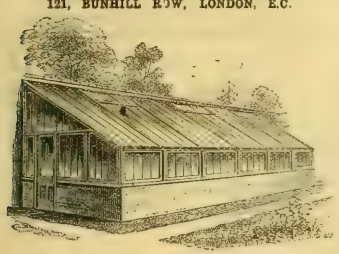
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Garden Frames and Sashes in Stock.



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R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

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2-light frame, 8 feet by 6 feet } Packing	3 10 0
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The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.
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Imperishable and Cheap—The New

WINDOW FLOWER BOX



MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
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A Liberal Discount to the Trade.

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Span-roof Greenhouses fitted complete, made in lights, glazed with 21-ounce glass and painted three coats of good oil colour. Tenant's Fixtures, 12 feet by 8 feet, £23 19s. For brickwork, £16 17s.



Three-quarter Garden Frame, with registered set-open lights, 2 inches thick, glazed with 21-ounce glass, and painted four coats, 4 feet by 6 feet, £2 17s.; 8 feet by 6 feet, £4 10s.; 12 feet by 6 feet, £6 5s. 6d.; cases, 6s.

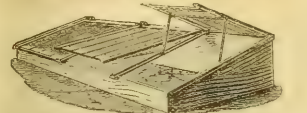
CUCUMBER FRAMES.

Lights 2 inches thick, glazed with 21-ounce glass, painted four coats.

	£	s.	d.
8 ft. by 6 ft..	3	4	6
12 ft. by 6 ft..	4	12	6

Cases 5s.





THE CHEAPEST LEAN-TO FRAMES IN THE MARKET.

Glazed with 21-ounce glass, and painted three coats, fitted with strong joints and (registered) set-opes, 8 feet by 4 feet, £2 2s.; 12 feet by 4 feet, £2 15s.; 16 feet by 4 feet, £3 10s. Cases, 6s.
Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, and Belfast.
Illustrated Catalogues, post-free, two penny stamps.
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SPECIAL PRICES on application.

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GLASSHOUSES & HEATING.

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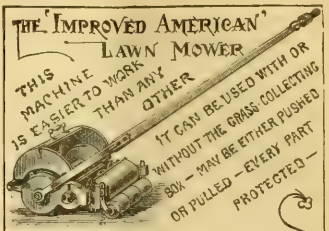
HORTICULTURAL SHEET GLASS.

14×12	20×15
16×12	20×16
18×12	22×16
20×12	24×16
16×14	20×18
18×14	22×18
20×14	24×18

21-oz. Foreign of the above sizes, in 700 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.
A large stock of similar current sizes of 15-oz. glass in 200 feet boxes.
Propagating and Cucumber Glasses, and all Miscellaneous Glass Articles, can be obtained from

GEORGE FARMILOE & SONS,
GLASS, LEAD, OIL and COLOUR MERCHANTS.
34, St. John's Street, West Smithfield, London, E.C.
Stock List and Prices on application. Quote *Chronicle.*

THE 'IMPROVED AMERICAN' LAWN MOWER



PRICES

10 INCH MACHINE, £3.0.0. | 14 INCH MACHINE, £4.15.0.
12 INCH MACHINE, 4.0.0. | 16 INCH MACHINE, 5.10.0.
GRASS BOXES EXTRA

ALEXANDER SHANKS & SON,
DENS IRON WORKS, ARBROATH,
& 27, LEADENHALL STREET, LONDON.

MAKERS ALSO OF SHANKS'S CELEBRATED LAWN MOWERS

Oil Paint no Longer Necessary.

HILL AND SMITH'S BLACK VARNISH,

for Preserving Ironwork, Wood, or Stone.

(Registered Trade Mark.)



(Registered Trade Mark.)

This VARNISH is an excellent substitute for oil paint or any outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of forty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of most of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom

UNSOLICITED TESTIMONIAL

From ALFRED LOWE, Esq., *The Rykeys, Alderley Lodge.*

"Some twenty years ago I used your Black Varnish, and shall be glad if you will forward me a cask, as I consider it the best thing known for the preservation of all outdoor work, either wood or iron, that requires to be painted."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
Large Illustrated CATALOGUE on Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

HILL & SMITH,

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118, Queen Victoria Street, London, E.C.; and 136, Stephen's Green, Dublin.

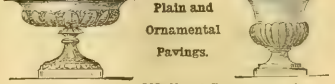
GARDEN NETTINGS.
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Buyers should apply for prices to
Rigby, Wainwright & Co.,
MANUFACTURERS,
NEPTUNE WORKS, MANCHESTER.
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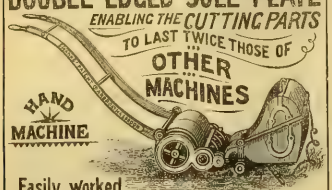
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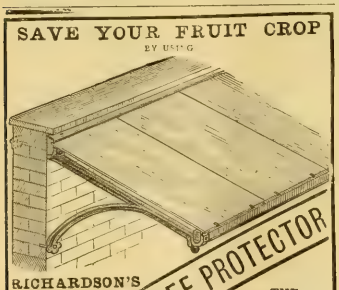
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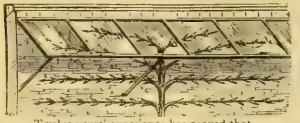


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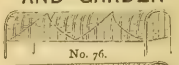


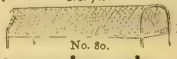
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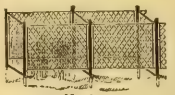
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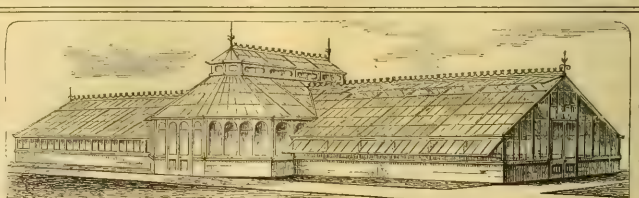
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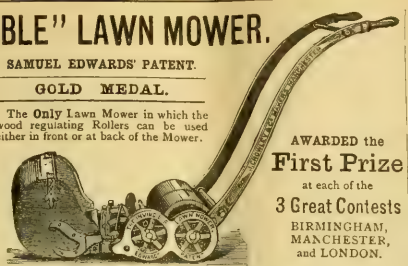
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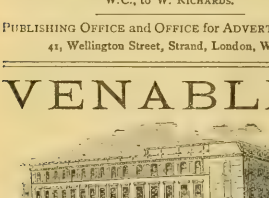
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JAMES CARTER AND CO. have at all times upon their Register reliable and competent MEN, several of whom are personally well known to Messrs. Carter.—Enquiries should be made to 237 and 238, High Holborn, W.C.

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RICHARD SMITH AND CO. beg to announce that they are constantly receiving applications from Gardeners, seeking situations, and that they will be able to supply any Lady or Gentleman with particulars, &c.—St. John's Nurseries, Worcester.

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GARDENER (HEAD).—Mr. FRANKIS, Gardener to J. W. Wilson, Esq., The Beeches, Oatlands Park, Weybridge, can confidently recommend his Foreman to any Lady or Gentleman requiring a good practical man in all branches of the profession.

GARDENER (HEAD).—THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited, are in a position to recommend a thoroughly competent man as first-class Orchid Grower; well up in the Cultivation of Fruit, Flowers, &c.—Full particulars on application to the MANAGER, The Vineyard, Garston, near Liverpool.

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GARDENER (HEAD); age 31.—Mr. BAILEY, Shardeloes, Amersham, Bucks, can with confidence recommend his Foreman, D. Allen, to any Lady or Gentleman, as a thorough practical man.—Apply as above.

GARDENER (HEAD); age 30, married.—Advertiser begs to offer his services as a trustworthy, energetic, and first-class practical man. Fifteen years' experience in producing Choice Fruits, Flowers, Vegetables, &c.; carrying out Ground Work, Managing Large Staff of Men, and producing for Market. Three years as Head.—J. PARKER, Downfield Lodge, Poles, Ware.

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GARDENER (SINGLE-HANDED, or SECOND where four or more are kept).—Age 23, single; three years' good character from last place.—E. NEAL, Adhurst St. Mary, Petersfield, Hants.

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GARDENER (SECOND), in a good establishment. Age 22; seven years' experience Inside and Out, with good character.—J. JONES, Reeves Cottage, Brampton Brian, Herefordshire.

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FOREMAN, General or Departmental.—Age 27; ten years' experience in Noblemen's or Gentlemen's Gardens, Inside and Out. Knowledge of House Decorations. Abstainer. Well recommended. Distance no object.—State wages and particulars, H., Garaway's Nurseries, Bristol.

FOREMAN, in the Houses.—Age 27; twelve years' experience in Vines, Pines, Peaches, Melons, Cucumbers, Stove and Greenhouse Plants, Orchids. Two years' good character from present employers. Bothy preferred.—G. DOVEY Templeton, Roehampton, Surrey.

FOREMAN.—Age 25; ten years' experience in the Cultivation of Stove and Greenhouse Plants, Vines, Peaches, Melons, Cucumbers, Tomatos, &c. Over two years Foreman previously, and can be well recommended.—E. J. SMITH, Watcombe Park Gardens, Torquay.

FOREMAN; age 21.—E. BECKETT, Gardener to H. H. Gibbs, Esq., can with every confidence recommend his first Journeyman, George Bungay, to any Gardener requiring a respectable, steady young man as above.—The Gardens, Aldenham Park, Elstree, Herts.

To Nurserymen.

FOREMAN, or ASSISTANT, in large Nursery.—Age 31, married; good knowledge of Budding, Grafting, and General Outside Work. Accustomed to take charge of men. Six years' good character from last situation. State wages, &c.—W., 50, Cotterell Street, Hereford.

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FOREMAN PROPAGATOR (NURSERY WORKING).—Well up in Hard and Soft-wooded Plants, Roses, Conifers, Fruit Trees, Grapes, Cucumbers, Tomatos. Good Salesman.—T. P., 67, Ranelagh Terrace, Leamington.

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ROSE GROWER, in a Nursery or Private Establishment.—Age 26; eleven years' experience at the Cheshunt Nurseries. Thoroughly understands the Growing of Roses, Indoors or Out.—T. SKEGGS, 1, Jubilee Place, Cheshunt Street, Cheshunt, Herts.

JOURNEYMAN, in the Houses; age 19.—Mr. A. COVE, Gardener, Pentillie Castle, St. Mellion, wishes to recommend a young man. Four and a half and one and a half years' excellent character. Abstainer.—Address as above.

JOURNEYMAN; age 21.—Mr. STAGG, Gardener to P. RAWSON, Esq., Woodhurst, Crawley, Sussex, would be pleased to recommend G. S., who has lived with him six years, to any Gardener requiring a trustworthy man.

JOURNEYMAN (FIRST), in the Houses in a good establishment.—Age 21; six years' experience. Two years in present situation.—J. L., The Gardens, Wilton House Southampton.

JOURNEYMAN, in the Houses, next to Foreman, in Nobleman's or Gentleman's garden.—Age 23; Two years and nine months in present place.—W. CHESHER, The Gardens, Abbot's Wood, Dalton-in-Furness.

JOURNEYMAN, in the Houses in a good establishment.—Age 24; six years' good character from present situation.—J. F., The Gardens, Chapel Allerton Hall, near Leeds.

JOURNEYMAN, in the Houses, in a good establishment.—Age 21; five and half years' Inside and Out. Excellent characters. Bothy preferred.—A. BARNETT, Post-office, Peasmarsh, Sussex.

JOURNEYMAN, in the Houses, in a good establishment.—Age 21; total abstainer. Two years in present situation.—GEO. PARRANT, Rd. Parrant, Blackwater, Farnborough, Hants.

JOURNEYMAN, in the Houses in a good establishment.—Age 21; seven years' experience. Good character. Bothy preferred.—R. HARROW, The Gardens, Nevill Court, Tunbridge Wells.

JOURNEYMAN, in the Houses.—Age 20; five years' experience. Good references.—ERNEST BROCK, 30, Doncaster Road, Wath-on-Dearne, near Rotherham.

JOURNEYMAN, in the Houses (age 21).—Mrs. T. JACKSON, The Gardens, Berry Hill, Mansfield, Notts, wishes to recommend a thorough competent, reliable and attentive young man, as above.—Apply above.

JOURNEYMAN, in the Houses.—Age 20; one year and six months in present place. Leaving for improvement. Good character from two previous places. Bothy preferred.—THE GARDENER, Forest Farm, Windsor Forest.

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To Nurserymen, &c.

IMPROVER, in the Houses; take Outside if required. Age 22; total abstainer. Educated.—F., Borrowdale, Bournemouth.

IMPROVER, in the Houses, in a good establishment.—Age 18; three and a half years in present situation. Good character. Bothy preferred. Total abstainer.—C. PEACH, The Gardens, Thorpe Lawn, Peterborough.

IMPROVER, in a Gentleman's Garden, under Glass preferred.—Age 18; six years in present situation Garden Work, Indoors and Out. Good character. Total abstainer.—S. FENNELL, The Gardens, Bowden Park, Chippenham, Wilts.

TO HEAD GARDENERS.—Wanted by a youth (age 17) a situation in a good Garden as IMPROVER where he could gain a good knowledge of the profession. Twelve months' good character. Three years and six months in the Garden.—A. B., Staines Road, Sunbury.

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SHOPMAN (HEAD), or MANAGER.—Thorough knowledge of every detail connected with Seed, Bulb, and Sundries' Business routine, acquired during a thirty years' experience in first-class London and Provincial Houses. Accustomed to extensive Counter Trade, good Correspondent, and well versed in general Nursery Stock. References assuredly recommendatory.—W., 6, Seller Street, Chester.

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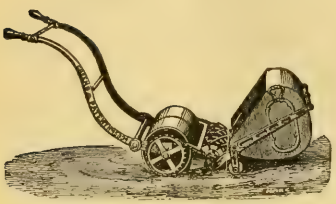
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HER MOST GRACIOUS MAJESTY THE QUEEN on many occasions,
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The Late EMPEROR OF THE FRENCH, The EMPEROR OF RUSSIA,
And most of the Nobility, Clergy, and Gentry of the United Kingdom.

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Upwards of 130,000 of these Machines have been sold since they were first introduced in the year 1856,
And thousands of unsolicited Testimonials have been received testifying to their superiority over all others.

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The following are their advantages over all others:—
1st. Simplicity of Construction—every part being easily accessible. 2d. They are worked with much greater ease than any other. 3d. They are the least liable to get out of order. 4th. They make little or no noise in working. 5th. They will cut either short or long Grass, wet or dry.



SINGLE-HANDED LAWN MOWER.

To cut 6 inches,	can be worked by a Lady	Price £1	15 0
To cut 8 inches,	do. do.		2 10 0
To cut 10 inches,	do. by a strong youth	..	3 10 0
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DOUBLE-HANDED LAWN MOWER.

To cut 16 inches,	do. one man on even lawn	£6	10 0
To cut 18 inches,	do. man and boy	..	7 10 0
To cut 20 inches,	do. do. ..	..	8 0 0
*To cut 22 inches,	do. two men ..	..	8 10 0
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* If made stronger, suitable for Donkey, 30s. extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self Delivery Box, or Side Delivery, with Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness:—

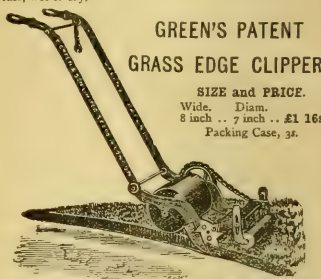
DONKEY and PONY MACHINES.

To cut 26 inches	.. ..	£14	0 0
To cut 28 inches	.. ..	16	0 0
To cut 30 inches	.. ..	18	0 0
Leather Boots for Donkey	.. .. ..	1	0 0
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To cut 30 inches	.. ..	£22	0 0
To cut 36 inches	.. ..	26	0 0
To cut 42 inches	.. ..	30	0 0
To cut 48 inches	.. ..	34	0 0
Leather Boots for Horse	.. .. ..	1	9 0

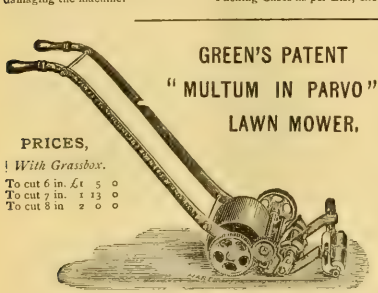
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Packing Case, 3s.

Specially designed to meet a want that has long been felt in cutting the overhanging grass on the edges of walks, borders, flower-beds, &c., and do away with the tedious operation of cutting with shears.



GREEN'S PATENT "MULTUM IN PARVO" LAWN MOWER.

PRICES,
With Grassbox.

To cut 6 in.	£1	5	0
To cut 7 in.	1	13	0
To cut 8 in	2	0	0



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Small Bag of Marking Composition, *9d.*

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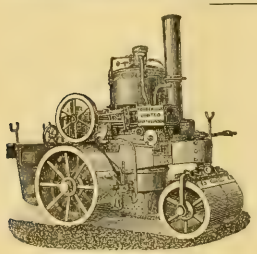
For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths, &c.
SUITABLE FOR HAND OR HORSE POWER.

PRICES of ROLLERS in two parts.

Diam.	Length.	£	s.	d.
16 in. by	17 in.	2	15	0
20 in. by	22 in.	4	0	0
24 in. by	26 in.	5	0	0
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Special Quotations made for Rollers, 3 feet, 3½ feet, and 4 feet Diameter, fitted with Shafts for one or two Horses.



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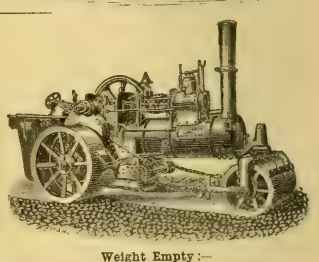
Which are made in sizes of 6, 10, 12½, 15, and 20 Tons weight, and both the Driving and Steering of them are under the easy control of ONE Man.

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10 TONS. 12½ TONS. 15 TONS.
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12½ TONS. 15 TONS. 18 TONS.

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THOMAS GREEN & SON, Limited, Smithfield Ironworks, Leeds; and Surrey Works, Blackfriars Road, London.

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THE

GARDENERS' CHRONICLE.

Established 1841.

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NOTICE to ADVERTISERS.

FRIDAY NEXT, *April* 23, *being* GOOD FRIDAY, *the* "GARDENERS' CHRONICLE" *will be published on* THURSDAY, *April* 22, *at* 2 *p.m.*

ADVERTISEMENTS *for* NEXT WEEK *must therefore reach the Office not* LATER *than* WEDNESDAY MORNING, *April* 21.

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PRIMULA CONFERENCE.—A full Illustrated Report of this Meeting will be given in the GARDENERS' CHRONICLE, *April* 24.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NATIONAL AURICULA SOCIETY'S SHOW in the Conservatory, TUESDAY NEXT, April 20. Open to Fellows and their Orders at 12 o'Clock, and the Public at 1 o'Clock. Small Band of the Royal Horse Guards, by permission of Colonel D. Milne Home, from 3.30 P.M. Admission, 2s. 6d.
N.B. Entrance, North-east Orchard-house; and Exhibitors' Entrance, East side of Royal Albert Hall.
A PRIMULA CONFERENCE, for the Reading of Papers and discussion, will be held on WEDNESDAY, April 21, and Programmes and all particulars can be had on application to the SECRETARY, South Kensington, S.W.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
FLORAL MEETING at the Town Hall, Manchester, on TUESDAY, the 27th inst. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1886, will open at the Gardens on JUNE 11. Schedules may be had from the undersigned.
BRUCE FINDLAY, Royal Botanic Gardens, Manchester.

ROYAL AQUARIUM, Westminster.—In consequence of an extension of time for holding the exhibition by the Kennel Club in June next, the ROSE SHOW announced for June 25 and 26 is unavoidably WITHDRAWN; and the STRAWBERRY SHOW and FÊTE on July 2 and 3 is for the same reason POSTPONED until JULY 9 and 10.
RICHARD DEAN, Superintendent of Exhibitions.

ROSE SHOW, at the Brighton Aquarium, on FRIDAY and SATURDAY, July 9 and 10. Schedules on application to
J. WILKINSON, Manager and Secretary.
Brighton Aquarium.

BIRMINGHAM BOTANICAL and HORTICULTURAL SOCIETY.—ORCHID SHOW. ONE HUNDRED and FIFTY POUNDS in Prizes. For Schedules apply to
W. B. LATHAM, Curator, at The Gardens, Edgbaston.

Important Notice.
To Florists, Seedsmen, Horticultural Builders, &c.
PLANTS, FLOWERS, FRUITS and VEGETABLES a Specialty.
WM. J. WELCH begs to call particular attention to his productions for ILLUSTRATING BOOKS, MAGAZINES, CATALOGUES, and for ADVERTISING PURPOSES.
For Specimens see *Gardeners' Chronicle*, 1883 to 1886.
ADDRESS, 25, Wellington Street, Strand, London, W.C.

CATALOGUE of NOVELTIES—Pelargonium grandiflorum, peltatum, and Zonal; Fuchsia, Dahlia, Chrysanthemum, Pentstemon, Phlox, &c.
ROZAIN-BOUCHARLAT a Cuire-les-Lyon, Rhone, France.

ORCHIDS IN FLOWER.—A magnificent display of beautiful Orchids is now in blossom at Mr. WILLIAM BULL'S. An Inspection is invited.
Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

ONE HUNDRED VERBENAS, well-rooted, clean, healthy plants; several best varieties, mixed, 5s., or separate sorts, 6s. per 100, from
The PLANT and BULB COMPANY, Gravesend.

CARNATIONS.—Fifty dozen Dark and Clove, for Sale, at 2s. per dozen. Apply,
H. SMALL, Hook Hill, Woking.

PALMS for SALE.—Two splendid Latania borbonica. Twelve leaves, 8 feet by 8 feet, in new tubs; also 1 Seaforthia elegans, 10 feet high, six leaves. Price on application to
J. GREEN, Hawford House Gardens, Worcester.

Pride of the Market
PEA.—A good stock; growth 1885; sample and price on application.
ANTHONY WATERER, Knap Hill Nursery, Surrey.

ASPARAGUS (true Giant).—Special Offer to clear ground:—2-yr., 20s.; 3-yr., 30s.; 4-yr., 40s. per 100. NEW POTATO (Bird's Doctor Bob), 4d. per stone. Trade prices on application.
JAMES BIRD, Nurseryman, Downham.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustraied SEED LIST, free. Strong roots, 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.
RICHARD SMITH and CO., Worcester.

ASPARAGUS, SEAKALE, and RHUBARB, for Planting and Forcing.
Special Prices on application.
JAS. DICKSON and SONS, "Newton" Nurseries, Chester.

FRANCIS BRILL, SEEDSMAN, &C., Riverhead, New York, U.S.A.
European Growers will please forward Price LISTS.

Profitable Sale of Cut Flowers.
CONSIGNMENTS carefully Disposed of. Address, Commission Department—
HOOPER and CO., Covent Garden, London, W.C.
Good Flowers are always Wanted. Inferior qualities are useless.

Floral Commission Agency.
A. HILL and CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of Choice CUT FLOWERS in any quantity. A. H. & Co., giving personal attention to all consignments, are thus enabled to obtain the highest market prices. All Cheques forwarded weekly. Bankers and good Trade references. Boxes and Labels supplied.

SQUELCH and BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

SQUELCH and BARNHAM, giving personal attention to all consignments, they are thus enabled to obtain the HIGHEST MARKET PRICE.

SQUELCH and BARNHAM. ACCOUNT SALES sent daily, and CHEQUES forwarded weekly.
BANKERS and TRADE REFERENCES.
BASKETS and LABELS supplied.

WISE and RIDES beg to inform Senders that they now have special facilities for the SALE of STRAWBERRIES, BEANS, CUCUMBERS, TOMATOS, GRAPES, MUSHROOMS, &c. Also for EUCHARIS, Maréchal Niel ROSES, and other CHOICE CUT FLOWERS.
WISE and RIDES, Fruit and Flower Salesmen, Fruit Market, and 360, Flower Market, Covent Garden, London, W.C. Warehouse—37, Hart Street.

MESSRS. GREGORY and EVANS, Longlands Nursery, Sidcup, and 285, 286, 287, 288, Flower Market, Covent Garden, W.C., REQUIRE CONSIGNMENTS of CHOICE CUT FLOWERS. Messrs. G. & E., having a ready Sale for same, can ensure good Market Prices. Account sent daily.
REGISTERED TELEGRAPH ADDRESS—"COMMISSION, SIDCUP."

WANTED, New, Rare, and distinct NARCISSUS or DAFFODILS. Send sample bloom, say quantity of Bulbs that can be supplied next Autumn, and price, to THOS. S. WARE, Hale Farm Nurseries, Tottenham, London.

WANTED, Large PALMS and FOLIAGE PLANTS of a decorative character. Apply, stating lowest price for cash, with descriptions, to
WILLS and SEGAR, Florists by Royal Warrant to Her Majesty the Queen and H.R.H. the Prince of Wales, South Kensington, London, S.W.

WANTED, a Pair of Handsome BAMBUSA (not ARUNDINARIA), 6 to 8 feet high, in pots.—GEORGE EDWARDS, Balham Nursery, London, S.W.

WANTED, JERUSALEM ARTICHOKES. Send Sample and Price to
SQUELCH and BARNHAM, Salesmen, Covent Garden, W.C.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.
The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Street, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

NEW ROSES.—List containing descriptions of remarkable and valuable novelties free.
RICHARD SMITH and CO., Nurserymen and Seed Merchants, Worcester.

PRIMROSE, Common Yellow.—Seed for present sowing, 6d. per packet. Special price per ounce or pound on application.
WATKINS and SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, W.C.

SEEDS, a Bargain.—1400 Penny Packets of HARDY ANNUALS, 580 Penny Packets of VEGETABLES, 360 Threepenny Packets of Hardy and Half-hardy ANNUALS, and about ½ an ounce of GERMAN STOCK, and about 1 ounce of PHLOX, ASTER, and DAHLIA. The lot for £4.
Messrs. ELLOART, Auctioneers, 40, Chancery Lane, W.C.

SEEDS.—RICHARD SMITH & CO., Worcester, beg to draw attention to the Low Prices of individual articles (Peas especially), and the liberality of the Collections at Fixed Prices as set forth in their Illustrated SEED LIST, which will be sent free on application. All Seeds, &c., are of the *best possible* quality.

Just Published.
OUR NEW ORCHID LIST, No. 79. With List of Mr. Ed. Wallace's Importations.
A small Importation of Rare Cape Bulbs. Special LIST. Our Spring LIST of Bulbs (No. 78) for immediate Planting.
NEW PLANT and BULB COMPANY, Colchester.

PAUL'S, WALTHAM CROSS.—SEEDS, ROSES, EVERGREENS, TREES, SHRUBS, CLIMBING PLANTS, FRUIT TREES, GRAPE VINES, CAMELLIAS, BULBS, &c., of the best quality, and low in price. See Priced Descriptive CATALOGUES, free by post.
WM. PAUL and SON, Paul's Nurseries, Waltham Cross.

HOLLY for HEDGES (now is the time to transplant), 12 to 15 inches, 25s.; 15 to 18 inches, 35s.; 18 to 24 inches, 50s. per 100. Forest LIST, containing heights and prices of well-grown Quick, Ash, Larch, Spruce, Pines, Oaks, Underwood, &c., free.
RICHARD SMITH and CO., Nurserymen and Seed Merchants, Worcester.

Carnations, Picotees, Cloves, and Pinks.
CHARLES TURNER'S New and Descriptive CATALOGUE of the above is now ready, and may be had free on application. This Collection was awarded over 30 prizes in London and the Provinces last season. The plants are strong, and the present time is recommended for planting.
The Royal Nurseries, Slough.

PANSIES.—Now is the best time to Plant. 100 best Show and Fancy Pansies in Cultivation, in 50 finest named varieties (600 sorts to choose from), my extra choice selection, for 25s., package free for cash with order. All other Florist's Flowers at equally low prices. CATALOGUES on application.
JOHN FORBES, Nurseryman, Hawick, N.B.

HOLLIES of all sizes up to 8 feet, or 8 feet.—These plants have been removed yearly, consequently are safe for transplanting. An inspection of the stock is the only test of their quality to be relied on.
CHARLES NOBLE, Bagshot.

Brazilian Orchids.
SEN. A. F. SARAFANA, of São Paulo, Brazil, has on hand a splendid assortment of these beautiful Plants, in good and strong specimens. Also Plants of BROMELIAS, MELASTOMADS, PEPEROMIAS, PALMS, FERNS, CYCAS, &c., all of which he offers at very moderate prices.
CATALOGUES will be sent free if desired.

Covert Plants.
BLACKTHORN, GORSE, and all other Fox and Game COVERT PLANTS. Special quotations on application.
JAMES DICKSON & SONS, "Newton" Nurseries, Chester.

CARNATIONS, PICOTEES, Selfs, Cloves, &c., Hardy Herbaceous Border and Rock Plants for Sale. CATALOGUES may be had by intending Customers.
SAML. HARTLEY, Headingley Nursery, Leeds.

To Nurserymen.
PANSIES.—For immediate Sale, 5000 well-rooted Pansies—all Exhibition Varieties—the Surplus Stock of a large Amateur Grower, that are being Sold for the benefit of a Charity.
Address, PANSY GROWER, Messrs. Street & Co., 30, Cornhill, London, E.C.

GRAPE VINES.—Planting and Fruiting Canes, leading sorts. Also STRAWBERRIES in 60-pots.
F. R. KINGHORN, Nurseryman, Richmond, Surrey.

ASPARAGUS SEED (Covent Garden Variety). We offer Seed of this very fine variety for Present Sowing. Special price per pound or hundredweight, on application.
WATKINS and SIMPSON, Seed and Bulb Merchants, Exeter Street, Strand, London, W.C.

SALES BY AUCTION.

Wednesday Next.—(Sale No. 7146.)
VALUABLE IMPORTATIONS of ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, April 21, at half-past 12 o'Clock precisely, a fine importation of ODONTOGLOSSUM CRISPUM (Alexandræ), the best type, O. VEXILLARIUM (in splendid condition), CATTLEYA AUREA, C. GIGAS, C. MENDELII (in splendid condition, with dormant eyes, and well leaved), ONCIDIUM WELTONI (true), O. KRAMERIANUM, O. FUSCATUM, and other ORCHIDS, from Messrs. Shuttleworth, Carder & Co.
On view morning of Sale, and Catalogues had.

The First Portion of the Valuable Collection of ESTABLISHED ORCHIDS formed by H. Lovatt, Esq., of Low Hill, Wolverhampton.

MR. J. C. STEVENS has received instructions from H. Lovatt, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, April 28 and 29, at half-past 12 o'Clock precisely each day, without the least reserve, the first portion of his choice COLLECTION of ESTABLISHED ORCHIDS, comprising amongst other fine things:—

Cattleya Trianæ alba
,, Mendelii, with thirty-two breaks (grand var.)
,, Skinneri alba
,, Morganæ (very fine plant)
Dendrobium Ainsworthii
,, Schroderi
,, suavissimum (extra fine)
,, nobile, extra var.
,, Goldeana
Lælia anceps Dawsoni (true)
,, elegans (fine plant)
,, Brysiana
,, xanthoglossa
,, purpurata (extra fine plants)
Masdevallia Veitchii (fine plants)
,, Harryana
,, ,, (Bull's blood, true)
,, Lindeni
,, chimæra
,, Backhousiana
Cymbidium Lowii (two extra fine plants)
Angulua Ruckeri } grand
,, Clowesi } plants
Saccolabium guttatum
,, Holfordi (plant)
Cattleya Schilleriana (splendid
Cœlogyne Massangeana (finest plant in the country, with thirty bulbs)
Cattleya maxima decora
,, Wagneri
,, Crawshayana
,, labiata
,, ,, (autumn flowering)
Odontoglossum vexillarium
,, Chestertoni
,, Œrstedii
,, Alexandræ, in var.
Pilumna nobilis (very fine plants)
Vanda suavis Veitchianum
,, tricolor Dodgsoni
,, Sanderiana
Acrides Lobbi
Cypripedium caudatum roseum
,, Veitchii
,, Spicerianum
Oncidium macranthum
,, Lanceanum, grand variety
Cymbidium eburneum,
Sobralia macrantha (four splendid plants)
Ada aurantiaca (grand specimen

On view mornings of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, MAY 5, at half past 12 o'Clock precisely, the Collection of ESTABLISHED ORCHIDS formed by the late J. J. Barran, Junr., Esq., of Burley, Leeds, including fine plants of C. gigas, C. Mossiæ, C. Mendelii, C. Percivaliana, Lælia anceps alba, Oncidium Rogersi, O. lanceanum, O. tigrinum, Dendrobes, Masdevallias, and Cypripediums of sorts; a grand specimen of Odontoglossum Alexandræ, O. Pescatorei, O. Rossi majus &c.
Further particulars in future Advertisement.

Monday Next.—Short Notice and Special Sale.

CYPRIPEDIUM GODEFROYÆ.
SPLENDID IMPORTATION.

This is the first time that this exceedingly beautiful Orchid has been offered by public competition, and in consequence of the rarity of the species in its native habitat, and the great difficulty and expense on obtaining it, Mr. Sander does not think there is any probability of his being again tempted to search for it. The plants are in exceptionally fresh condition; amongst them are several really marvellous masses, and Mr. Sander certainly has not been fortunate enough for many years to offer such a magnificent consignment of Orchids.

CYPRIPEDIUM SPECIES.
Splendid importations, found near Cypripedium Godefroyæ.

LISSOCHILUS DILECTUS.
Described by Professor Reichenbach in last week's *Gardeners' Chronicle*. A magnificent novelty from the Congo River, the importation being large and specially fine.

Several fine ORCHIDS from Cochin China, some fine hybrids of Odontoglossums, a probably quite new Cattleya, some of the finest masses of Odontoglossum Wazandæ ever offered, Cattleya Mendelii, and splendid plants of the following rare ORCHIDS:—

Cypripedium Morganianum, four growths
,, Fairieanum, six growths
,, grande, with flower spike
,, vermixeum
,, Leeanum superbum
Vanda Sanderiana, being the most handsome plant ever offered by auction.
Lælia anceps Percivaliana
Cypripedium Arthurianum
,, euryandrum
,, Andersonianum
,, Wallisii (true)
,, æranthum superbum
,, vexillarium
Cœlogyne Massangeana, one of the very finest specimens in existence
And many other rare Orchids.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on MONDAY NEXT, April 19, at half-past 12 o'Clock precisely, the above Valuable Orchids.
On view morning of Sale, and Catalogues had.

Monday Next.
LÆLIA ELEGANS TURNERII (?).

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Mr. F. Sander, to include in their SALE by AUCTION, on MONDAY NEXT, the most wonderful specimen ever seen of LÆLIA ELEGANS TURNERII (?); several most extraordinary specimens of LÆLIAS from the Brazils, LÆLIA ELEGANS, LÆLIA PURPURATA, &c.
On view morning of Sale, and Catalogues had.

Monday Next.
HYBRID ODONTOGLOSSUM.

MESSRS. PROTHEROE AND MORRIS will include in their SALE on MONDAY NEXT, a specially fine ODONTOGLOSSUM hybrid in flower, with great blotches, and altogether very distinct,
On view morning of Sale, and Catalogues had.

Tuesday Next.
ORCHIDS IN FLOWER.—SPECIAL SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, April 20, at half-past 12 o'Clock precisely, 300 lots of ORCHIDS in FLOWER, from various Collections. Amongst them may be mentioned:—

Lælia elegans
Masdevallia Veitchii grandiflora, Veitch's superb variety
,, Harryana, grand variety
,, coccinea, varieties
,, sivertifolia
Cœlogyne cristata, Chatsworth variety
Odontoglossum hybrids
,, Alexandræ, many specially fine varieties
,, hastilabium
Cypripedium Dominianum, grand plant
,, albo-purpureum, fine hybrid

CATTLEYAS, DENDROBIUMS, MASDEVALLIAS, and many others.
On view morning of Sale, and Catalogues had.

Wednesday Next.

800 First-class Standard and Dwarf ROSES from English Nurseries, all named; AZALEAS, PALMS, and other PLANTS in variety; 300 CARNATIONS and PICOTEES, PHLOX, PÆONIES, PYRETHRUMS, IRIS, HARDY PLANTS and BULBS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, April 21, at half-past 12 o'Clock precisely.
On view morning of Sale, and Catalogues had.

Duke Street and Tooley Street, London Bridge, S.E.
By order of the Executors of the late Mr. Alexander Tod, in consequence of the sudden death of the late Mr. William Adams Tod.

MESSRS. A. SAVILL AND SON have received instructions to SELL by AUCTION, at the Auction Mart, Tokenhouse Yard, Lothbury, E.C., near the Bank of England, on MONDAY, May 3, at 20 Clock, precisely, the valuable LEASEHOLD PREMISES, known as 16 and 17, Duke Street, and 41, Tooley Street, Southwark, S.E.; also the valuable Goodwill and Interest of the old-established Business of a Potato Salesman, carried on at the above premises for over fifty years so successfully by the Messrs. Tod.
Particulars and Conditions of Sale may be obtained of Messrs. DRUCES AND ATTLEE, Solicitors, 10, Billiter Square, E.C.; at the Auction Mart, Tokenhouse Yard, E.C.; at 17, Duke Street, S.E.; and at the Auctioneers' Office, 39, New Broad Street, E.C.

Ashford, Middlesex.
TO MARKET GARDENERS, BUILDERS, AND OTHERS.

MR. H. J. E. BRAKE will SELL by AUCTION, at the "Angel and Crown" Hotel, High Street, Staines, on THURSDAY, May 6, at 6 o'Clock in the evening to the minute, a valuable FREEHOLD MARKET GARDEN, containing 8a. 1r. 9p., situate at Ashford, Middlesex, well stocked with thriving Fruit Trees.
A valuable corner Plot, with frontages to the Kingston and Feltham Roads at Ashford, containing 0a. 3r. 3p., with the well built Eight-roomed House, Out-buildings, Conservatory, Stable, &c., and good Garden.
Also 28 Plots of valuable FREEHOLD BUILDING LAND, each having a frontage of 33 feet to the Richmond and Feltham Road, and a depth of 200 feet.
Particulars and Conditions of Sale may be had of W. E. FOSTER, Esq., Solicitor, Aldershot; and the Auctioneer, Farnborough, Hants.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.
The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.
The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.
The Vineyard, Garston, Liverpool.

London, W.
Re Boller, Deceased.
By order of the Executors.—Important to Florists.

TO BE SOLD, the well-known Property, The WOODFIELD NURSERY, Harrow Road, W., noted for the growth of Succulents. There are numerous Greenhouses. Terms moderate.
Apply, for full particulars, to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Surrey.

FOR SALE, a MARKET NURSERY. Extensive ranges of Glass, admirably heated. Rent very moderate. Terms to be arranged.
Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Through the Death of the Proprietor

TO BE SOLD, a compact NURSERY, known as Hanwell Nursery. Lease unexpired, 17 years. Apply to Mrs. KRAUSE, Hanwell Nursery, Hanwell, W.

FOR SALE, genuine Old-established FLORIST'S and GREENGROCER'S. Horse and Vans. Everything for use. Price £250; part purchase-money may remain. Apply, 607, Fulham Road, S.W.

COUNTRY HOUSE, 9 miles from London. —Nine Bedrooms, Bath-room, Library, and Dining-rooms, and extensive well-arranged domestic offices. Southerly aspect, open country, healthy, bright, and sunny. Church near. Very extensive Grounds, Orchards; Grass-land abundant: Fruit Conservatories, small Farmyard, with abundance of Milk, Flowers, &c. Stabling, Coach-houses, and Outbuildings. To those desiring a delightful country residence this offers a capital opportunity.
Address A., Woodville, Welling, Kent.

Cuckfield, Sussex.

TO BE LET, from the 8th of May next, excellent walled GARDEN and ORCHARD, with Peach-house, Vinery, and Forcing Pits; the whole comprising 2a. 2r. 11p., suitable for carrying on the business of a Nurseryman and Florist. For terms and further particulars, apply to Messrs. R. H. AND R. W. CLUTTON, Hartswood, Reigate

TO MARKET GARDENERS AND NURSERYMEN.

A MEETING of MARKET GARDENERS AND NURSERYMEN will be held at SIMPSON'S RESTAURANT, 103, STRAND, W.C., ON MONDAY, APRIL 19, at 7 P.M., to consider the advisability of supporting the Worthing Market Gardeners in the case of PURSER *v.* WORTHING LOCAL BOARD of HEALTH, in the Court of Queen's Bench, *re* the Rating of Glass Houses used for Trade purposes.

As the decision in this important case will rule the future method of Rating, it is of the utmost importance that Market Gardeners and Nurserymen should attend this Meeting.

We, the undersigned, hope that earnest interest will be shown by a large attendance:—

PHILIP LADDS.
JOHN TURTLE.
ROBERT LAWFORD.
JOHN ELLIOTT.
GEORGE BECKWITH.
JOHN MALLER.
EDWARD SAWYER.
THOMAS ROCHFORD.
T. PAGET.
JOHN HAYARD
JAMES SWEET.
E. WETHERILL.
G. B. SHOULTS.
PETER E. KAY.

April 12, 1886.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 67 and 68, Cheapside, London, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

NOTICE IS HEREBY GIVEN, that the Partnership heretofore subsisting between us, the undersigned WILLIAM BARRON and JOHN BARRON, as Horticulturists, Nurserymen, and Gardeners, at the Elvaston Nurseries, Borrowash, in the County of Derby, and at 16, Market Street, Nottingham, in the Town and County of the Town of Nottingham, under the style or firm of WILLIAM BARRON AND SON, was DISSOLVED, by mutual consent, from the day of the date hereof. All DEBTS DUE to and OWING by the said late Firm will be RECEIVED and PAID by the said JOHN BARRON, by whom the said Business will in future be carried on.
Dated this ninth day of April, one thousand eight hundred and eighty-six.
WILLIAM BARRON,
JOHN BARRON.
Witness to the signatures of the said William Barron and John Barron—
JNO. MOODY, Solicitor, Derby.

CRYSTAL PALACE COMPANY'S SCHOOL of ART, SCIENCE and LITERATURE.
Artistic and Economic Improvement of Estates and Landscape Gardening. Principal, Mr. H. E. MILNER, A.M.Inst.C.E. This division of the School of Art, Science and Literature is carried on in Mr. Milner's offices, situated on the Aquarium Terrace, Crystal Palace. The student is under articles which secure both theoretical instruction and the advantage of practical outdoor work. During the employment of the student in practical work, a certain salary may be allowed. The profession which undertakes to improve land, and enhance its value by artistic and scientific treatment other than agricultural, has two main divisions:—I. Creating and Arranging Natural Beauties of Landscape, to Adorn Land for Ornamental and Recreative Purposes, Parks or Gardens, Public or Private; including the Architectural, Engineering and Gardening Works incidental thereto. II. The Treatment of Estates for Remunerative Purposes, such as Planning and Development for Building, with incidental Engineering and other Works, whether voluntary or public and statutory. Students will have the benefit not only of the work in Mr. Milner's offices, illustrated by lectures, but opportunities of actual professional work, in which they will practise what they learn. The term of studentship is three years, one year at least of which is devoted to out-door work. The Premium is £300, payable to the Crystal Palace Company in advance. During his second and third years the pupil will receive a salary of £50 per annum, if he discharge his work to the satisfaction of Mr. Milner; but this salary or allowance can be claimed only by the twelve students standing for the time in the order of their entry the first twelve on the roll of the school, and not by any other students, until they in their turn become eligible by becoming one or more of such first twelve for the time. Gentlemen desiring to become students must satisfy Mr. Milner as to their scholastic training and their capacity for receiving the artistic instruction. Each student must hold a season ticket to the Crystal Palace, which, however, will be issued to him at half the usual rate. Lecturer on Architecture, Mr. R. Julian, A.R.I.B.A. Lecturer on Physiological Botany, Soils, &c., Mr. R. Houston, F.L.S. Students will enter their names and pay their Premiums only at the office of the School of Art, Science and Literature, in the Library, Crystal Palace.—F. K. J. SHENTON, F.R.Hist.S., *Superintendent of the Educational Department*, Crystal Palace, Sydenham.

VERBENAS, Ball of Fire, finest scarlet, Purple King, Le Grand, finest white, pink, crimson, blue, &c., 5s. per 100, 40s. per 1000, all well rooted, Spring struck, strong and healthy. Post free, for cash.
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NOTICE TO ADVERTISERS.—Friday next, *April 23, being* Good Friday, *the* "Gardeners' Chronicle" *will be published on* Thursday, *April 22, at 2 p.m.*

Advertisements *for* Next Week *must therefore reach the Office not* later *than* Wednesday Morning, *April 21.*

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SPECIAL NOTICE.

MORLE'S LAST GREAT CONSIGNMENT for the Season is now to hand, in the finest possible condition. They are guaranteed, for quality, the cheapest in the Trade.

Good sound fresh Bulbs, 28s. per 100, 4s. per dozen; larger size, 35s. per 100, 5s. per doz.; extra fine, 45s. per 100, 7s. per doz.

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Effectually clears *all Insects and Parasites* from the Roots or Foliage of Trees, Vines, and Plants. Kills all Grubs, Flies, &c. Cures Mildew and Blight, and makes a good Winter Dressing.

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10 Cwt. of Dried Fish Flesh—Organic Matter.
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3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
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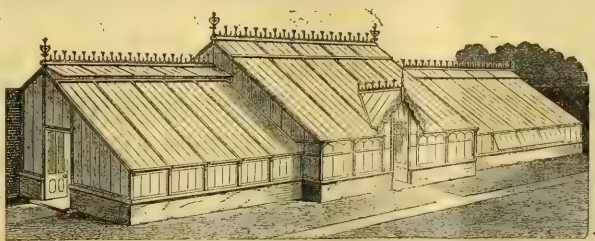
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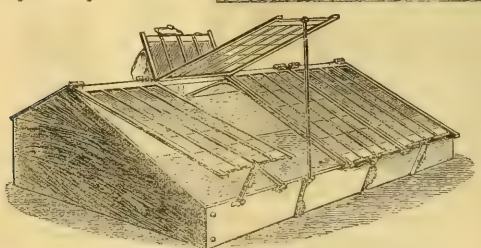
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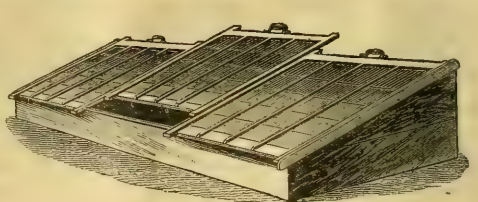


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,, Reid's Quilled, extra fine, mixed ...	0	6
,, Victoria, mixed	1	0
AURICULA, Alpine, mixed	1	0
,, show varieties	1	6
BALSAM, Williams' Superb	1	6
BEGONIA, Hybrid, mixed	1	6
CALCEOLARIA, Williams' Superb ...	1	6
CAPSICUM, Williams' Little Gem ...	1	6
CARNATION, extra choice, mixed ...	1	6
CHRYSANTHEMUM frutescens grandiflorum	1	0
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CINERARIA alba, new...	2	6
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POLYANTHUS, Williams' Prize Strain	1	0
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,, East Lothian, collection of 3 vars.	2	6
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THE
Gardeners' Chronicle.

SATURDAY, APRIL 17, 1886.

THE ORIGIN OF THE POTATO.

AT a time when the question of the origin of our cultivated Potato is receiving more attention than it ever has before, it is important that all the minute details on which have been based conclusions, accepted as facts, should be re-examined with care. It may, therefore, be useful to draw attention to one point, which, though of small importance in itself, becomes important when used as a ground for inferences. It is this—

Gerard in his *Herbal*, at p. 781, under the heading "Potatos of Virginia," gives a figure (wood or copper) of a Potato, and it appears to have been tacitly assumed it was drawn from one of the plants growing in his garden, and that this had sprung from "roots" he had received from Virginia. The figure is recognised a as good typical Solanm tuberosum, and hence it has come to be assumed that tuberosum is wild in Virginia, and from it—this wild tuberosum—all our Potatos are descended.

What value are we to attach to this figure? It is worth carefully enquiring what are the proofs this affords that S. tuberosum was wild in Virginia, and what proofs it furnishes that our cultivated Potatos have sprung from stock brought from Virginia. The elements that have hitherto been admitted into the consideration of the Potato origin question are—(α) names; (β) figures; (γ) descriptions; (δ) written accounts of travellers; (ε) references to voyages.

The straightforward botanical way of approaching the question, that of observing various species, of Potato, or what we think are species, under various conditions of growth, has been adopted in but very recent times. That tubers sent over from Valpariso as S. Maglia should turn out on cultivation to be S. tuberosum is just one indication of the need of greater attention being paid to the value of inferences drawn from mere names.* That, however, is a line of enquiry distinct in itself, apart from reviewing our so-called historic evidence, and in the following remarks, which are confined to a consideration of historic evidence, is not further referred to.

Were it not for those ten words in Gerard's *Herbal*, "since which time I have received rootes hereof from Virginia," the natural inference as to the origin of our Potato would be, that England received it through the Spaniards from Peru, as Italy, Belgium, and Austria are reported to have done. But there are those ten words, there is the woodcut, and there is the heading to p. 781, "Of Potatoes of Virginia." Now what can we make of all this? His *Herbal* was published at the end of 1597. First, what do we know of Virginia up to that date?

In Hakluyt's *Collection of Voyages* (1589)

* Sabine, *Trans. R. H. S.*, v., p. 249, &c.

there is an account of a "Voyage made to the coasts of America with two barks, wherein were Captains M. Phillip Armadas and M. Arthur Barlowe, who discovered part of the country now called Virginia, Anno 1584, written by one of the said captains, and sent to Sir Walter Raleigh, Knight, at whose charge and direction the said voyage was set forth." They started April 27, and in July landed on an island, called by the natives Wokoton. They subsequently went to the island called Roanoak, 21 miles distant, took possession on the 13th, in the Queen' name, in accordance with the patent granted to Raleigh; visited a few neighbouring islands, and returned home by September. Whether they really touched the mainland seems uncertain; but by command the district was called Virginia. The following year, we learn from Hakluyt, Raleigh commenced his colony by sending out seven ships to Virginia, under the command of Sir Richard Grenville. They reached Wokoton June 26, and Roanoak immediately after. Grenville remained till August 25, and then returned to England with the ships, leaving 107 persons at Roanoak. There is a list of "names of those, as well gentlemen as others, that remained one whole yeare in Virginia under the government of Master Ralph Lane." There is also, by Ralph Lane, "an account of the particularities of the imployment of the Englishmen left in Virginia . . . until June 18, 1586, at which time they departed the country." This states that discoveries had been made from Roanoak to the south for 80 miles, to the north for 130 miles, north-west for 130 miles, and also west. The ship that was to have been sent out to them with supplies had not arrived, and was long overdue in the following spring, when Drake, returning from an expedition against the Spaniards at Carthagena and in their West Indian possessions, visited Virginia, by command, to see how the colonists were faring. After consultations the particulars of which are given by Lane, they thought it prudent to take advantage of a return to England, and Drake accordingly brought them nearly all home. It was June 18 when they left, and they arrived at Portsmouth, July 27.

The ship which Raleigh sent "freighted with all manner of things in most plentiful manner for the supply and relief of his colony" arrived immediately after, and finding the colonists had left returned home. This is called the third of Raleigh's expeditions. "About fourteen or fifteen days after the departure of the aforesaid shippe, Sir R. Grenville, Governor of Virginia, arrived, accompanied by three ships," with provisions, &c., for the colony; and after searching for some time without finding any one, returned home.

Later, there was a "fourth voyage made to Virginia with three ships, in the yeere 1587, wherein was transported the second colony." This was a much larger colony than the first, consisting of 349 men, women, and children. In 1588 "two small pinnaces were sent out to visit the new colony, but they were captured and plundered and then returned home. Raleigh gave up his patent on March 7, 1590. On March 20, 1589 (according to White's *Virginia*) or 1590 (according to Hakluyt), three ships and two small shallops were dispatched. They could find no trace of the colonists, even after a protracted search, and returned; no more attempts at colonisation were made again till 1606.

As Gerard says that he received "rootes" from Virginia, we naturally look to these accounts of Virginia to see if there is any notice of the Potato in its wild state. Lane's report, already referred to, contains nothing. There is, however, another report, dated February, 1587. It is called "A brief and true report of the new found land of Virginia, of the commodities there found and to be raised, as well merchantable as others; written by Thomas Heriot, servant to Sir Walter Raleigh, a member of the colony, and there employed in discovery a full twelvemonth." It is a long report to have been written from memory entirely, yet Lane in his report says that when they left Roanoak in Drake's ships the difficulties of embarkation were such that there were left or thrown over cards, books, and writings. That the report itself was put in form after Heriot's return home, is clear from the dates. It has not the value of Cieza de Leon's writings on South America, who made his records from time to time on the spot; but, as Heriot's was a mind accustomed to the accuracy of mathematical thinking, we may rest assured that, though there may be omissions, and perhaps important ones, what there is, is accurate. The first part is on "merchantable commodities." The second part "of such commodities as Virginia (their Virginia, it must be remembered, 80 miles to south and 130 to north of Roanoak, not the present State of Virginia) is known to yeeld for victuall and sustenance of man's life, usually fed upon by the naturall inhabitants as well also as by us during the time of our abode; and first such as are sowed and husbanded." Maize finds a prominent place, and under the section "Of Roots" is the following:—

"Openauk are a kind of roots of round forme, some of the bignesse of Walnuts, some farre bigger, which are found in moist and marsh* grounds, growing many together, one by another in ropes, as though they were fastened with a string. Being boiled or sodden they are very good meat."

In the whole of botanical literature or of records of discovery or of voyage this is the only place where the word Openauk occurs, except in what seem to be direct quotations. It is only by inference, and inference from this quotation alone, that we can arrive at what the Openauk was. The "round" roots "in ropes," as though "fastened with a string," which are "sowed and husbanded," and are "very good meat," when "boiled or sodden," have been generally taken to refer to some species of Potato. Is there any other plant that answers to the description in all respects?† The "sowed and husbanded" is important. Which species it was has to be decided, if it ever can be decided, by some other separate inquiry. Neither Heriot himself says anything in his report about the introduction of the Openauk to England, nor is there any contemporary record that refers to its introduction.

Because Gerard says he received Potatos from Virginia the inference has been drawn that the plants he received were the Openauk Heriot mentions; and then, because he gives a figure with his description, it is assumed that this is a figure of the Openauk. But Gerard neither mentions the word Openauk, nor does he say from whom he received his roots nor in what year he had them. *W. S. M.*

(*To be continued.*)

TREE ROOTS AND BUILDINGS.—At a recent meeting of the Society of Arts, in the course of a discussion on Indian archæology, Mr. Sewell said he did not know anything which would advance the preservation of ancient monuments in India more than the discovery of some means of checking the growth of tree-roots on the temples. All sorts of things had been tried in Southern India, but they had discovered absolutely nothing effectual. They had burnt the roots with red-hot crowbars, and some people had suggested putting sugar upon them, in order to attract ants and other insects, but he did not think that was very practicable. If any remedy were discovered and made known, it would be invaluable.

* Marsh is probably here used literally—*i.e.* = pooly.

† It has been suggested it was the Jerusalem Artichoke.

New Garden Plants.

CYPRIPEDIUM IO, *nov. hybr. angl.*

A FINE cross, raised by Mr. Norman C. Cookson, of Oakwood, Wylam-on-Tyne. Cypripedium Argus was the seed-parent, and Cypripedium Lawrenceanum the pollen-parent. Such a pair might have been expected to produce a fine progeny. The leaf is that of Cypripedium Lawrenceanum. The peduncle is very long, and resembles that of Cypripedium Argus, as well as the flowers, the petals of which are a little deflexed, as in Cypripedium Argus, not straight, as in Cypripedium Lawrenceanum. The dorsal sepal is rather broad, and reminds one of Cypripedium Lawrenceanum, but the numerous median nerves are green, and only the external ones purple. The lateral sepals form a small green-nerved body, and are much shorter than the lip. Petals nearly like those of Cypripedium Argus, brown at the tips. Lip that of Cypripedium Argus. Staminode rather that of Cypripedium Lawrenceanum, much forcipate. It is a rather showy thing.

It is called Io, in honour of Her Royal Highness, Io, daughter of King Inachus. Io having smiled in too gracious a way on Jupiter, had the sad fate to be changed into a cow by Juno, for a time, during which herbivorous period of her life she was watched by the hundred-eyed Argus. Now, this Cypripedium being like Cypripedium Argus, I have named it Io in order to associate the two together in the memory! *H. G. Rchb. f.*

ONCIDIUM SARCODES (*Lindl.*) DISCOIDALE, *nov. var.*

We have or have had in the gardens three varieties. The type of Dr. Lindley, which I do not remember having seen alive, though it may have been so in the past, when I was not scrupulous as to the markings of varieties, has petals and sepals with small scattered spots, and the lip nearly unspotted.

Oncidium sarcodes Rigbyanum (Oncidium Rigbyanum, Paxt. *Mag.*, xvi., 1849, p. 257) has the sepals nearly half covered with lobed Horse chestnut-coloured blotches in the middle and remarkably developed spots on the anterior part of the lip. I had lately a remarkably fine individual from Mr. Strauss, Ehrenfeld, and it is now at hand, less spotted, but with very bright colours, from Mr. Sander. It is represented in Williams' *Manual*, ed. 6, p. 500, simply as sarcodes. Oncidium sarcodes discoidale would be Sarcodes Rigbyanum if there were spots on the anterior part of the lip. There are none there. I had it May, 1879, from Mr. Worlee, at Hamburgh, President of the Hamburgh Horticultural Society. Just now I enjoy the sight of a wonderfully developed grand panicle kindly forwarded by Mr. Sander, to whom it was sent by R. H. Measures, Esq., The Woodlands, Streatham. This variety was sketched in Brazil by the late Mr. Miers. No doubt by pressure of time he selected the most tiny plant he could find. An English orchidist would shrink at the sight of such a miserable dwarf. *H. G. Rchb. f.*

DENDROBIUM EUOSMUM, *Rchb. f., and* C. LEUCOPTERUM, *hybr. angl. Veitch* (*Gard. Chron., Feb.* 7, 1885).

A fresh supply of seedlings of the same origin has flowered at the Royal Exotic Nursery. One series (564) is very near the original type of 1885. The lines on the front side of the column are more pallid than those of the type, and the flowers are smaller. The longest stem is 11 inches high, and Mr. Harry Veitch says it has much the habit of Dendrobium moniliforme, Sw. (japonicum, Bl.). There is, however, quite a new variety, which came out of the same seed-pod. It has much larger flowers and sepals and petals of the purest white, and the disc of the lip is of a glorious purple. Therefore it is called, on account of the white sepals and petals, white-winged — leucopterum. The stems are 17 inches high, as I learn from Mr. Harry Veitch. It strikes one just as if it were a charming white D. nobile. It deserves a place of honour as a success amidst the English Orchids, since it has such pure chaste colours. *H. G. Rchb. f.*

ON THE NARCISSI OF THE LINNEAN HERBARIUM.

There are two or three points connected with the naming of Narcissi on which I want to offer an explanation to my fellow-members of the Narcissus Committee of the Royal Horticultural Society and others interested in the genus.

The first is upon the Narcissi as they were known to Linnæus. The question continually arises at our committee meetings and other times, What is the type form of a certain plant named by Linnæus, which we now subdivide? From a bibliographical point of view the type of any variable species is the form that was known to the author who first gave the plant its binomial name. So far as the Linnean Herbarium throws light upon the matter, the case stands as follows:—There are in it fifteen sheets of Narcissi, and I will enumerate them in the order in which they stand, the name printed in italics being that written on the sheet by Linnæus:—

1. *poeticus.*—This is marked by Salisbury as radiiflorus, but looks to me typical poeticus.

2. *Pseudo-Narcissus.* — A very monstrous form, probably of major, with both corona and perianth-segments multiplied and slashed up into narrow slices down to the very base.

3. *bicolor.*—From the Upsal garden.

4. *minor.*

5. *moschatus.*—From the Upsal garden.

6. *triandrus?*—This is ordinary Jonquilla.

7. *trilobus.*—From the Upsal garden. A very small deep-coloured variety of odorus, with a shallowly 6-lobed corona.

8. *odorus.*—Typical odorus, with a paler and much longer flower than in the last, with a deeply, regularly 6-lobed corona.

9. *Tazetta.*—Typical Tazetta, as described in my Synopsis, with white perianth and yellow corona.

10. *Tazetta.*—A second sheet is N. patulus.

11. *trilobus* crossed out and *Tazetta* substituted. Marked in the handwriting of Salisbury, "tenuior, Curtis, according to Sabine;" "certainly angustifolius, Curtis;" "tegulæformis, R.A.S."

12. *Bulbocodium.*

13 and 14. *serotinus*—two sheets, the latter from Badajoz, from Lœfling.

15. *Jonquilla.*—Not the Jonquil, but N. juncifolius.

The Narcissi named by Linnæus in the first edition of the *Species Plantarum* (1753) are—1, poeticus; 2, Pseudo-Narcissus; 3, Bulbocodium; 4, serotinus; 5, Jonquilla; 6, Tazetta. To these in the second edition (1764) are added—7, bicolor; 8, minor; 9, moschatus, 10, calathinus; 11, triandrus; and 12, trilobus. Out of these two only, calathinus and triandrus, are not represented in the Herbarium. Linnæus took a broad view of species. For instance, it will be seen he knew juncifolius, and did not separate it from Jonquilla; and knew patulus and tenuior, and did not separate them from Tazetta. *J. G. Baker.*

MARKET PLANTS.

Messrs. Beckwith's Tottenham Nursery.—Amongst the immense number of species and varieties of plants, hardy or tender, now in cultivation, it is remarkable how few there are that possess the requisite properties to render them of any use for market. The public whose likes and dislikes determine the growers in what to adopt and what to reject, know little and care less about the nice drawn distinctions that influence those who are supposed to possess superior knowledge in gardening matters. No matter how costly or rare a flower may be, if it is wanting in the matters of decided colour and ability to last well it is useless to the market growers. Fortunately for them, fashion in flowers is not so fickle as in some other things, nevertheless they find it necessary to look well ahead in the direction the public taste is taking. From time to time some particular colour takes a decided lead and continues to do so for a lengthened period—as, for instance, during late years yellow, in its numerous shades, has been all the rage, although until the present movement in its favour it was less cared for than any other colour.

Narcissus.

The partiality evinced of late for simple hardy flowers, together with the fact that many of the kinds are of the required yellow colour, has brought the Daffodils into favour to an extent that before was unknown. For some years during the spring months, from the time they are obtainable out-of-doors, the quantities that have been sold in Covent Garden are well nigh incredible. To such an extent has the run been on them, that it has much reduced the demand for, and consequently the value of everything else, so long as they last. The adaptability for forcing, which some of the Narcissus family possess, has long been known; but that the double and single varieties of the Trumpet Daffodils, and the bicolor section, would force well was scarcely known, if known at all, until the present fashion for them came up. Messrs Beckwith now grow immense quantities of at least a score of sorts. One of the best forcers is a large double form of spurius; Aurantius plenus (Butter and Eggs) also forces beautifully. The old common double variety does not force so well as the above. Another fine sort that stands heat well is Phœnix, a double sulphur-coloured variety; this is a great favourite in the market, as also is Empress, a very large-flowered kind, with rich yellow trumpet and white perianth, one of the finest and freest bloomers of the bicolors—the most chastely beautiful of all the large-flowered section of Daffodils. Of this there was a fine batch covered with blooms, occupying a portion of a stage in one of the long houses now devoted to these plants. This variety is a gem when forced, as it is in the open ground. It is a scarce and dear sort, but Messrs. Beckwith are making great efforts to get a large stock of it together. Stella is another beautiful single sort that comes in a month earlier than most others. One of the best of the single yellow Daffodils for forcing is coronatus; the perianth segments are broad, the cup large and open.

Polyanthus Narcissus.

Of these the earliest in bloom was gloriosus, quantities of which were open in November.

Narcissus poeticus

is represented by numbers such as, without being seen, could scarcely be credited; the bulbs are planted out on the flat stages of the long houses they occupy as closely as they can be grown. The variety grown is a very fine one, sometimes sold under the name of poetarum, and although not the best form that bears the name, it is much superior to the ordinary variety. It began to bloom the first week in January.

All the most likely sorts of Narcissus that are obtainable in quantity are tried, and, as with most other plants that are forced, there is a marked difference in the way that different varieties respond to artificial treatment in heat, some coming on much more freely than others when treated alike. Some idea of the extent of the stock of these plants, which Messrs. Beckwith have got together in a short time, may be formed from the fact that the old bulbs, which they grow themselves, occupy 2½ acres; whilst offsets to the number of some 400,000 are sent to be grown on until strong enough for forcing, to Holland, the land, *par excellence*, of bulbs.

White Lilies

are one of the leading specialties now. Foremost amongst them stands L. Harrisii, the true variety; so amenable is this beautiful Lily to pot culture that it has been more or less in flower here for over two years. No other kind is equal to it for winter blooming. A very large stock is grown of L. eximium, which is the best form of L. longiflorum; 10,000 bulbs of it will have been forced this season; the plants are in splendid condition, unusually strong and sturdy in growth, promising to yield a profusion of flowers. L. candidum, the well known white garden Lily, is now pressed into the service of the market flower forcers, but although one of the freest of all the white Lilies, only a few of those who have taken it in hand have been successful with it, and this after patiently studying its peculiarities. The variety of this Lily grown here is much dwarfer than the common sort of flowers, a month earlier in heat, and is altogether much superior to the typical form. Ten thousand of this Lily are coming on, three in a pot, and as even as possible from end to end of the long stages which reach from end to end of the houses it occupies.

Hydrangeas.

A new form of the common Hydrangea is now largely grown here; the stems are quite black, the flowers a little deeper in colour than the old variety, and the flower-stalks are bright red. It is a very good grower, and is here better liked than the ordinary variety.

Roses.

Ten thousand Tea Roses were grafted this season; half of them had taken, and were growing away fast when I saw them early in February; the remainder were being got on with. The seedling Brier is the only stock used; the sorts are The Bride, a pure white sport from Catherine Mermet, and an exact counterpart of that beautiful variety in everything except colour; Duchess of Westminster, pink; Perle de Lyon, yellow; Etendard de Lyon, yellow; Isabelle Sprunt, sulphur; Souvenir d'un Ami, rose; and Devoniensis, one of the most beautiful of all the Teas, but a variety which few growers can induce to produce flowers in sufficient quantity. Nevertheless, it can b bloomed freely enough, if it only gets the right treatment, and the flowers always command a good price. It is scarcely necessary to say that the Roses which will answer for market growing are very few; the colour and shape must be such as suits the taste of the public, they must be free bloomers, good forcers, and capable of being made to grow freely so as to give a succession of flowers.

Pelargoniums.

Amongst the immense quantities of Pelargoniums still grown by Messrs. Beckwith there is a new early flowered variety named Etna, said to be the best of all the high-coloured sorts; brilliant crimson. Its season of blooming is from March to May. *T. B.*

GEOGRAPHY IN THE GARDEN.

If the plan of adding an indication of the native countries and station to the name of a plant on the label (such as often done in botanic gardens) were more generally adopted in private collections it would add much to their interest. Now that the clue given by the geographical distribution of plants has proved to be of paramount importance in their past history, such a method of labelling would open up new pleasures both to the visitor and to the grower, whose memory, unless he be a very experienced botanist, is apt to need refreshing now and then both as to names and habitats. Another advantage in careful labelling is that it may prove a check to the essentially retrograde movement towards inventing English names, which are in the end far more bewildering than botanical ones; for a peculiarity of these English names is that of being as misleading as possible from a botanical point of view.

No one can object to the use of old English names which are sanctioned by association, and form links between present and past flower gardening which it would be a thousand pities to break. But now that the interchange of plants between different parts of the world is becoming more and more common, the need for cosmopolitan names (if they may be so called) is greater than ever. The more information labels can give in a short space the more chance there is of their general use; nor need they be at all a disfigurement to any garden. Hundreds of zinc labels may be used without being conspicuous. In the case of widely distributed plants, two of the countries furthest apart might be given; for example, Britain—New Zealand for the Killarney Fern (Trichomanes radicans), and the Holy Grass (Hierochloe borealis); or "Temperate regions of globe," "N. temperate," "S. temperate," "Temp. America," as the case may be.

It might be of interest to group separately the plants from different countries, but in most gardens this could hardly be done without injury to the general effect as to beauty; and it might also involve cultural difficulties, as plants from the same country often require such different treatment as to soil and position; but in places where the idea might be carried out on a larger scale it would give much additional variety, and perhaps also the charm of novelty, to come upon a Japanese or a Chinese, an Indian or a South American garden; and in the milder parts of the country a garden filled with some of the hardier of the Australian, New Zealand, and Tasmanian plants would be possible. There is material enough amongst hardy plants to make each garden beautiful as well as full of interest.

Of course, with artificial heat, representatives of every flora might be found even in a moderate-sized garden; but I speak only of the geographical range

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possible in outdoor collections, and such a range has by no means narrow limits. There are few countries in the world from whose floras some representatives might not be found in a good collection of hardy plants, as even from some tropical countries alpine species are hardy. In the same garden may be grown Saxifraga oppositifolia, which has been found within 7° of the Pole; and Hypericum triflorum, which though probably introduced from India is also a native of Java. This latter shrub can be grown as a wall plant out-of-doors in the south-east of Ireland, and probably in other parts of the kingdom. There is a peculiar interest in growing a plant of the common Polypody, which I received direct from the Falkland Islands; and the numerous instances of specific identity from widely separated parts of the world are of hardly greater interest than those instances of slightly different species of the same genus, such as Empetrum nigrum from Britain and Empetrum rubrum from South America; as these differences form quite as important a part in the study of geographical distribution.

Examples of specific difference and identity are endless, and yet all these points of suggestive interest as to the history of each plant are too often lost sight of in ordinary gardening, and many an opportunity for valuable observations in plant life is probably lost too, for want of the slight amount of trouble and thought required to keep in mind from what part of the world each plant comes. *C. M. Owen.*

THE SEED TRADE.

KIDNEY BEANS.—A short time ago I asked the representative of one of the wholesale seed-houses in the City how many bushels of Scarlet Runners were sold by his house in the course of a season, and the reply was that the average sales were about 2000. This represents a large quantity of seed of this popular vegetable, and let it be remembered it is the consumption of but one wholesale house only. If it were possible to get at the aggregate quantity of Scarlet Runner Beans, first received into, and then sent away from the Metropolis in one season, it would be astoundingly large. Think, too, of the quantity of land required to produce them, the number of hands employed in preparing the ground, sowing the seed, cultivating and harvesting them, the cost of carriage, &c., and then we can form a general idea of what a huge industry the seed trade is. Fancy being deprived for one season only of such a favourite vegetable, and what a loss it would be! It comes in at a time to supply the place of the main crop Peas that have gone out of bearing. I have met with people who could not eat Peas. I search my memory in vain to find one who could not take kindly to Scarlet Runners.

THE SCARLET RUNNER.

To whom are we indebted for the Scarlet Runner? It has probably been in cultivation in this country for something like 150 years. He who discovered its edible qualities, and introduced it to English dinner-tables, was a benefactor to mankind. It is said to be a native of South America, probably growing as a perennial, though increasing itself also by means of shedding its seed. Probably it came first to France or Spain, or some parts of Germany, where its edible qualities were first recognised, and then it got to be known here.

In Rhind's *Vegetable Kingdom* it is stated that the Scarlet Runner was introduced from South America in the year 1633. It is supposed that it was first cultivated by Tradescant, the celebrated gardener at Lambeth. It was then, we are told, in so great repute for its flowers that they formed the leading ornament in the nosegays of the ladies, and it seems to have kept its place only as an ornamental plant for nearly a hundred years, as its legumes were seldom used as a vegetable until brought into notice by Miller, of Chelsea, in the eighteenth century.

A seed catalogue published in 1817 gives the Scarlet Runner and the White Seeded Runner. It also includes the following dwarf French Beans:—Negro, Canterbury, Dun, Fulmer's Forcing, and the black, purple, and red-speckled, with others scarcely known now in seed lists, unless indeed they appear under other names, making fourteen in all. A catalogue of a leading wholesale seed house gives at the present time a list of twenty-four varieties, and seven of Runners. In 1817 the Painted Lady Runners do not appear to have existed. It is known also as York and Lancaster, because its blossoms are scarlet and white, blending in one the colours of the opposing Roses. How did the Painted Lady originate? It is generally regarded as a sport from the Scarlet Runner, but it has also been claimed as a true species. Those who grow Scarlet Runners aver that they will occasionally sport to the Painted Lady type, and this means not only a change in the flowers, but in the marking of the Beans also. If it is a sport, then here is a nut with a tough shell for the botanists to crack.

Scarlet Runners are largely grown in England for seed—in Bedfordshire, Essex, and elsewhere. They are grown by contract, as in the case of Peas; many are grown as a matter of speculation, the grower taking his chance of getting remunerative prices on the market. Holland and Germany send large supplies to this country and elsewhere; indeed, it may almost be said that seeds of this thoroughly English plant are grown all over the world. Some of the best samples ever seen, come from Nova Scotia. Holland probably produces the finest samples of White and Scarlet Runner Beans; those obtained from Germany are rather smaller in size, and more nearly resembling the English saved. In the warmer countries the seeds produced are generally smaller in size and not so well coloured. When the English-saved Scarlet Runners are a fine sample and well harvested they are preferred to all others. By the White Runner is meant the white form of the Scarlet Runner with flowers and seeds both white, an undoubted sport from the scarlet; it is known as the Giant White Runner, or the Dutch Haricot, being grown largely in that country for consumption by the Jewish race. It is claimed for this variety that it does not drop its blossoms so quickly in hot dry weather as the Scarlet Runner. The Variegated or Painted Lady is much less restricted in cultivation, being confined mainly to England and Germany.

The old Caseknife or White Dutch Runner is now nearly obsolete, and practically useless compared with the others; the pods also have a thin shell.

The Painted Lady is regarded as the earliest of the Runners—not so tall in growth; it does not produce so much bine, and will mature its fruit nearly ten days earlier. Such is the testimony of one of the best informed men in the wholesale seed trade. It is a good cropper also, though testimony has been given to the opposite effect.

The Champion Scarlet Runner is a fine selection from the common type made by Messrs. Carter & Co., and produces larger pods, it is therefore useful for exhibition purposes. Some years ago the same firm made a selection of a black-seeded Runner, a sport from the scarlet; but in addition to being difficult to fix its character, it presented no point of improvement over the Scarlet.

The New Zealand and Eclipse Runner Beans are now scarcely heard of; the former proved generally too tender for English gardens.

There are several distinguishing features in the Runner Beans as compared with those of the dwarf types—the cotyledons remain underground, the plants are of a perennial character if protected from the cold, and the racemes of flowers are as long or longer than the leaves, while those of the ordinary French Bean are much shorter. There is also this peculiarity in the growth of the Scarlet Runner—that, unlike most other twiners, it twists in a contrary direction to the course of the sun. Loudon, in his *Encyclopædia of Gardening*, states that "this aberration from the common habit of plants has been accounted for by supposing that the native climate of the Scarlet Runner will be found to lie south of the equator, and that the plant, although removed to the northern hemisphere, is still obedient to the course originally assigned to it, twining in a direction which in its native climate would be towards the sun." It has been stated that the Scarlet Runner is a perennial, but it is so keenly sensitive of frost that it is soon killed by it. Rarely, if ever now, are the roots preserved for another season; but being of a tuberous character, they were formerly lifted after being cut down and preserved during the winter, much as Dahlias are, planting out in spring, and obtaining in consequence a crop somewhat earlier than from Beans sown in the spring in the open ground.

As a matter of course Runner Beans after harvesting have to be hand-picked the same as Peas before they are sold. Much depends upon the way in which they are harvested. Last year proved a bad harvest-time for Beans, a great many that otherwise would have been available for seed did not reach maturity. But the supplies that are drawn from other countries render our English seedsmen to a considerable extent independent of a harvest in our own country, but a bad harvest is a serious loss to the producer notwithstanding.

Can any one suggest a means of keeping Scarlet and Painted Lady Runner Beans in a dry state, bright and well coloured, from one winter to another. Like the Longpod and Broad Beans they will become discoloured, and practically useless for purposes of sale when so kept.

The Butter, or Wax-podded Beans, which are to be found both in the Runner and Dwarf sections still sell. They are of German introduction, and it would be interesting to have their origin set forth. They are delicious eating when properly cooked, and are much appreciated on the Continent.

DWARF BEANS.

The Dwarf Kidney Beans in all their varied colours, from the pure white seed of the Canterbury, shining black of the Negro and crimson of Canadian Wonder, the shades of Dun, and all the variety of speckled sorts, are now largely grown in Italy, that climate producing a crop of well-ripened seeds in less time than any other country, but in consequence of the shorter season the seed is smaller than either German, French, or English grown Beans. In England the main of the dwarf Beans are grown in Essex. The unfavourable late summers and autumns in this country of late have made it necessary to provide in the productions of other countries for failures in this, and especially was this necessary last year, when, as already stated, not a tithe of the dwarf Beans saved for seed reached maturity. Although large sized seeds are generally preferred in commerce it is not at all essential to sow large Beans; provided the small ones are of the true type, they will produce as good seed as large ones if the season is only favourable to their full development. But in the case of dwarf Beans, as with other seeds, continual selection is necessary in order to secure the best stocks.

In reference to varieties of dwarf Beans, that known as Canadian Wonder, introduced a few years ago by Messrs. Sutton & Sons, has taken an immense stride in relation to demand over all others. It is a thoroughly distinct Bean—distinct in shape, size, and in lateness; indeed, later than many others. Probably the true credit of introducing this Bean is due to the late Mr. James Cutbush, of Highgate, who catalogued it for years under the name of Cutbush's Giant French Bean, but who did not appear to make it known beyond his own business circle. It was, in all probability, originally a fine selection from the Red Flageolet of the French.

Next to the Canadian Wonder in popularity and usefulness comes the Negro, with its short and long-seeded varieties; and the pale and dark Duns, the latter known also as liver-coloured. The Negro is one of the earliest, and is largely grown by the market gardeners for a first crop. A new selection, demanding attention from gardeners, is the Monster Negro, a fine selected type, largely productive, with long and handsome pods, but being a late ripening variety it is difficult to have it in quantity unless in a very favourable season. Ne Plus Ultra, introduced by Mr. Geo. Cooling, of Bath, is a distinct, excellent, and very productive Bean, the seed cream-coloured. Osborn's Prolific is a good early Bean, and one that is being much grown by gardeners. Many others are of inferior merit. For exhibition purposes the best are Ne Plus Ultra, Canadian Wonder, and the Monster Negro. The pods of some of the dwarf Beans are streaked with purple or black, but it is no detriment to their good quality when cooked.

But why called French Beans? The original of our dwarf French Beans is a native of India. Perhaps the French were the first to take in hand the culture of the dwarf varieties, and so they came to be regarded as French.

As a farinaceous seed for the food of man, the kidney Bean is considered by the French as being far superior to any other legume, and next, if not equal in importance, with Wheat. In this country the culture of dwarf Beans has scarcely extended beyond the gardens of the well-to-do: and even these kidney Beans occupy but a small breadth, and are only cultivated for their pods, which are used in a green state, or when about half grown. The cottager appears to prefer the Scarlet Runner to any of the dwarf types. In France, Italy, and other countries of Europe, as also in the Canadas and United States of America, and elsewhere, kidney Beans are not only used in a green state, to a much greater extent, it is said, than

in this country, but are cultivated in the fields, and by every cottager who possesses a piece of garden ground. for ripe seeds, of which they make various kinds of dishes, and consider them of as much importance in their domestic economy as the cottagers in this contry do Potatos. Unlike the common Broad Bean, the kidney Bean does best in a fairly light soil of good quality, and in a favourable season the crop is a large and remunerative one. *Pisum.*

ALPINES.

Muscari ligulatum.—This rare and sweet little Grape Hyacinth, although, in flower at least, resembling to some extent the commoner kinds, is yet ahead of them in blooming, being just now at its best. The foliage is very glaucous and deeply channeled, thus differing entirely from any of the other commonly cultivated species. It is of dwarf stature, with two Orchid-like (Orchis Morio) leaves, and a dense, rather short spike of deep blue flowers. Here it is grown in a prepared bed of fibrous loam, peat, and leaf-mould; but as my acquaintance with it has been of but short duration, I will not assert that this is the most suitable compost for its successful cultivation, although I may add that it, so far, seems to suit it well. Perhaps some of your readers who have had more experience than I have had will kindly let us know its requirements, and tell us if it has proved perfectly hardy in this country.

Polygala Chamæbuxus.—Our Swiss friends frequently express surprise, in one or two instances almost amounting to incredulity, that we English are able to successfully cultivate this pretty Milkwort. No difficulty whatever do we experience, for in many an English garden, although planted by the half-hundred, rarely or ever does a death occur. True we have it not in such perfection as it is usually seen in its alpine home, but it is perhaps nothing worse for that, as its low straggling habit reveals the pretty creamy-yellow flowers as well as if they were elevated to double or treble the height. Few of our diminutive peat-loving plants are more attractive and useful, the foliage forming dense, close tufts of usually not more than 4 inches in height—special recommendations for associating with other dwarf rock shrubs. The variety purpurea is perhaps preferable to the latter, for, although of smaller growth, the deep purple flowers are both distinct, beautiful, and freely produced.

Arabis lucida.—This, the shining Rockcress, is a particularly desirable species, not only for its neat compact habit of growth, but also for its verdancy and floriferousness. True, the flowers are in a somewhat straggling raceme, but this is quite made up by their quantity and the early season at which they appear. A. lucida variegata is another very ornamental rock or border plant, while for edging purposes it is effective in no small degree. Both species and variety are readily managed, the soil best suited to their nature being what is open and sandy if fairly moist.

Erica carnea.—Of this lovely plant it may well be asked why is it so rarely seen?—for certainly a more ornamental occupant of our spring gardens is not to be found. Masses of it grown in the ordinary border, or cushioning the sunny side of some rocky boulder, and studded with their reddish-purple flowers, are just now a treat which even the most unobservant will not pass by unnoticed. Unlike the generality of Heaths the one in question is by no means particular about a peaty soil, good sandy loam or the ordinary garden soil suiting it well, and, as regards position, it can hardly be placed wrong, for the rockwork border or shrubbery come alike; while in sunshine or shade, sheltered or exposed situations, but little difference is noticeable in this ever-accommodating plant. From early February till late in April is the usual flowering season of this, the earliest of the Heath family.

Anemone fulgens, or the scarlet Wind-flower, whether for effect or usefulness, is one of the best flowers that can be introduced to the garden, for its fiery brilliancy during the winter and spring months is excelled by no other; while for floriferousness and durability it equals any and surpasses most of the extensive family to which it belongs. Planted in good bold masses, in rather damp portions of the rockwork, it is perhaps seen to best advantage, the brilliant scarlet flowers rising well above the dwarf, crisp, finely divided foliage. Rich sandy loam, moderately moist, and a sunny situation, are, we find, the chief requirements of this distinct, handsome, and early flowering plant; and when thoroughly established under these conditions is, without doubt, the noblest ornament of our spring gardens. *Emergo.*

The Rosery.

AFTER THE STORM.

I remember well, in yachting days, how often after a severe gale we were occupied in "repairing damages," sometimes so severe, that we had to put into port and give a general overhauling; at other times comparatively slight, so that we could "lay-to," and do them at sea, but it was always an interesting question how far the good cutter had withstood the gale. And so, too, with the Rose grower—when the winter is past and gone he has to look through his garden to find out how far he has weathered the storm, and what may be necessary for him to do in the repairing of damages done. Sometimes, as in the winters of 1883-84, and 1884-85, he has had comparatively little to do, the mildness and the fine ripening weather of the autumn of the former year—a year so lovely in its general aspect, that, taking it all in all, we are not likely to look upon its like again for some time to come; but this year the case is different. It is true, that in most places, there has not been any very low temperature, and nothing like the severe frosts we have had in bygone years; and in the earlier part of the winter a good quantity of snow in many places kept the plants warm, and so hindered the frost from taking as much effect as it might otherwise have done; but during the earlier months of this year a long continuance of low temperature, with frosts at night and absence of sun by day, together with a bare soil, tended greatly to the injury of the plants—the month of February especially being remarkable for its low temperature.

No greater contrast could possibly be afforded than the appearance of a Rose garden in the first week in March in both years. Last year the plants were all in leaf, flower-buds even at the terminal shoots being formed, and the fear being that they would so bleed when pruned that the plants would be injured. This year in many places the same plants presented an array of dead or half-dead shoots, which had all to be cut away, and the plants considerably reduced thereby.

The effect of the winter on Roses will, I think, depend on three causes—1, situation and soil; 2, varieties; and 3, stocks. With regard to the first of these, it is very difficult to determine what affects them, although in some cases it may be pretty clear; thus, where a Rose garden is high it is less likely to be injured than where it is in a valley, however sheltered; where, too, there is any water near they are sure to be more injured. Heavy soils seem, from their retaining more moisture, more injurious than light ones; yet one grower told me that on the Bagshot sand he had suffered severely; but then where his Roses are planted the natural soil is taken away and clayey loam substituted; so that another grower, Mr. Geo. Mount, of Canterbury, who has a small and sheltered garden, which he has made famous by the excellent Roses he has exhibited from it, told me that he suffered more there than he did in his large garden, which lies on the low ground, and which consists of a good stiff, greasy loam. Then the varieties have much to say to it: some are more susceptible than others—why, one cannot quite say. Thus Mdme. Gabriel Luizet is one which we often find much injured; while others which have more of the Tea blood in them, such as Captain Christy, escaped. It has been said by some that smooth-wooded varieties suffer more than the thorny ones, but I hardly think this is borne out by facts. Then I think that stocks have a good deal to do with it. The Manetti is very early. The sap begins to run soon, the shoots become soft in consequence, and as a result the Roses budded on them suffer; and this is one of the advantages which the seedling Brier has over it. It is much later, and as a consequence the sap does not rise so soon; nor do the Roses have to endure the ordeal so soon. One of our largest growers, who has not been an over-zealous advocate of the seedling Brier, told me that in looking through two quarters in his nursery, one on the seedling Brier and the other on Manetti, he found the latter much more hardly hit by the frost; of course the same will hold good with regard to the Brier cuttings. Standards, where people will persist in growing them, have suffered very severely; it is difficult to protect them adequately.

PRUNING.

In going through the Roses for pruning, where this has not been done, it will be found that the frost has been before us, and it will be necessary to cut out a considerable portion of the dead wood; in pruning it will be necessary to cut back to sound wood where discoloured pith is present; it is a sure sign that frost has injured them, and therefore all this must be severely cut away. It will probably be found necessary in many localities to prune very hard; but there is this advantage in growing dwarf plants, whether on their own roots or budded on the Manetti or seedling Brier, or Brier cutting, that you may cut right down to the ground with the certainty that shoots will start again from the crown thus left. Where plants are of very vigorous growth, such as Etienne Levet, Madame Clemence Joigneaux, it is not well, as an ordinary rule, to prune them hard, for they are apt to run into wood and throw up long shoots which will not bloom; in fact, as a rule, the more delicate growing a variety is the harder may it be pruned. In this season it will have probably been found that many of these have been amongst the hardest hit by the frost, and therefore they will require the pruning knife just as much as the more delicate ones.

I have had in my mind in these observations the hybrid perpetuals alone: Teas and Noisettes from their greater tenderness, must be treated differently, and very much depends on the locality in which they are grown. In the North of England they cannot be grown without protection, while in the South-western Counties they grow without any; in some places they are taken up in the autumn, laid in and then protected—in others frames are placed over the beds, which are then covered with either glass or wood; in other places they are protected by branches of evergreens placed amongst them—in the South-eastern Counties, we hardly require this, and in looking through Tea beds I find that while there is much more dead wood than amongst the hybrid perpetuals, that in very few instances shall I have to cut them down to the snow line. Some of the newer varieties seem to have gained in respect of hardiness, while their flowers are as beautiful as the older varieties, indeed, I have a standard of Marie van Houtte—I mean a standard of itself (not budded)—which seems to be very little touched, the stem being perfectly sound. This increase, for you ought to make the Teas still more popular, for there is no class amongst Roses which gives us pleasure for so long a time as do they when properly managed, and certainly no class is more beautiful. *Wild Rose.*

THE ARNOLD ARBORETUM.

In the last annual report to the President of Harvard University Professor Sargent notes that the arboretum should contain two distinct collections—1. The permanent collection for display, consisting of a selection of species intended to illustrate as perfectly as circumstances of climate will permit, and by fully developed specimens, the most important types of arborescent vegetation. 2. A collection for investigation, which need not necessarily be permanent, and which should be arranged in a manner to permit the admission of new species or new forms, and the removal of others which have served their purpose. To this second collection would naturally be joined all minor collections like that of shrubs and other plants of less enduring character than trees.

The type collection will contain representatives of all the genera of trees hardy in Eastern Massachusetts. Species of doubtful hardiness and all accidental and other varieties not permanently fixed by time or long cultivation will be excluded. Prominence will be given to the species of Eastern North America, and especially to those native of New England, because these species are better adapted to reach maturity in this climate than those of any other region; and because it is believed that the community which will naturally have the closest relation with the Arboretum, will derive the greatest benefit from the examination of a collection of our native trees growing under favourable conditions, and eventually fully developed; and this doubtless be found true, whether the collection be studied in its scientific, industrial or purely ornamental aspect. The plan contemplates that each hardy tree species of Eastern America shall

be represented by an individual so planted as to secure for it a maximum growth attainable in this climate, and also by a group of individuals varying in number from six to twenty-five selected to show variations of character and habit in the species, and planted with the view of securing its expression in mass, rather than perfect individual development. The general type collection will be arranged by genera, from Magnolia to Larix in the sequence of their botanical relationship, such an arrangement probably affording the greatest facility for examination and maintenance. In a few instances, however, genera will be placed out of the natural sequence in order to secure for them favourable conditions of soil and exposure. The species of the different genera will, as far as practicable, be arranged geographically: first, those of North America, then those of Europe, then those of Asia; the species of each continent in their proper botanical sequence.

THE BEST VEGETABLES FOR EXHIBITION.

Brussels Sprouts. — To obtain long stems thickly furnished with firm Sprouts they should be grown in a sunny, well-exposed position. When planted they should be placed in rows a yard apart, or isolated specimens can be grown here and there amongst dwarfer growing crops, where they will not afterwards interfere with tillage operations. It is best to plant in drills, and after the plants are about half grown several inches of soil should be drawn up to the stems, just after a good soaking rain or artificial watering. These little mounds round each stem will soon be permeated by active roots, and as well as assisting growth they will keep the stems steady and in an upright position. However, any that are required for exhibition on the stems as grown are much better staked and made secure. Soil of ordinary fertility is quite rich enough for their cultivation. When judging stems of Sprouts, the length of stem, number of Sprouts, and solidity, should take precedence, and not simply the length and thickness of stem and large loose Sprouts. May's Northaw Prize Sprout seems one of the best adapted for exhibition on stems; Merritt's Non Plus Ultra is also a good selection. Veitch's Exhibition is a good variety to grow from which to pick dishes for collections, and when planted at the same time as other varieties it is the first to produce Sprouts with which I am acquainted. This, above all other varieties, must not be planted on rich soil.

Carrots.

As I have previously alluded to the preparation of soil for roots no further remarks are necessary on this score. When striving to produce fine symmetrical shaped roots, it is most important that the young seedlings should be thinned early, in order to avoid interlacing of the roots. It is best to thin the plants twice or even three times, as then the second thinning can be made use of. At the final thinning the plants should be left 1 foot apart each way. When the roots are three parts grown, large grubs often prey upon them. These can be easily caught by removing about an inch of soil close to the Carrots. The best top-dressing to apply when the roots are three-fourths grown is fine road-scrapings with a little soot added. This has a tendency to improve the colour, and prevents the upper part of the roots from becoming green. At the time of application, should the weather be hot and dry, the top-dressing should be followed by a watering. The best varieties are Early Nantes Horn and Sutton's Improved Intermediate, neither of which varieties can be grown too large, providing the roots are not coarse and disfigured by lateral roots.

Cauliflowers.

There is a great variety of opinion as to what size the usable head should be allowed to grow to be placed on the dinner, or exhibition table at the highest state of perfection. I think, at least for exhibition, the head cannot be too large, providing shape, colour, closeness, and solidity accompany size, otherwise they must be considered too far gone, or of imperfect cultivation; and when deciding the merits of these, the same knowledge of varieties that is so indispensable when judging other things is also requisite. Rich holding soil is what the Cauliflower delights in, and if this cannot be given them, surface-dressing and frequent stimulating waterings must be applied throughout their growth. Drought and lack of fertility in the soil are the chief causes of premature flowering, generally termed buttoning. Heads for special purposes must be zealously watched, I may say daily, as caterpillars and slugs soon disfigure them if not kept in check by hand-picking. To obtain flowers of as fine a colour as possible, shading in some form must be given as soon as the foliage shows signs of leaving the heads exposed, Some varieties, but not all, have sufficient foliage to protect the heads if the leaves are broken mid-way. Rhubarb leaves are the best for shading those which have not, and they should be laid over them several leaves in thickness. The cool of the evening is the best time to attend to these apparently small but nevertheless important details. Considering the collective merits of varieties which have come under my notice, two are sufficient to carry one through the season, viz., Early London and Veitch's Autumn Giant, and for ordinary use they cannot be excelled. *G. H. R.*

MYOPORUM INSULARE.

This with M. Sandvicense attains a height of 40 feet—Dr. Hildebrand, as he informs me, having seen the species of that height. As thus M. insulare is one of the two largest Myoporineous plants in existence, it will be of interest to your readers to give an illustration of the tree (fig. 92, p. 493). Mr. Bentham mixed up this species with M. serratum and M. viscosum, but it is very distinct from the two latter, as pointed out in the *Fragmenta*, vii., 110. M. viscosum and M. insulare growing here in some places mixed without the slightest transitions, while M. serratum is confined to West Australia, being closely allied to M. oppositifolium. Thus in the *Census* a fair sequence is adopted accordingly for these species. I wrote to Mr. Carruthers, begging of him to ascertain whether Forster's M. crassifolium from *Botanices insula* could possibly be identical with M. insulare, and to try to find out where the "Botany Island" is. Perhaps Forster meant Botany Bay. Of course Mr. Forster's name (probably from Solander) would take precedence, if the two were identical, which might be cleared up when the woodcut is published. A sample of the wood of M. insulare has been sent to the forthcoming Indian and Colonial Exhibition, along with many others, by me. For rural and technologic notes on Myoporum insulare, see *Select Plants*, American edition. *Ferd. von Mueller.*

[The species of Myoporum belonging to N. O. Myoporaceæ have been specially studied by Baron von Mueller, whose work on the subject will be exhibited in the Colonial Exhibition. The species are found solely on the Australian continent and in New Zealand. They are mostly furnished with white flowers. M. parvifolium acuminatum and a few others were cultivated as greenhouse plants in this country in the times when New Holland plants found numerous admirers, and it comes as a surprise to find that some of the species form veritable trees, as in the one now figured. Ed.]

Orchid Notes and Gleanings.

A USEFUL ORCHID SELDOM SEEN.

As one rarely sees Brassavola nodosa, it may be asked if it is considered to be beneath the notice of the lover of the beautiful, or it it is wanting in attractiveness? Whatever the reason may be that the plant is seldom grown, it is really worthy of a place in any collection. It has the special claim of easy cultivation, and its flowers are for the most part white; it is an almost continuous bloomer, and the flowers remain for three weeks in perfection. We have a plant growing in a basket suspended from the roof of the plant stove, which does very well. It has occupied the same position for the past six years, winter and summer, thriving and blooming freely, and is in bloom nine months of the year. The flowers are borne on the top of a stem from 6 to 10 inches long, and are spread out fan-shape, each flower having a stem of it from 2 to 3 inches in length, so they may be cut singly if so required. If the whole truss is cut, then care should be taken to leave as much of the stem on which it is borne as possible. I do not know if this be a secret or not, but I find that by cutting the stem just above one of its joints (and it has several) another truss of bloom will break therefrom, especially if the first was strong and early in the year; but there will not be so many blooms on this second truss as on the first. I used to give this Orchid a larger and more decided season of rest, but I now treat it more liberally during the winter months, and it seems to enjoy the change. Its requirements are few and very simple. A basket made of rather large rods, and filled with pieces of charcoal, crocks, and peat, intermixed with sphagnum moss, are the materials I use. Water enough is given to keep the moss in a growing state all the year round, but more must be given in the summer than during the winter season. The position our plant occupies is a very light one immediately over one of the paths in the stove. As neighbouring plants are syringed rather freely, the Orchid gets the benefit of a moist atmosphere. It produces a spike of bloom from each new growth, and makes two growths a year. Where white flowers are often required this Orchid should be largely grown, as it is a sure bloomer. Though it likes an abundance of light, it will not stand a strong sun without injury. *N. Blandford.*

Orchids at West View, Mount Aden Park, Dulwich.

The specialities cultivated by E. H. Adcock, Esq., with such success give fine examples of the perfection to which Orchids may be brought if their individual wants are studied and provided for. While a specimen or two of most good things are grown the striking feature of the collection are the Odontoglossums of the Alexandræ and hybrid class, which are growing with stout smooth pseudobulbs, by the increasing size of which each season's progress may be marked, not only in a few instances but throughout the whole house. Oncidium macranthum, too, represented by nearly one hundred plants occupying the greater part of one side of the cold house, is of surprising vigour—the largest bulbs measuring 9 inches in length and the same in circumference, and having leaves 3 inches broad. Equally fine in the same house is O. Edwardii, with bulbs over 6 inches in length and 4 in width. Both these fine plants are grown very cool, and are potted in a compost of which sphagnum moss is the chief ingredient, it evidently suits them well. In the intermediate-house the fine leafy plants of Odontoglossum vexillarium, the healthy specimens of white Lælia anceps, the heavily flowered Oncidium Marshallianum, Cattleya citrina, Odontoglossum Rossii majus, and O. grande are conspicuous by their fine condition.

In the warm house is perhaps the finest lot of Cypripedium Spicerianum in the country, many of the specimens being 2 feet 6 inches across, and having from twelve to twenty growths each, the long, fleshy, green leaves being marked with purple in a degree unknown in poorly grown plants. These fine specimens are grown in 12-inch pans, and, like the rest of the things in this house, each is stood on a raft placed over a pan which is always kept full of water, and which is said to contribute much to their vigour and their cleanness. In their season they bear each about a dozen spikes, and one of the varieties is always twin-flowered. C. niveum also grows grandly in the same way, and is now finely in flower, together with a superb form of Cypripedium ciliolare with very large and handsomely marked flowers. Oncidium Krameri here, too, grows almost beyond recognition, its broad stiff foliage in some instances attaining a length of nearly 1 foot, and its marvellous butterfly-like flowers 7 inches. O. Papilio majus also does equally well, and most of them are grown over pans of water, which method is worthy of imitation as it evidently agrees with the plants. Dendrobium Jamesianum (dwarf variety) and other Dendrobes are in bloom, and the Phalænopsis in grand condition.

The range, a curved span, in three divisions is by Messrs. W. G. Smith & Co., of Bury St. Edmund's, and built on their "patent metallic non-conducting glasshouse" plan. Mr. Adcock says he cannot speak too highly of it, as in such houses the best and greatest amount of light is to be obtained as they are glazed down to the ground line (that below the staging being thick, ribbed Hartley's plate), and while in them perfect ventilation is provided for by the arrangement of the ventilator, it is practically impossible to have the house unhealthily close, even by accidental neglect of attending to their ventilation, as they are to a great extent self-ventilating. The frame being made of galvanised iron, the structures are very durable, and much inconvenience in painting is avoided.

Aërides cylindricum (vandarum).

At p. 427 of the *Gardeners' Chronicle* for April 3 it is stated that the above is seldom seen in flower. In Colonel Cooper's collection at Markree Castle, Collooney, Co. Sligo, Ireland, where it has flowered annually for the last eight years, the plant in question is about 3 feet high from the pot, with numerous side branches, and when in flower it is certainly very attractive. The plant is grown in a pot in sphagnum and charcoal, stood on the stage over an uncovered cistern which has the hot-water pipes running through it. At times, according to the state of the weather and atmosphere, the water is below the level of the pipes, and at other times it is allowed to cover the lower or return pipe, in order to get it sufficiently warm for watering. The temperature of this house has frequently been as low as 50°, Fahr., during the winter season. It may be stated that Cœlogyne barbata also flowers annually in this house.

COMMERCIAL BULB CULTURE IN ENGLAND.

Mr. Mooy's interesting paper upon Hyacinths which you have recently published will certainly fail in usefulness if it does not induce gardeners at home to inquire why we cannot grow our own bulbs. If inquiry be made as to the why and the wherefore, we are met by a sort of *non possumus*—"we can't." The question is, "Has the matter ever been fairly tested, and is it absolutely certain that we cannot grow bulbs?" Perhaps it will now be replied, "Oh, yes, we can grow bulbs in a way, but not at all fit to compete with the Dutch bulbs." If that position be absolutely proven, there is an end of the argument; but the question must be raised, Have we fairly tried to produce good bulbs? Has not the fact that in our prosperity and almost unhappy amplitude of wealth we have found it so much easier to go into the Dutch market to purchase, than to set industriously about the work of growing our own? There is not so much difference between our climate and that of Holland, both are temperate in summer. If a flat country and an abundance of water be useful, we have in the Eastern Countries, and indeed in many of the riverside soils, all that, and to spare. If ample manure and abundant sewage or liquid filth is need-



Fig. 92.—Myoporum insulare. (see p. 492.)

ful, we have that too, unhappily, in too great abundance, and troubled to dispose of it. We have all these essentials, but I fear we want the dogged determined application and enterprise which characterises the natives of Holland. Hence, we find it so much pleasanter to spend our money and promote a foreign industry, than to promote a similar one in our own island. At a moment when the government is being invited to enter upon experiments in the home cultivation of the Tobacco plant, it is strange that none of our ardent legislators should suggest experiments in

bulb culture also. Let us but for a moment look at the myriads of bulbs of Lilies, especially of the famous Japan Lily, annually imported into this country. Why is this? Do we simply grow these bulbs for one year, and then fling them to the dunghill? or do they die after a year or two's blooming? And even if this be the explanation of this wonderful demand for the bulbs, how is it they are so short-lived? But, on the other hand, have we ever attempted systematically to produce our own stock of Lilium auratum, or other popular market kinds?—and if not, why not? Are we to be told that we cannot in this matter compete with the Japanese, and that home cultivation would fail? Let us try and see, for what is possible in Japan ought not to be absolutely impossible here. Perhaps it will be retorted, that if we raise auratum Lilies we shall have bulbs that will endure, and thus soon kill the trade. I fear there are those who will urge that argument, and perhaps with good ground; for my own experience is, that home-raised bulbs do endure, and will divide and increase. Enterprise on the part of raiser and cultivator have almost killed the once considerable foreign trade in Potatos, because we now grow enough at home [?]. Messrs. Kelway and others have shown us how to raise Gladioli bulbs in vast quantities; and those are far more delicate in constitution than Hyacinths are. It does seem as if home enterprise in some of these matters were sadly lacking, and yet myriads of acres of land are lying sterile, oceans of sewage are running to waste, and we are hampered by tens of thousands of surplus labourers. We are so fond of the foreign heathen that we prefer to attempt his conversion to that of our own proletariat; and equally we prefer to fill other pockets with our good coin rather than attempt to provide work and wealth for our own people. *A. D.* [Many years ago the late Mr. Masters of Canterbury grew a large quantity of Hyacinths in the vicinity of Sandwich, under conditions as nearly as possible like those which obtain in Holland, but although the bulbs were fully up to the average, they were not "Dutch" bulbs, and the London houses would not buy them. Ed]

Foreign Correspondence.

A FRUIT TREE MANUFACTORY.

At the present time, where the plough is frequently used in market gardening instead of the spade, it may not be without interest to see how successfully plough culture can be carried out in a tree nursery. Such a nursery, belonging to the two brothers Mathiesen, in Korsoer, I visited a short time ago, and will now give you a short account of the chief features of the cultivation.

The nursery is situated on a rather hilly ground, close to the sea, and exposed to the sun and the weather without any protection whatever, except in the space devoted to seed and propagating beds. The soil is a nutritious sandy loam. As soon as the land is taken under cultivation it is trenched, chiefly in order to get all stones removed; the small stones are carried away at once, and the bigger ones are left till the frost sets in and makes it easier to transport them. For trenching a very strong spade, especially constructed for the purpose, is used. If possible all the trenching is done before winter. Having been once trenched the land is always afterwards worked with the plough and harrow.

As soon as the soil is workable (which is in the spring) it is harrowed, and rolled with a ring-roller. Before the planting takes place the land is divided in regular parts. These divisions are usually 360 feet long and 60 feet wide; the walks between them are alternately 4 × 7. Each of the larger parts is again divided across in six divisions. Formerly the plants were set in rows across the beds, but as this method renders it more difficult for the horse to pass it is now abandoned, and the rows are drawn from one end of the beds to the other. In order to facilitate the planting, and to avoid using too long a planting line the beds are divided into halves. Before the planting all the places to be occupied by the plants are marked out by a line provided with knots placed at the same distance apart as that at which the plants are to stand. This distance is 30 inches between the rows for all sorts of trees; the distance between the trees in the row is different, being 18 inches for half-standards or lower trees on wild stock, and 12 inches for dwarf trees proper.

When the land is thus divided the planting follows. Seedlings with many and large roots are planted with a spade, but when the roots are small, dibbling is preferred. When the dibbling is to be done a man walks in front, making holes with a dibbler, which is long enough to allow him to stand nearly upright, and with a cross-handle at the top, another man follows behind setting the plants in by means of a short iron-pointed dibbler. Strict attention is paid to this planting, and there is reason for it: instances have occurred in the nursery where half the plants have decayed only on account of careless planting, and it could be seen distinctly which of the workmen had planted a particular row.

As soon as the planting of the wild stock is over an earthing plough is drawn through between the rows thus loosening the soil after it has been trampled by the workmen. The plough is drawn in a manner that enables it to form a low ridge on either side of the plants, which ridge will give them very valuable protection against the wind and the drought. The way to propagate fruit trees is by budding, which is carried out in July and August. Apples and Pears get one bud put in, Cherries and Plums two. A clever workman is able to put in some 1400 or 1500 buds per diem when he has the necessary assistance for tying. The next spring the crown of the wild stock is cut, a stub is left for the tying of the scion in the first year, but in autumn this stub is removed. A stick is put to the plants if it is necessary to tie them, which is far from being always the case. The second spring after the budding all the trees are pruned, the straightest stems are chosen for half-standards, and the less straight ones for lower trees. As the half-standards are the trees most in demand it is always possible for the stem to reach the necessary height in one year. The cleaning is done with a harrow specially constructed for the purpose. When the trees are two or three years old the cleaning is done by hand as the crowns do not allow a horse to pass.

Walls trees are planted in rows from north to south, in order to get both sides equally developed. In the first year they are only tied to sticks, but in the second some wires are trained along the rows, forming a rough trellis; the wires are 6 to 8 inches apart. The trees are tied alternately on the east and on the west side of the trellis. Each division is always planted in a manner that allows all the trees to be cleared away at the same time. The clearing invariably takes place at the fall of the leaves; if they do not fall quick enough, the remaining ones are pinched off a short time beforehand. After the trees have been dug out the roots are pruned a little, and they are stored in the vicinity of the packing-shed in double rows in an upright position.

As soon as the land is cleared it is ploughed, and by ploughing twice in the same furrow the soil can be easily worked to a depth of 12 to 14 inches with a common plough. The first year after the clearing the land is sown with corn or vegetables, such as Onions, &c.; but next year it is, as a rule, cultivated with fruit trees again. Trees of the same sort, however, are never planted in succession. After Pears on wild stock Apples on Paradise or drupaceous trees are planted; after Apples on wild seedlings, Pears on Quince, and so on. Before this planting takes place the land is again ploughed over twice, but this time the first ploughing is done with a common plough, and the second with a subsoil plough drawn by three horses. That this mode of culture suits the trees excellently is sufficiently shown by their vigorous growth combined with great hardiness. *C. V. Larsen, Copenhagen.*

The Apiary.

ARTIFICIAL POLLEN.

After the late severe winter natural pollen cannot be expected to be very plentiful. In the olden times if bees could not get pollen from the flowers, then they had to go without. If, however, we can assist Nature without endeavouring to set aside Nature's laws, then it seems only right to do so. A gentleman who lived near a windmill found that his bees were continually visiting the mill, and returning again to their hives. After watching them for some time he paid a visit to the mill, and there he discovered his bees floundering about in the flour, and carrying it away. He found that the reason was that natural pollen was scarce. As we do not all reside in the neighbourhood of windmills, and for various other reasons it is desirable to give the bees flour nearer home. It has been discovered that the best kind of flour to give bees is Pea-flour. If you have Crocuses in your own garden then you cannot do better than follow out the plan of Mrs. Long, of Sherrington Manor. That lady takes a pepper-box or flour-dredger and goes and slightly sprinkles Pea-flour into the Crocus-cups. The advantage of this is, that as bees are certain to visit the flowers they will be sure to find the Pea-flour and make use of it. I may, however, be addressing some unfortunate person who does not possess a Crocus, and perhaps his neighbours would not like their Crocuses peppered just for his benefit. Well, then, if that is the case, get a large pan with a few shavings at the bottom, then sprinkle some Pea-flour amongst the shavings and place it in the neighbourhood of the hives. The bees may be a little while finding it out, so to draw their attention to it point it out to them by means of their noses, *i.e.*, put some sweet syrup in a piece of comb, and put it in the pan. If you have a small quantity of honey to spare so much the better. They will soon find it out then. But when you have once commenced, do not leave it off till there is plenty of natural pollen. It is hardly necessary to remind the intelligent reader that the natural is at all times superior to the artificial. I have mentioned in a previous article how to supply bees with water. Give them water at once. *Walter Chitty.*

Fruit Notes.

AMERICAN BLACKBERRIES.

I annex a list of American Blackberries, taken from Downing's *Fruits and Fruit Trees of America*, 2d edition, revised and corrected by Charles Downing, published in 1869. As these fruits have been for some time cultivated in America, and have been known in England, it is strange that no specimens of ripe fruit have been exhibited at the Royal Horticultural Society, where attention was first directed to their cultivation. The two sorts most recommended were the Dorchester and the New Rochelle or Lawton; these were imported and planted by my father many years since, and long robust canes were produced, but they were not fruitful, and in no sense superior to the common English Blackberry. It may be that the moist English climate does not ripen the wood, or that the soil (a calcareous sand) did not suit them—in any case the result was disappointing. The Ohio Black-cap Raspberry, tried at the same time, was not more encouraging. There is no reason why more care should not be given to the cultivation of the English Blackberry, it is certainly one of the most popular of autumn fruits, and many waste places might be made profitable by planting it. The civilisation of our wildings is, however, not always easy, they are self-willed, and often will only grow when they choose their own habitation. Probably the best plan will be to give them their own way, and not to cultivate them too much, allowing them the society of their friends and neighbours, the hedgerow weeds. *T. F. Rivers.*

"The Blackberry.

"There are several species of the Bramble indigenous to this country, which produce eatable fruit, but the best for the table or for cooking are the low Blackberry, a trailing shrub, and the following varieties of the high Blackberry.

"Cut-leaved.—An old European variety, valued more for its curious foliage than for the amount of its fruit. Fruit roundish, black, sweet, with a musky peculiar flavour.

"Dorchester.—Introduced to notice by the late Captain Lovett, of Beverly, Mass. Nearly equal in size to New Rochelle, of a more elongated form, grains rather smaller, somewhat sweeter, and producing large crops of high-flavoured fruit; a vigorous grower. Fruit large, oblong, conic, sometimes measuring 1½ inch in length, of a deep shining black. The berries should be fully matured before they are gathered; it bears carriage well. Ripens about August 1.

"Kittatinny.—A native wilding from the Kittatinny Mountains, Warren Co., N.J. It has within a few years become widely disseminated, and everywhere proves of the highest value. Canes quite hardy, and very productive; ripening early, and continuing a long time. Fruit large to very large, roundish, conical, rich glossy black, moderately firm, juicy, rich, sweet, excellent.

"Low Blackberry.—A low trailing, prickly shrub, producing large white blossoms in May, and very large roundish oblong black fruit in midsummer. Leaflets from three to five in number. The fruit, when in good soil and fully exposed to the sun, is high-flavoured, sweet and excellent.

"New Rochelle.—This remarkable variety was found by Lewis A. Seacor, in its native wildness by the roadside, near the town of New Rochelle, Westchester Co., N.Y. It is of very vigorous growth, with strong spines which belong to the Bramble, is hardy and exceedingly productive. Fruit very large, oval, and, when fully ripe intensely black. When mature the fruit is very juicy, rather soft and tender, with a sweet, excellent flavour; when gathered too early it is acid and insipid. The granules are larger, consequently the fruit is less seedy than other varieties. Ripens about August 1, and continues in use five or six weeks.

"Wilson's Early.—Introduced by John Wilson, Burlington, N.J. A hardy, productive, very early ripening market sort. Fruit large, oblong oval, black. Flesh firm, sweet. Good."

Adair's Claret, Albion, Cape May, Colonel Wilder, Crystal White, Cumberland, Cuttler's Mulberry, Doctor Warder, Duncan's Falls, Farley, Felton, Holcomb, Kentucky White, Mason's Mountain, Missouri Mammoth, Newman's Thornless, Sable Queen, Wachusett, Washington—all these varieties are described as possessing little merit.

Pear Beurré Alexandre Lucas.

A large Pear with the form and appearance of Duchesse d'Angoulême or Beurré Diel, slightly melting, vinous, sweet and juicy; the season January and February. This is the short description given in the *Bulletin d'Arboriculture* for March. M. Pynaert considers it will prove a first-rate market Pear for its good qualities and size. The plate shows a large Pear of regular pyriform type, with a short thick stalk and a lemon-yellow skin.



The Flower Garden.

THE ROSERY.

Roses will require to be carefully inspected to see that greenfly and catterpillars do not gain a footing; if the first should make their appearance syringe the bushes with tobacco-water of the strength of 1 quart to 6 gal. of clear water, or syringe the plants with clear water and dust them with tobacco-powder, which must be syringed off after it has done its work. The best remedy for caterpillars is to syringe the plants with Hellebore-powder, steeped some considerable time in water. To rid the stems of moss a mixture of soot and fresh lime mixed with water and brushed over the affected parts, will entirely rid them of this injurious growth.

Beds and Borders.

Get all vacant flower-beds dug up ready for the reception of their summer occupants. Tie up the flower-spikes of Narcissus, Hyacinths, Tulips, &c., before they get spoilt with rain and wind; a slight mulch of Mushroom-bed manure, or cocoa-nut fibre will prevent the heavy rains from dashing the plants and flowers. Harden off East Lothian Stocks sown in heat in January—these may be planted out by-and-bye. The plants raised from seeds sown in autumn and wintered in pots and pits may now be planted out. Do not give Stocks too much manure, as it predisposes them to attacks of maggot at the root; rather feed them with some concentrated, or liquid manure.

Lawns.

The idea of a lawn suggests a velvety carpet of living verdure. To obtain this frequent sweepings and rollings will be requisite, and the mowing machine must be run over the lawns at least every eight or ten days. As the season advances raise the front of the machine a little each time until a height of 1½ inch has been reached; this will produce a sward which will give the feeling of walking on a Turkish carpet. The worst practice in the world is to allow the grass to get away from the machine, and the scythe have to be resorted to; for should the summer prove a dry one, a scorched appearance of the grass will be the result. If a place is not well kept throughout the season, it will never have the dressed appearance which bespeaks high culture. The late season has much retarded the blooming of hardy bulbs, which are now in perfection. *W. M. Baillie, Luton Hoo Gardens.*

The Orchid Houses.

DENDROBIUMS.

Among the Dendrobes many will be growing now, and must be supplied with water. It should be borne in mind when retarding Orchids, that when the time has arrived for the plants to commence to make growth, it is obviously wrong to attempt to prevent its development; if we do, it is at the expense of the health of the plant. This holds good as well with Orchids as other plants, so that if D. Denisoni, D. thyrsiflorum, or other varieties, are pushing their flowers or growth, by all means give them water at the root and a moist atmosphere in the house.

The Cattleya-house.

Here work is pressing on all sides. The potting of C. Trianæ must be finished. Mossiæ and Mendeliis are fast pushing their flowers through the sheaths, and should be kept free from fly and thrips. If any of the sheaths are turned brown and withered, cut off the tip, or the flowers will fail to push through. C. Sanderiana is now growing, and will shortly show the flower-sheath. C. gigas, C. Gaskelliana, C. Warneri, all of these, and many others, require plenty of water at their roots, but none should be allowed to fall on their sheaths; keep the syringe active below the rim of the pots, air freely without draughts, and keep plants, pots, and stages, perfectly clean.

The Odontoglossum-house.

In this division growth has been very rapid during the last fortnight, and the Odontoglossums, that appeared as if they would be late, have made remarkably quick growth. Care must be taken that with this quick growth there is plenty of sweet fresh air admitted both under and over the plants. There is no fire-heat required in these houses now, and when the weather is mild a syringing overhead (with rain-water) should be given to the Odontoglossums of the crispum type. Protect the flower-spikes that are now showing from the ravages of slugs, ants, &c. Any spikes of Oncidium macranthum that may be near the open ventilator, should be put out of the reach of draughts, or the flower-buds will become crippled. Keep an eye on Odontoglossum vexillarium for thrips, and clean them well before the buds expand. We find the flower-spikes on these are unusually early this year, owing no doubt to the firing that was requisite during the winter. Should dry parching winds prevail with sunshine, it is good to syringe the blinds and outer surface of the houses two or three times a day to help to maintain a moist atmosphere. *A. Bradshaw, Waddesion.*

Plants and their Culture.

PREPARATIONS FOR THE SEASON.

Now that the sun is attaining great power all blinds and shadings must be got in order, as they must soon be required; it being found that after such a long sunless time, many plants will need shading a little for a time which in other seasons do not require it. All new or remarkable plants should be relabelled for convenience of reading; therefore secure a good stock of labels for the general collection of plants in pots and borders. See to have wire trellises ready for the climbers which are now growing on strings fixed under the roof. Plenty of stakes of various size should be made ready for growing plants as required. Give attention to the ventilating gear now the days are getting warmer so as to have no hitch when they are wanted. Ventilating at this time of year requires more care than at any other; on bright mild mornings a little should be given quite early, then a little more at a later interval. Never give a large amount of ventilation all at once, because the temperature has risen too high, owing to the early ventilation having been overlooked, as this often causes a check to some of the inmates, which will be productive of permanent injury. On bright mornings, even if it is a little frosty, the stoker should moderate the fires, it being injurious to growing plants to have hot-water pipes throwing off heat in the house and the sun pouring his rays on the roof, besides being a waste of fuel.

Growing-on of Young Plants.

Early started Caladiums will need potting, according to the purposes for which they are wanted; if for decoration, they will be more useful in small pots, and should be occasionally attended to with liquid manure of some kind. All the late tubers of Gloxinia and Gesnera should now be potted up. These I have found to do well in a pit or frame with a little bottom-heat, plunging the pots to about half their depth in cocoa-nut fibre with about 2 inches of fresh green moss above it: this keeps the foliage, as well as the bloom, clean, until they are required for use. Young seedlings of these, as well as those of Begonias, should be pricked off, when large enough, into small pots or pans. Achimenes will also want shifting, and if any variety is needed to be increased 2 or 3 inches of the tops as cuttings can be put in now, as they root very quickly. Tuberous Begonias will now be growing freely, and should be shifted into larger pots before the roots get pot-bound. Pay attention to all winter-flowering plants; keep the young stock regularly potted and stopped, in order to produce a bushy growth. Old plants of Libonias I have found to bloom much better when trimmed over (not cut-in too close) than young plants; they should be grown through the summer quite exposed to the sun. All young plants of Croton and Dracæna should be kept well up to the light, and be inspected closely for thrips, as these insects will very soon disfigure the foliage if allowed to remain a short time. Aphides often infest the centre leaves of the Dracæna, and should be removed by means of a piece of wadding fastened on a small stick. Tydæas should now be started for autumn and winter use; there is nothing to equal these when well done, there is so much variety in leaf and flower; and if the plants are wanted very late they may be kept back a little longer, although they will not stand drying off like the Achimenes, but they are easily retarded by keeping them cool, with just a little moisture. Now the flowering is over with Toxicophlæa spectabilis cuttings of it may be put in for flowering in small pots next season; they look very pretty in bloom when about 6 inches high. Celosias, Balsams, Browallia elata, Schizanthuses, Petunias, Ipomæas, Mimulus, &c., should now be in 7 or 8 inch pots, ready for the greenhouse or conservatory, after the Azaleas, &c., have finished their blooming; as after these sometimes Fuchsias are the only things employed to replace them, and which, owing to their similarity, do not give contrast enough. The late batch of Mimulus Harrisoni should be broken up, potted, and placed in cool pits. *A. Evans, Lythe Hill, Haslemere.*

The Kitchen Garden.

FRAMES.

Young Carrots in frames will soon be large enough to draw from; when they are about the size of useable young Radishes they may be increased in size rapidly by closing the frames early on bright afternoons and after they have been well damped overhead.

Potatos

that are maturing their crops will require little if any water; the lights should be opened a little every day, and closed dry and warm; those a stage later and swelling their tubers will require more liberal treatment in that respect, but an excess of moisture should at all times be avoided in Potato frame culture, both in the soil and atmosphere. Frames cleared of early Potatos, &c., could with advantage be planted with French Beans, which would come in much before those sown out-of-doors.

Tomatos

will require their shoots stopping and thinning out as they progress, removing the flower-spikes also, until the plants have attained size and strength to carry a good crop. When the plants are in bloom, and until a good set is secured, the temperature should be dry and warm, with a free circulation of air, after which more moisture and heat will be required until the fruit begins to colour, when an excess should be avoided.

Main Crops.

Parsnips, Onions, Carrots, &c., should have the Dutch hoe run lightly between the drills as soon as they appear above-ground; growing crops of all kinds would also be much benefited by this operation. By a free use of the Dutch hoe now, weeds will be destroyed, and the surface of the ground improved, and a saving of labour effected hereafter.

Root Stores, &c.

Roots of all kinds should be looked to, and care be taken to prevent them growing out, as when this is the case both colour and flavour will be destroyed. Walks should now be put in order, and where Box is used as an edging it ought to be replanted and made good if required. Box edgings, as a rule, are unfit for kitchen garden walks, and should be replaced by brick tiles, or something similar. *John Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	April 19	Sale of Orchids, at Protheroe & Morris' Rooms.
TUESDAY,	April 20	PRIMULA CONFERENCE, and Show of the National Auricula Society, at South Kensington Sale of Flowering Orchids, at Protheroe & Morris' Rooms
WEDNESDAY,	April 21	PRIMULA CONFERENCE continued: Reading of Papers, and Discussion. Sale of Roses, Plants, and Bulbs, at Protheroe & Morris' Rooms.
THURSDAY,	April 22	Meeting of the Société Botanique de France.

MANY of our readers—all who have had occasion to come in contact with him—will regret to hear of the resignation of Mr. JOHN SMITH as Curator of the Royal Gardens, Kew. His courtesy and willingness to oblige, his consideration for the feelings of others, no less than his ability, rendered him a general favourite with outsiders, and we believe also secured for him the esteem of his superior officers, and the respect and goodwill of his subordinates. Mr. SMITH'S resignation has been tendered mainly in consequence of ill-health, several very severe attacks, added to a succession of the sorest of domestic trials, having enfeebled his energies, and warned him to seek that rest to which his long and arduous duties have most fully entitled him.

Looking back some thirteen years we note that at that time, when laying before our readers a portrait of Mr. SMITH, we remarked that "on few if any gardeners of the kingdom do greater cares and responsibilities fall than on the Curator of the Royal Gardens, Kew. The duties of his office are so numerous, the interests he has to serve are so varied, and to some extent so conflicting, that it requires a man of no common energy and tact to cope with them. To hold the balance between the requirements of scientific, of practical, and of ornamental gardening; to satisfy the requirements of the *dilettante* and the pleasure seeker, and to discharge the extremely important but little known duties in connection with the colonial botanic gardens—this is the task Mr. SMITH has to undertake daily."

We do not know that we need add anything to that statement; its general truth has only been confirmed in the years that have elapsed since it was written. Mr. SMITH'S loyalty and fidelity have been manifested as signally since as previously, so that he retires with the gratitude and esteem that are fairly won by long years of diligent service and courtesy. We must refer to our previous notice for full details of Mr. SMITH'S professional career (December 20, 1873). It must suffice to say that the principal grades in his course are marked with the names of Floors, Alnwick, and Syon, whence, in 1864, he went to Kew. What has been done at Kew since 1864 would require much space to detail were it necessary to do so. But it is not—the place speaks for itself, and the share the Curator must have had in the work is not likely to be overlooked by any one who considers for a moment what the responsibilities and duties of such a post are. It is noteworthy that Mr. JOHN SMITH'S predecessor of the same name—a man as well known for his labours in the history of Ferns as for his duties as Curator, and who retired in 1864 from failure of eyesight—not only still survives, but enriches our columns from time to time with reminiscences of old times and old plants, such as few but he can do.

—— THE PRIMULA CONFERENCE.—We are requested to state that the Conference will be held on Wednesday, the 21st inst., in the Albert Hall. The chair will be taken at noon punctually by JOHN T. D. LLEWELYN, Esq., Penllergar, Swansea. The following papers will be read and discussion invited thereon. The first in order is that by Mr. SHIRLEY HIBBERD, "On the origin and history of the florist's Auricula"; second, "In what direction should efforts be made with the view of improving the florists' flowers belonging to the genus Primula?" Mr. BARLOW has been unable to prepare a paper on this subject, but the Rev. F. D. HORNER has kindly consented to take his place. Mr. J. G. BAKER, of the Royal Herbarium, Kew, will next speak on "The nomenclature of the alpine Primulas." Dr. MASTERS has undertaken to prepare a paper on "Root structure, and mode of growth, as affording indications of the probable best culture."—One contribution to this interesting gathering will be gladly welcomed—that of some fine specimen plants of GILBERT'S double Chinese Primrose, sent by Mr. W. ELPHINSTONE, gardener to A. M. MUNDAY, Esq., Shipley Hall, Derby. Mr. ELPHINSTONE is known as a highly successful cultivator and propagator of the double forms of Chinese Primrose, and while the premier exhibitor of these at the Manchester Chrysanthemum Show, he is also able to have them in fine condition in April; and it will be interesting to have present as many as possible of the types included in the genus.

—— THE COLONIAL AND INDIAN EXHIBITION.—Great preparations are being made to represent the flora and the vegetable products of the several colonies at the forthcoming Exhibition. In addition to numerous Tree Ferns, Palms, Pines, and other plants, which have been received and grown for the purpose at Chiswick from the West Indies and elsewhere, large numbers of illustrative specimens have been selected from the Royal Gardens, Kew, and from nursery establishments, while many of the specimens of timbers which formed part of the Edinburgh Forestry Exhibition will be exhibited also on this occasion:—

Nova Scotia.—We learn that arrangements have been made for a continuous display during the season of Nova Scotian fruit. The other provinces of the Dominion will send timber and vegetable products, and a representation of the native flora.

Victoria.—From this colony the energetic Baron VON MÜELLER sends a huge Todea weighing 3500 lb., and other specimens of the flora, together with illustrations of products, timber, and a series of botanical publications.

New Guinea.—Recent explorations in this huge island, an account of which has been given by Baron VON MÜELLER in his Presidential address before the Geographical Society of Australasia, have enabled this unwearied botanist to issue the seventh number of his *Descriptive Notes on Papuan Plants*. Among them is a very beautiful Acanthaceous plant new to science—Leptosiphonium Stricklandi—which we may hope soon to see in cultivation. The interest attaching to the New Guinea flora, especially to that of the mountains in the interior, is extreme. In due time we shall doubtless learn more of this vast island and its resources. In the meantime botanists are under a great obligation to the Baron for his endeavours to bring to light speedily such information as he can collect. The Myoporineæ have of late occupied much of his attention, and it is hoped that his work on this subject, comprising seventy-six plates, will be ready for the Exhibition. Many of these plants are very ornamental (see pp. 492 and 493), and the great advance made in our knowledge of them is illustrated by the circumstance that whereas in 1847 A. DE CANDOLLE only knew of about twenty species, Baron VON MÜELLER now enumerates over seventy species. (See pp. 492, 493.)

South Africa.—Our friends at the Cape will do well to continue their consignments of Pears, which arrive in good condition at a time when they are highly valued.

—— COVENT GARDEN LIFE-BOAT FUND.—A concert in aid of the above fund will be given at St. James's Hall at 8 o'clock on Tuesday, the 20th inst., under the direction of Mr. W. G. CUSINS and Mr. S. NAYLOR.

—— MYOSOTIDIUM NOBILE.—This very beautiful New Zealand plant was shown on Tuesday last at South Kensington. Its bold light green foliage, almost wholly destitute of hairs, is more like that of some of the Megasea section of Saxifrage than a Borage, but the tall inflorescence of bright cobalt-blue flowers, edged with white, recalls the Forget-me-Not. The plants shown were exhibited by Mr. E. G. Loder, Floore, but we understand that Mr. GEORGE PAUL has also flowered the plant.

—— HYBRID PLANTS.—A hybrid Phalænopsis, exhibited by Messrs. VEITCH, and which deservedly obtained from the Scientific Committee the award of a Botanical Certificate at its last meeting, is noteworthy from the fact that it is identical with imported plants whose hybrid origin and parentage had been suspected, but was now demonstrated, Mr. SEDEN having designedly crossed P. rosea with P. amabilis, with the result of obtaining a plant of the same character as the imported plant.

—— "THE BOTANICAL MAGAZINE."—The April number contains illustrations of the following plants:—

Echium candicans, t. 6868.—One of the noble shrubby species, native to the Canaries and Madeira. It forms a bush 6 feet high, with green or hoary lanceolate leaves, and dense erect spikes of blue flowers. These plants are so gorgeous that it is astonishing they are so little known out of Botanic Gardens (Kew).

Iris Bartoni, t. 6869, is a handsome Afghan species of the bearded section, with greenish-yellow "falls" and white segments (Cambridge Botanic Gardens).

Caccinia glauca, t. 6870.—The strange but beautiful Boragineous plant, which we never saw elsewhere than at Kew, and which was figured in our columns, August 11, 1883, *l.* 27.

Eomecon chionantha, t. 6871.—A lovely perennial herb of the Poppy family, native of Southern China. It has a short, erect stock, from which proceed numerous closely-packed, long-stalked glabrous leaves, the blades of which are cordate-ovate, or roundish, with bold crenations. The flowers are in loose erect cymes, each circular, flattish, about 2 inches in diameter, with four pure white petals and a central mass of yellow stamens. This beautiful plant is probably too tender for outdoor culture, but a frame or cool greenhouse ought to supply its requirements.

Vaccinium Mortinia, t. 6872.—A small bushy species like a Pernettya in habit with drooping clusters of small pink vase-shaped flowers. It is a native of the Andes of Ecuador, and must be treated as a greenhouse plant.

—— THE "ORCHID ALBUM."—The species figured in recent numbers are Dendrobium Jamesianum, t. 221, which Mr. WILLIAMS grows in the warm end of an Odontoglossum-house with plenty of air, good drainage and a fair supply of water; during the resting period enough should be given to prevent the bulbs from shrivelling. Odontoglossum blandum, t. 222; Cypripedium Leeanum ×, t. 223, a beautiful hybrid between Spicerianum and C. insigne var. Maulei; Masdevallia Harryana, t. 224, the flower of which is of a deep apricot-yellow.

—— "LINDENIA."—*Cypripedium œnanthum superbum* ×, t. 33.—A magnificent mongrel—may the Orchid growers forgive us!—raised between C. Harrisianum × (a hybrid between C. barbatum crossed with the pollen of C. villosum) and C. insigne Maulei. The dorsal sepal is flushed with claret colour, and marked with large purplish spots, arranged in lines, and with a wide margin of white. The petals are red, the lip red shaded with brown, and shining.

Masdevallia Lindeni var. grandiflora, t. 34.—The species was introduced casually with Odontoglossums and Cattleyas from New Granada, but since that time it has been frequently re-imported. The present is a variety with rather larger flowers than ordinary.

Odontoglossum Wilckeanum albens, t. 35.—Supposed by M. LINDEN to be a hybrid between O. Alexandræ and O. luteo-purpureum. It is a very fine plant in the way of O. crispum, with large flat five-rayed flowers, the segments ovate-lanceolate, white, heavily blotched with chocolate; the edges of the petals are irregularly toothed near the base; the lip is oblong, with a yellow horseshoe-shaped crest at the base, a yellow disc with a brown blotch, while the free anterior portion is ovate-acute, and pure white.

Restrepia antennifera, t. 36.—A very remarkable species, in which the two lower sepals are blended together, and fulfil the office of the lip, which is small and relatively inconspicuous. The upper sepal and the two lateral petals are linear, and taper off into long thread-like points, whence the name. The ground colour is yellow, thickly spotted with small red spots. The "antennæ" are red.

—— BISMARCKIA NOBILIS.—A new Palm from Western Madagascar, originally described by M. WENDLAND, and now figured with a coloured plate

and cultural notes by M. Stein in the April number of the *Gartenflora*. The trunk is short, spineless, and gives off a crown of long-stalked, roundish, glabrous leaves, cleft nearly to the base into numerous linear lanceolate segments.

—— Billbergia Quesneliana.—This stately Bromeliad is a native of Guiana, and, like many other of the large types, is not likely to become common in collections owing to the size it must necessarily attain before flowering. It is said to reach a height of 6 feet, and would evidently have no difficulty in doing so in its native country, where it had free scope for its development. Under cultivation, however, restrictions as to pot-room (if so grown) would exercise a retarding influence on its natural vigour, and induce flowering in a smaller state. Probably the most noticeable feature in this species is the greatly elongated, erect, densely leafy stem. The lower part is apt to become naked as the plant gets old, but, as in most species of the order, the leaves have great powers of endurance, or in other words are very persistent. They are ligulate, acuminate, acutely and closely spiny-serrate, produced not in a vasiform tuft, but over a considerable area of the stem. As seen in the Victoria-house at Kew the pyramidal or conical inflorescence emerges from the centre of the foliage, and stands clear of the latter, but does not reach any considerable height. The lower part of the peduncle is clothed with adpressed, densely felted white bracts, while those subtending the flowers are a lively rose colour, felted only at the margins. The flowers themselves are blue verging on purple. The plant is figured in *Flore des Serres*, 10, 1026, and is synonymous with Quesnelia rufa.

—— The Nursery Trade.—A cursory glance at trade advertisements will show that dwarf Roses are very much cheaper in price than they have been for some time past, indeed they are being offered in the trade at a price that can scarcely pay for culture. Standard Roses also are much more plentiful and cheaper than they have been for years past, and if any one is inclined to form a rosery it could be done at the present time upon advantageous terms, but at this late season a good deal of care of the plants would be necessary in the event of dry warm weather setting in. It is said that dwarf-trained fruit trees have been in but small demand during the past autumn and winter: and this seems to indicate that in large gardening establishments planting is being done sparingly, as if the pressure of bad times is being felt. On the other hand standard fruit trees, and especially Apples, have been in brisk demand, which looks as if outdoor fruit culture is extending. Probably the market gardener is somewhat puzzled what to grow, and regards the planting of fruit trees as one of the best and safest in-

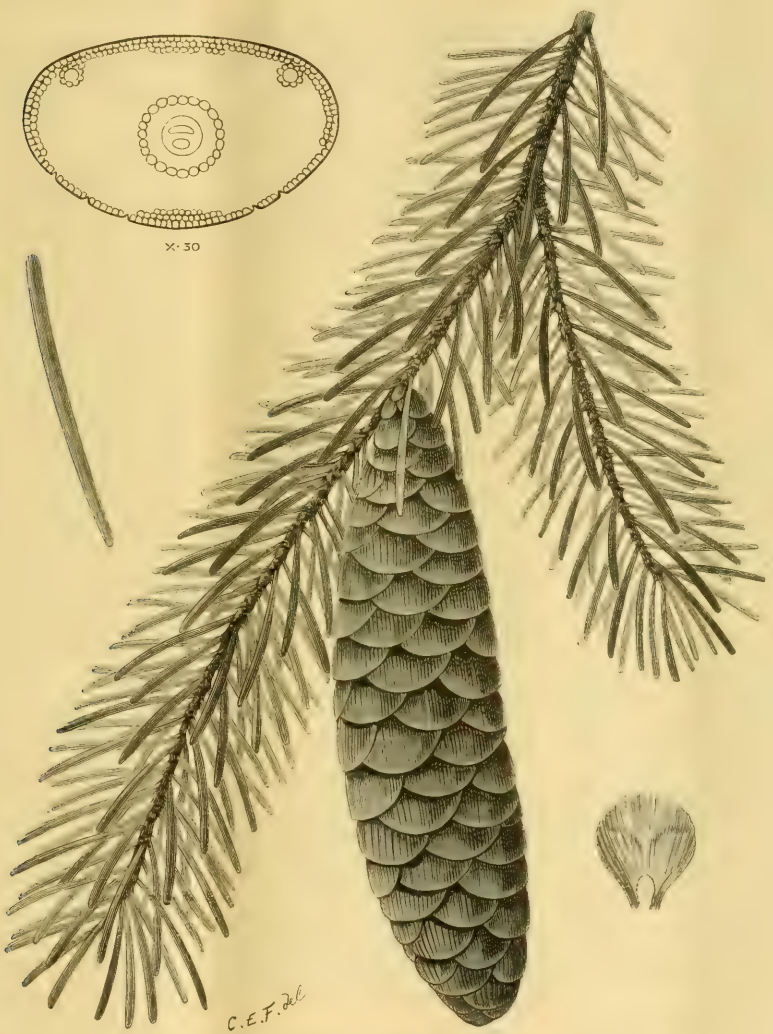


Fig. 93.—Picea breweriana: a new Californian spruce. (see p. 498.)

vestments at the present time. If only some signs of improvement would manifest themselves nurserymen and market gardeners would be among the first to rejoice.

—— THE COLONIAL AND INDIAN EXHIBITION.—Fellows of the Royal Horticultural Society are entitled, according to the amount of their subscriptions, to purchase one or two tickets of admission available on the occasion of the opening of the Exhibition by HER MAJESTY, at the rate of 10s. per ticket—half the price charged to the general public.

—— GRAFTING.—Professor STRASBURGER has lately published the results of some experiments similar to those performed by the late Mr. MAULE, and by Mr. ALEXANDER DEAN. Thus the Professor has succeeded in grafting upon the Potato, Datura Stramonium, Physalis Alkekengi, Nicotiana tabacum and rustica. Atropa Belladonna succeeded only in 10 per cent. of the trials, and Hyoscyamus niger only in 5 per cent. In another series of experiments the Potato was grafted, with greater or less success, on to Solanum nigrum, Nicotiana rustica, Physalis, Atropa and Hyoscyamus. Much interest attaches to the successful implantation of Schizanthus Grahami—a plant some times placed among the Scrophulariaceæ, but which has the internal anatomical structure of the other Solanaceæ [Vesque]. In no case was it possible to observe any influence exerted by the stock upon the graft. As in similar experiments made in this country, as a rule, no change was effected in the tubers of the Potato whatever the plant grafted upon its haulm. But in some cases it was observed that the tubers were very irregular in form, and moreover, extremely minute traces of atropine were found in the tubers upon which Datura had been grafted. The particulars are taken from an abstract in the *Annales Agronomiques*.

—— ROYAL CALEDONIAN HORTICULTURAL SOCIETY'S SHOW.—A fine mass of the splendid yellow Carnation Bride of Penshurst, was exhibited by Mr. CANNELL, Swanley, Kent, who was awarded a First-class Certificate. The fine flowers were greatly admired.

—— AURICULAS AT SLOUGH. — Lovers of that fascinating flower, the Auricula, will have the opportunity during the next fortnight of seeing the collection at Slough in the best condition. There is a large number of plants of all the leading varieties, both show and alpine; of the former there are some old sorts not often seen, and of the latter a quantity of seedlings just opening. The few pips that have expanded show how rich in promise the batch is. Even with the help of fire-heat during the autumn and winter the plants are late generally, and the most suitable of weather is needed to get the pips up to show form by Tuesday next. There is scarcely a green edge in flower; the "cracks" of the section appear to be very late. The Rev. F. D. HORNER states that they are late with him also, and probably this is the case generally this season. The selfs are, as usual, first in the race. Clipper (TURNER), a good useful new variety, dark in colour, and with finely formed pip, is worthy of notice. In the section of grey edges, George Lightbody is highly promising, and should the plants come up to time Mr. TURNER will be able to show this in fine condition at South Kensington. Acme, white edge, and Duke of Albany (TURNER), a new variety in the same section, also promise well. But the annual Auricula exhibition must needs be smaller in extent than usual, owing to the general lateness of the spring.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—A meeting of the General Committee took place at the Old "Four Swans" Inn, Bishopsgate Street, E.C., on Monday evening last, E. SANDERSON, Esq., President in the chair, there being a good attendance of members. The minutes of the last meeting having been read, ten candidates for membership were elected, bringing the total number up to 322; and the Dartford and Henfield Chrysanthemum Societies were admitted into affiliation with the Society. Mr. C. HARMAN-PAYNE, the Secretary of the Catalogue Sub-Committee, reported that a great deal of the principal part of the work of the preparation of the catalogue was completed; that the committee were adding, in so far as they possibly could, the names of the raisers of the different varieties, and the years in which they were sent out, so as to make the catalogue as complete as possible. The Hon. Secretary reported several additional subscriptions to the special prize fund. Some other routine matters having been disposed of, the meeting closed with a vote of thanks to the President.

—— ROYAL AQUARIUM, WESTMINSTER. — We are requested to state, that owing to the extension of the time for holding the exhibition by the Kennel Club in June next, the Rose Show announced for June 25 and 26 is unavoidably withdrawn; and from the same cause the Strawberry Fête and Show, announced for July 2 and 3, is postponed until July 9 and 10.

—— EXHIBITION FIXTURES.—The annual exhibition of the Bedfordshire Horticultural Society will take place at Bedford on Wednesday, July 14. As is usual handsome prizes for cut Roses, &c., are open to all comers. The annual exhibition of the Oxford Carnation and Picotee Union will take place, as last year, in Mr. E. S. DODWELL'S garden in the Stanley Road, Oxford, on Tuesday, August 3, and there will be a luncheon and business meeting after, as last year. The autumn Chrysanthemum show of the Ealing, Acton, and Hanwell Horticultural Society will take place in the Lyric Hall, Ealing, on Tuesday and Wednesday, November 2 and 3. The annual exhibition of the Aylesbury Horticultural and Floral Society will take place on Thursday, July 8, and that of the Trowbridge Horticultural Society on Wednesday, August 18.

—— DORYANTHES PALMERI.—Of the two known species belonging to this genus of Amaryllidaceæ, Palmeri is unquestionably the nobler and showier as far as the inflorescence is concerned. Few establishments can boast of having flowered either of them, for although small plants are frequent in conservatories and other houses where they are grown for the decorative value of their foliage like the Draceenas, they can seldom be afforded the house-room and pot-room necessary to grow them to a flowering condition. Four years ago a large specimen flowered in the temperate-house at Kew, and now a second specimen in flowering condition may be seen in the succulent-house No. 5. It is grown in a large tub, from which the broad sword-shaped leaves arch on all sides, with the huge peduncle arising from the centre. The flowers are borne on a compound pyramidal spike, and present a more handsome and imposing appearance than the short umbel-like inflorescence of the older and more common D. excelsa. The individual flowers are crimson externally, much paler or almost creamy internally, and commence expanding from the base of the branches upwards, which ensures a long succession of bloom. This species was lately figured in the *Botanical Magazine*, t. 6665, and is a native of Queensland.

—— THE ENGLISH ARBORICULTURAL SOCIETY.—We understand that the 1st prize silver medal, offered by the above Society for an essay on the "Larch Disease," has been awarded by the judges to Mr. CLARK, of CLARK BROTHERS & Co., nurserymen, Carlisle, the 2d prize bronze medal being awarded to Mr. COUPAR, Ashford, County Galway, Ireland. The publication of these essays will be looked forward to with interest, as whole plantations of Larch are supposed to have been destroyed by this cause all over Great Britain and Ireland.

—— PRESENTATION.—On Thursday, April 8, at Kells, Ireland, a few friends and *employés* at Headfort presented Mr. IRELAND with a handsome gold watch, as a small token of their esteem and regard on his leaving Headfort Gardens to take charge of those of Lord ST. OSWALD at Nostel Priory, Wakefield, Yorkshire.

—— THE FLORA OF THE PACIFIC ISLANDS.—M. E. DRAKE DEL CASTILLO has published the first part of a series of lithographic plates illustrative of the flora of the South Sea Islands—*Illustrationes Floræ Insularum maris Pacifici*. These islands, very numerous and very widely spread, are either of volcanic origin, or are coral reefs. In the former the surface is hilly, in the latter flat. The flora of the island mountains is like that of Tropical Asia, but marked with a distinct individuality, as witness, for instance, the floras of New Caledonia, the Sandwich Islands, the Fiji Islands, &c. The vegetation of the coral islands resembles that of the Malay Archipelago, and from the circumstance of the case has been introduced comparatively recently by currents, winds, birds, or other agencies. The present part comprises ten quarto plates with descriptive text. No special order or arrangement is followed; but the work will, it is evident, form a useful complement to those of SEEMANN, ASA GRAY, BRONGNIART, and others.

—— RATING.—We understand that there will be a meeting on Monday, April 19, at SIMPSON'S Restaurant, 103, Strand, W.C., at which it is hoped nurserymen and market gardeners will be present. The purpose of the meeting is to consider the advisability of supporting the Worthing market gardeners in the case of PURSER *v.* Worthing Local Board of Health in the Court of Queen's Bench *re* rating of glasshouses used for trade purposes. The decision in this case will rule the future rating of such erections, and it is therefore important that people who are interested in such matters should be present on Monday.

—— GARDENING APPOINTMENTS.—Mr. F. J. THORNE, late Gardenener at Hampworth Lodge, Downton, Salisbury, has been appointed Head Gardener and Bailiff to J. T. MACKENZIE, Esq., of Kentail, Sunningdale Park, Sunningdale, Berks.

A NEW CALIFORNIAN SPRUCE.

MR. T. S. BRANDEGEE'S visit to the Siskiyou Mountains in Northern California last September, for the purpose of securing a log of this new Spruce for the Jesup collection of North American woods in the American Museum of Natural History, enables me to add something to our still scanty knowledge of this interesting and remarkable tree.

Picea Breweriana* was first discovered in June, 1884, by Mr. Thomas Howell near the head-waters of the Illinois River, on the north slope of the Siskiyou Mountains, in a region previously but little known to botanists; indeed, all that district of Northern California between Mount Shasta and the coast is, perhaps, now less known botanically than any other part of the United States. Mr. Brandegee left Southern Oregon on September 20, crossed the Siskiyou Mountains by the Happy Camp Trail, and found a few small and detached groups of the new Fir where the southern slope of the mountains opens the head-waters of one of the small north forks of the Klamath River, to the west of the Happy Camp Trail, and a few miles south of the high rocky peaks where Howell had found this tree upon the upper waters of the Illinois. These are the only stations now known for Picea Breweriana. Not more than twenty or thirty trees were seen by Brandegee scattered over several hundred acres, and growing with Pseudo-Tsuga, Douglasi, Abies grandis (concolor?), Pinus Lambertiana and Chamæcyparis Lawsoniana (before unknown in the Siskiyou Mountains, and his interesting discovery, serving to connect the small outlying groups of this species in the valley of the Upper Sacramento River, California, with the coast forests of Oregon). The following extract from Mr. Brandegee's correspondence will, perhaps, be found interesting:—

"The largest tree measured," he says, "90 inches in circumference, and was less than 90 feet high. The drooping branches are a decided character of the tree. Some of the trees resemble in appearance Weeping Willows. I climbed a small tree to get cones and found it hard work to make headway against the downward growing branches. The branches from the main trunk at once begin their downward course, and it was impossible to get a foothold. The bark is exactly like that of Engelmann's Spruce in the Cascades; not so red as in Colorado, and, of course, scaly, and never ridged. The cones are borne all over the tree, like Pseudo-Tsuga, and are not confined to the tops, as with P. pungens and P. Engelmanni. They are borne at the ends of the long whips. It is a handsome and interesting tree. It does not grow on the very summits of the mountains, but its habitat is high, and near the top."

The striking features of the tree are the long pendulous whip-like branchlets, often 6 to 8 feet long. It is, however, quite distinct from the other American Piceas in its blunt and rounded leaves (the leaves of P. alba, P. nigra, P. pungens, and P. Engelmanni are quadrangular; those of P. sitchensis are

* "*Picea Breweriana*.—Pranches slender, often elongated and pendent, puberulent; leaves 5 to 12 lines long, ½ to nearly 1 line wide, strictly sessile upon the slender base, obtuse, smooth and rounded or slightly carinate above, stomatose beneath on each side of the slightly prominent midnerve; cones 3 inches long, narrowly cylindrical, attenuate at base; bracts linear-oblong (2 lines long), a fourth of the length of the puberulent scale, which is obovate, with the rounded thickish summit entire; seed 1½ line long, the wing 4 lines long by 2½ broad" *S. Watson, in Proc. Amer. Acad., n. ter.*, xii., p. 378; *Gard. Chron.*, May 2, 1885.

flattened and strongly ribbed on the upper side. It has the puberulous shoots of P. nigra, P. Engelmanni, and P. sitchensis, while the slender cones, with thin entire scales approach those of P. alba. These are 3 to 5 inches long, or more than double the size of those of P. alba. Picea Brewerïana, with its rounded leaves, large cones, and long pendulous branchlets, more nearly resembles the European P. excelsa than any North American species.

Fortunately Mr. Brandegee was able to find a few two-year-old seedling plants among the old trees, and half-a-dozen of them reached the arboretum alive. Like the other Californian Coniferæ, Picea Brewerïana will probably not prove hardy in Eastern America; it should make a valuable addition to European plantations.

The log which Mr. Brandyce succeeded in getting out of the mountains and sending to me was 19 inches in diameter. The tree from which it was cut was 166 years old, with sixty years of sapwood hardly distinguishable, as in other species of the genus, occupying a space of 3¼ inches. The wood cannot be distinguished from that of Picea alba. The figure on p. 497 is from a drawing of one of Mr. Brandegee's specimens, made by my associate, Mr. Faxon. *C. S. Sargent, Arnold Arboretum, Boston.*

Home Correspondence.

Disa macrantha.—In reference to Mr. Wood's note upon this plant on p. 43 of this volume, which pressure of other work has prevented me from answering before, it will be better perhaps if I give a full account of the facts connected with it, so far as they are known to me, in order to finally dispose of the question if possible. The true Disa macrantha is a plant described by Thunberg, of which nothing is known, there being no specimen of it in his herbarium, or in that of Swartz, bearing this name, neither do I find it in the Linnean, British Museum, or Kew herbarium—at least nothing that appears to me to agree with Thunberg's description of it. Lindley did not know the plant, neither does Professor Reichenbach I think; but to judge from Thunberg's description of it, it must be something in the way of D. cornuta, and quite unlike the plant which Mr. Sanderson has taken to be D. macrantha, and probably the two do not grow within 200 or 300 miles of each other, therefore the assumption that Mr. Sanderson's plant is true D. macrantha may, I think, be disposed of for good. The flower which Mr. Wood has sent me (and to which he refers in his above-quoted note), as being taken from a specimen of Mr. Sanderson's, bearing the number 498, I find to be the same as a flower in Lindley's herbarium, labelled "Macrantha, Natal," and which I have no doubt was received from Mr. Sanderson (although I cannot be sure that the handwriting is his), and is perhaps a flower taken from the same spike as the one which Mr. Wood sends. Mr. Wood in writing about this flower says:—"It is taken from a specimen of the late Mr. J. Sanderson's which is labelled No. 498, Disa macrantha. It is not the specimen from which Mr. Sanderson made the drawing, but it is quite evident that Mr. Sanderson took both to be the same species." Upon this point I quite agree, that the flower sent to me is the same species as that represented in Mr. Sanderson's, drawing; but I cannot agree with Mr. Wood in the opinion he expresses in the following quotation from his note:—"I have before me Mr. Sanderson's drawing, from which the copy (at Kew) was taken, a dried specimen from Mr. Sanderson's herbarium, labelled in his own writing, D. macrantha, and a specimen received by me from Kew, labelled Disa macrantha. Thunb., which was collected by Mr. McOwan on the Boschberg. I have compared these three together, and am inclined to believe that Mr. Sanderson's drawing and dried specimen represent the same species, and that it is different from, and a more robust plant, with larger flowers, than the one collected by Mr. McOwan." Having carefully dissected and examined side by side the flower sent me by Mr. Wood (Sanderson, 498) with that collected on Mount Boschberg, and distributed by Mr. McOwan under the name of Disa macrantha, I am unable to find any difference between them except size, and there is very little difference in size between some of the largest flowers sent by Mr. McOwan and the flower in question. What difference there may be between the two in a living state, I am of course unable to conjecture, but cannot think there can be any beyond a mere varietal difference, perhaps in colour or size. The next question is—what species is Mr. Sanderson's 498? I have on previous occasions stated that I believed it to be Disa crassicornis, Lindl., but now, having Mr. Sanderson's flower before me, I find on dissection and comparison with the type of D. crassicornis that the petals of D. crassicornis are far more acute than in Sanderson's and McOwan's plant, and the attenuation of the spur also seems to be somewhat different, but this is a point not easy to judge of correctly from dried specimens; so that it may really be different from D. crassicornis, and I may be wrong in considering it to be that species; living plants are required to show. The plant in cultivation, which is figured in the *Botanical Magazine* as Disa megaceras, is true Disa crassicornis, and what is now wanted is Mr. Sanderson's plant for comparison; for whether a distinct species or only a luxuriant variety of D. crassicornis, it is a plant that nurserymen would do well to look out for, as it is more robust and has a far finer spike of flowers, to judge from dried specimens, than ordinary D. crassicornis; and if the flowers and spike really attain the dimensions represented in Mr. Sanderson's drawing it will be a finer plant than D. uniflora, now such a favourite. Mr. Wood seems to think me unjust in considering Mr. Sanderson's drawing exaggerated, but even now it is hard to believe that it is not so, unless indeed the drawing was made from an unusually fine plant, for there are several specimens of it in the Kew Herbarium, and fine specimens too, but none approach the dimensions of the drawing, and yet it is agreed that the flower sent from Mr. Sanderson's specimen is the same species as represented in his drawing. The following are the dimensions of the flower from Mr. Sanderson's specimen No. 498, and of the flowers represented in Mr. Sanderson drawing which is labelled "No. 498, near Richmond, Natal." 1. Dimensions of flower received from Mr. Wood (Sanderson No. 498): Length of galea from apex to tip of spur, 2⅝ inches; diameter of flower from apex of galea to tip of labellum, 2 inches; length of lateral sepals, 1 inch; length of petals, ⅛ inch; length of lip, ⅛ inch. 2. Dimensions of flower represented on Mr. Sanderson's drawing (No. 498): Length of galea from apex to tip of spur, 4½ inches; diameter of flower from apex of lip to apex of galea, 3¼ inches; length of lateral sepals, 1¼ inch as seen in perspective; length of petals 1⅛ inch; length of lip, 1¼ inch; diameter of flower-spike, 5¾ inches. Now allowing even as much as one-third of the dimensions given for the shrinking of the dried flower, which is well dried, and so much shrinking would be unusual, I think, yet that flower would then fall considerably short of the dimensions of the flowers represented in Mr. Sanderson's drawing. It is not with the slightest intention of casting any charge of inexactness upon Mr. Sanderson as a draughtsman that I have said this, because I know his drawings in the main to be very good indeed; but in this case, with the evidence before me (unless, indeed, the shrinkage during the process of drying of this plant is much greater than is usually the case), I cannot help believing that the size represented is rather larger than in Nature: time must prove if I am wrong. *N. E. Brown, Herbarium, Kew.*

Dielytra spectabilis.—It is difficult to understand why the lovely Siberian Fumewort, Dielytra spectabilis, is not universally grown. I am inclined to the belief that the very fact that Mr. Fortune introduced the plant from China has been against its more extensive culture, the belief having gained ground that the plant is not so hardy as it really is. As to its forcing capabilities and its utility for all decorative purposes, I need not now speak. Suffice it to say on behalf of those who have no intimate knowledge of this valuable addition to the herbaceous border, that the roots, which are perennial, are obtainable at a moderate figure. Matured roots which have grown in any one spot for three or four years, divide well—short stiff cuttings taken from the matured growths with heels attached, root most readily in sandy soil with very slight protection from sun. Young plants so formed should be maintained in plunging materials in a cold frame until the following spring, when planting out is all they require. A warm sunny site is not only best, but the plant should from its peculiar merits have all possible favours. *William Earley.*

Anthracite Coal.—I have made many experiments at Sydenham with different qualities of coal and coke, and before any conclusions can be drawn I find it is necessary to have a most careful and experienced coal stoker, for this reason—some varieties of anthracite are so brittle that the coal will go through the bars if touched with the poker, and if it is not stirred some sorts run into clinkers. Then it is necessary not only to find how much coal is used a week, but to weigh the dust and ashes, and take it out in the full light, and wash it by throwing some cans of water over the pile; you will then see how much good coal has passed through the fire. Men who have been accustomed to coke fires have no idea how little stoking anthracite and smokeless coal requires, and that anthracite coal will not with economy consume cinders or ashes from other fires, for it then produces clinkers. One by one all the large Orchid growers at Sydenham have abandoned coke at 16*s.* to 18*s.* per ton in favour of anthracite at 19*s.* 6*d.* in the truck at Penge station. I have been burning Triansaran at 18*s.*, but it is not so economical as coal. I am now buying from Messrs. Green & Holland at 18*s.* 9*d.*, on account of the large waste there was in the coal passing through the bars. *T. Christy, F.L.S.*

The Want of Longevity in Maréchal Niel Rose.—My own experience is that the tree, whether on the Brier, on which it seems to thrive most vigorously, the Manetti or its own roots, reaches its prime at the age of six or seven years, and succumbs at fifteen to sixteen. I have seen older plants disfigured by being coddled up in the stem with moss or pots containing soil in order to induce it to take a fresh lease by emitting roots from the stem. Is there no other stock besides the Dog Rose, that will keep pace with the growth of the bud or scion? This Rose is declining in vigour evidently, the blooms in the cut flower shop windows are puny and effete compared with the magnificent golden balls it produced years ago. *T. W., Harrow.*

Extraordinary Snowdrops (469).—The stem of the Snowdrop, though blanched, was not buried half its length as supposed. The bulbs were about 5 inches deep. There was an extraordinary luxuriance of growth of various plants on this steep bank, and this caused the blanching of the stems for about 6 inches above the ground. One cluster of several hundred bulbs, whose leaves were 22 inches in length, were 17 inches above the ground. These Snowdrops attracted attention whilst driving past them, and from their great height were at first thought to be summer Snowflakes. The flowers were larger last year, and old inhabitants recollect them for sixty years. The farmer on whose land they grow is anxious to preserve them, and for this reason (beyond saying they are in Gwentland) their exact locality is withheld. *E. J. Lowe, Shirenewton Hall.*

American Blackberries.—I should be glad to be allowed to refer to two complaints lately made in your columns, from which I assume the writers have not taken the best means to obtain satisfaction. About a year since Messrs. Viccars Collyer & Co. sent me some "Wilson Junior," which were dried up as described, but when I wrote to them they agreed to replace them, and did so promptly. I think your correspondent who complained of American Blackberries being useless here, should not blame the sellers. Why did he order them? I have not the slightest connection with or personal knowledge of V. C. & Co., but I am glad thus to testify to what I know of them. *Richard Binns, Lovelands, Reigate.*

Peaches in Flower at Ketton Hall.—The large Peach-house at this place, just now in full flower, presents a most striking appearance, the trees in the centre of the house on each side of the walk, consisting of pyramidal trees in tubs and pots, and the large trained trees on the trellis being thickly studded with flowers all over—some of the large flowering kinds, such as Dr. Hogg and Hale's Early being very conspicuous. In one of the divisions of the house there are also some Cherries in tubs, and a quantity of Pears in pots, with abundance of flower-bud on them. The earlier Peach-houses are equally good, all the trees carrying heavy crops of fruit, and the growth strong and healthy. *W. Milne, Stibbington Hall Gardens.*

Cyclamen persicum.—There are few plants that give greater satisfaction than Cyclamens, when a good strain is obtained and the plants are well grown; but it is somewhat difficult to secure seed of a really good strain. Like many other florists' flowers the best forms do not seed so freely as the inferior types. Unless the plants are in a favourable position, and are carefully fertilised by the aid of a camel's-hair brush they will produce very little seed; and under the most favourable circumstances they do not produce seed very abundantly. There are now some very fine varieties of the giganteum type, but for general purposes the older form is preferable, for, although the flowers are not so large, they are produced in greater abundance, and the plants are generally of a more compact habit of growth. In selecting plants for seed especial regard should be paid to the habit of growth; as Cyclamens vary so much in this respect; of course form of flower and colour must also be considered. A separate brush should be kept for each variety, and to prevent cross-fertilisation by natural agencies each sort should be isolated as far as possible. The plants should be placed in a light sunny position, where there is a free circulation of air. After the seed is set it takes a considerable time to bring it to maturity, and the seed-pods are very liable to damp off if the plants are not kept carefully cleaned. Later on, after the seed has begun to swell, it may be finished off in a cold pit or frame. The seed will germinate more freely if sown soon

after it is collected, or if kept for some time it is a good plan to soak it in water before sowing. The seed may be sown any time from August to October, and if the plants are kept growing on freely they will make fine flowering plants for the following winter. Culture.—The seed should be sown in pots or pans, which should be well drained, and filled to within half an inch of the top with good yellow loam to which a little sand may be added, or if the loam is heavy a little peat may also be added; leaf-mould may be used freely for after-pottings, but it is best to avoid using it for the seed as it is likely to cause damping. After the seed is sown it may have a very slight covering of soil, or what is perhaps better is a little sphagnum moss chopped up fine and sprinkled over the surface. As soon as the plants are large enough to handle they should be pricked off, and they will be ready for potting off singly about March. During the winter and spring they should be grown on in a good heat, but to prevent drawing they must be kept as close to the glass as possible. After the plants are potted into their flowering pots they may be grown on during the summer in cold pits or frames. It will be better to have them indoors again about the beginning of September, so that a little heat may be given in case of dull damp weather; it is essential that the plants should have plenty of room, so that the air can circulate freely among them, especially after the flower-buds are formed, for if allowed to become crowded, the buds will remain dormant, and eventually die off instead of developing the flowers. Watering must always be carefully attended to, and after the pots are well filled with roots a little liquid manure may be given from time to time. The liquid-manure may be made from cow-dung and soot, this should be made some time before it is required for use, so that it can settle down, and be used in a clear state. *A. Hemsley.*

Cucumber Disease.—We have on several occasions given an illustration of the knots on the roots of Cucumbers and other plants produced by thread-like worms (nematoids). We now avail ourselves of the kindness of Mr. Michael to show a drawing of the eggs of the creature (fig. 94), and which will testify to its fertility and the necessity of adopting no half measures with such a plague. ED.

Tritonia aurea.—This, properly and well grown, is a very useful blooming greenhouse plant, coming into flower at a season when there are not many pot plants in bloom. Too frequently, however, the treatment accorded to it is not in keeping with its habits and requirements. To succeed with this Tritonia it should be treated as an evergreen plant, pure and simple, and the bulbs should not in any way be dried off as is generally the case. On observation it will be seen the bulbs have a singular habit, and, unlike most others, never remain at rest unless they are perfectly parched up. This activity is observable in connection with the new bulbs which are constantly formed, pushing forth young underground growths, these, in turn, eventually come up to the surface in the form of strong growths if water be given to them. Without it such young shoots perish. The result is when bulbs are dried, divested of these young growths, and replanted or potted in the early spring of the following year, they have to form secondary growths, which are not nearly so strong as the original ones. Can it be wondered at, therefore, that the plants which result from planting dry bulbs are dwarf, weak, and with very little flower? Plants grown thus, and such as result from the evergreen treatment, vary immensely in size. The former often average only 8 inches in height of stalk, leaf, and flower-spikes, whilst the latter attain a height of 3 feet and more. When treated on the evergreen principle young specimens started in 32-sized pots are shifted on into 24 or 16-sized, so that ultimately dense masses of foliage and flowers, very different in quality and size from the results of the ordinary system, are secured, proving excellent material for mixing with Palms and other foliage plants. *William Earley.*

ADIANTUM FORMOSUM.

OUR illustration (fig. 95) shows a very pretty sport from the ordinary type of this plant, in which the segments are lengthened into long linear segments, which give the frond a very elegant appearance. It was sent us by Mr. B. Brown, florist, of St. Thomas', Exeter.

SALE OF ORCHIDS.—At a sale of Orchids by Mr. J. C. Stevens last Wednesday, a yellow form of Odontoglossum Pescatorei (Mr. Knox's variety), which was exhibited at South Kensington the day before, and is described in our report of the show (p. 501), was knocked down at the price of 165 guineas, Baron Schroder being the purchaser.

Reports of Societies

ROYAL HORTICULTURAL: Tuesday, April 13.

ANOTHER Daffodil festival at South Kensington, three long tables groaning under the load of many hundreds of the beautiful yellow and white favourites of the day. But after all that can be said for these flowers, it was a relief to turn to the more varied contents of the other half of the show. Here were beautifully grown and flowered plants of choice Orchids and cut flowers of the same; brilliant coloured Amaryllis, resplendent new Cliveas, decorative Pelargoniums, and the distinct and a striking group of Anthuriums in variety. A collection of Rhododendrons in pots lent just the necessary complement of colour the great quantity of Daffodils seemed to demand.

Scientific Committee.

A. Grote, Esq., in the chair. Present: Messrs. Llewelyn, Michael, Pascoe, Boulger, Bennett, W. G. Smith, J. O'Brien, G. F. Wilson, Rev. C. W. Dod, A. H. Smee, G. Murray, H. Ridley, Major Clarke, Professor Church, Dr. Hogg, and Dr. Masters.

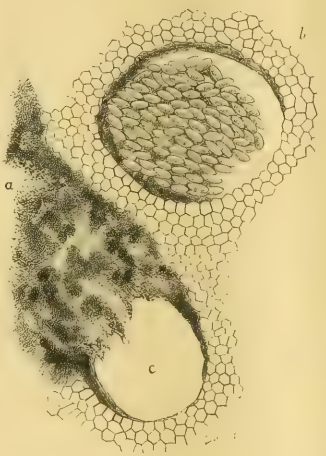


FIG. 94.—EGGS OF NEMATODE WORMS IN CUCUMBER ROOT.

RHODODENDRONS.

Mr. Llewelyn exhibited from the neighbourhood of Swansea various Rhododendrons, all grown out-of-doors except R. Edgeworthi. The species and varieties included R. Shepherdi (?), R. ochraceum, R. barbatum, R. Thomsoni, and R. ciliatum. Many of these are as hardy as the common Oak, provided they do not make their growth too early in spring. Most of the trees mentioned by Mr. Llewelyn were introduced many years since from Himalayan seed, and have now attained a height of 25 to 30 feet.

SPARROWS AND CROCUSES.

Mr. Boulger gave his experience as to the mischief effected by sparrows. Unlike Mr. M'Lachlan, he had found that the birds principally attacked the edge of the perianth and not the tube. It was remarked that Crocuses in masses were less liable to injury than when in lines.

PRIMROSES.

Mr. Boulger exhibited various forms of hose-in-hose Primrose, in which the calyx was petaloid like the corolla, and a malformation in which the stamens were all united into a tube.

FUNGUS POISONING.

Mr. W. G. Smith read an account of the injurious effects produced on himself by partaking of Agaricus dealbatus. The species is capricious in its action, as it does not always, and under all circumstances, produce the effects described by Mr. Smith, and which consisted of a sensation of heat and excessively profuse perspiration. No other ill effect was produced, and others who ate the fungus at the same time were not affected.

WEEVIL ON ORCHID BULBS.

Mr. O'Brien showed pseudobulbs of Cœlogyne cristata, injured by a beetle [since determined by Mr. Pascoe to be Nassophasis foveata], which was referred to Mr. Pascoe for identification. A conversation ensued respecting Isosoma and other insect pests imported with Orchids, and it was suggested that any suspicious-looking plants should be destroyed; but it was pointed out that the damage was probably done in a young state of the insect, and that destruction of the perfect insect, or of the affected bulbs, might be of little avail. Mr. Llewelyn alluded to certain longicorn beetles imported with timber from the Baltic, and which were illustrations of life under untoward circumstances, the beetles being found in the timber used in the mines after a long period of use underground.

FROST ON LEAVES.

Mr. G. Murray stated that the leaves referred to him on a former occasion were injured by frost and not by fungi or insects.

ODONTOGLOSSUM RAMOSISSIMUM.

Mr. Buchan showed a specimen of this plant determined by Professor Reichenbach to be the var. roseum, but as the Professor had not seen either leaves or pseudobulbs, which differ materially from those of ramosissimum, it was considered that the determination was open to doubt, and that the plant was probably that described as O. ioplocon, *Gardeners' Chronicle*, May, 1884, p. 445.

OUTDOOR ORCHIDS.

Mr. A. H. Smee showed a plant of Cattleya Trianæ in bloom. The plant was placed in the open air, exposed to full sunshine from June 24, when the entire growths were made, and taken in again on September 24. The flowers were of a richer colour than those formerly produced on the same plant under glass. A plant of Cypripedium insigne was also shown which had been out-of-doors all through the winter with only the protection of a broken hand-glass. The plant had been exposed in a similar way for two or three years, and this year had been subjected to 22° frost without injury.

PHALÆNOPSIS INTERMEDIA × .

A Botanical Certificate was awarded to this plant from the great interest attaching to the circumstance that this artificially raised hybrid, whose history is given in the report of the show, proves to be identical with imported plants suspected (and now proved to be) of hybrid origin.

MISCELLANEOUS EXHIBITS.

Owing to the number of subjects brought forward, and the short time at the disposal of the committee, some matters were passed over, and the following subjects were laid on the table:—A specimen of O. Alexandræ, in which alternate flowers were fertilised, and had become of a fawn colour, while the virgin flowers remain of their usual colour. A burr of Abies Douglasi, showing a condition of things like the Clanbrassil Fir. Peculiar growths of the Laburnum, in which the growth of last year was much thicker than that of the year preceding.

Floral Committee.

Present: G. F. Wilson, Esq., in the chair; and Messrs. R. Dean, J. Dominy, H. M. Pollett, J. O'Brien, W. B. Kellock, E. Hill, G. Paul, H. Cannell, J. Douglas, W. Bealby, Amos Perry, B. S. Williams, H. Herbst, Rev. W. Wilks, J. Hudson, G. Daffield, H. Turner, A. T. Lendy, H. Ballantine, W. Holmes, Shirley Hibberd, and Dr. Masters.

ORCHIDS.

The President of the Society, Sir Trevor Lawrence, contributed a beautiful group of these plants, comprising a pale lilac form of Cattleya Mossiæ bearing three spikes of flowers, the throat being marked as usual with yellow, but with the addition of purple lines; Dendrobium Brymerianum, a plant with few flowers; Oncidium Marshallianum, a strong basket plant furnished with three grand spikes of bloom; a bright tinted variety of Odontoglossum vexillarium roseum carrying twenty-eight blooms; the brilliant Masdevallia racemosa, with, unfortunately, only two flowers open; Cattleya Mendelii, with rich tinted lip; a very large mass of Cypripedium caudatum with blooms mostly well developed; Epidendrum Wallisi, furnished with five tall stems, having foliage for about 1½ foot downward. The flowers have sepals and petals of lemon colour, with a few brown spots, the lip being white, spotted and suffused with brown; Maxillaria Turneri was again shown in fine condition, full of flower; Trichopilia lepida, a rose-coloured species; Dendrobium crystallinum, a small specimen in fine flower; D. lituiflorum, a small plant of a good variety; Saccolabium curvifolium album, pure in colour, but small in size; Maxillaria Buchanani, and Cattleya citrina, bearing four blooms, a Silver-gilt Banksian Medal was awarded.

Mr. B. S. Williams showed cut flowers of his best variety of Cattleya Lawrenceana; the sweetly-perfumed Houlettia odoratissima; Odontoglossum cuspidatum, a



Fig. 95.—Adiantum formosum sport. (see p. 500)

fine spike of flowers, having a greenish-yellow ground barred with brown on all the limbs; Masdevallia Harryana lilacina of rosy-lilac, a truly pretty species.

Messrs. J. Veitch & Sons, Chelsea, showed Phalænopsis intermedia, an interesting hybrid raised between P. rosea and P. Amabilis. P. intermedia has been regarded as a natural hybrid between these two species, and this result of the artificial cross confirms that view. The flowers have the characteristics of P. intermedia; the petals and sepals are white, the former tinged at the base with crimson; the centre and side lobes of the lips are purplish-crimson with a few dots and a yellowish crest. The flowers are about 2 inches across, and the foliage that of a robust P. intermedia.

— Ingram, Esq., Elstead House, Godalming (gr., Mr. T. W. Bond), showed a small piece of Phalænopsis Sanderiana superba, as its name indicates an improvement on the well known Sanderiana; several Odontoglossums, as O. Andersonianum and O. crispum Elsteadianum, a pretty flower of creamy-white, spotted and blotched with bright brown as to the sepals and petals, the crest being large and yellow.

W. B. Greenfield, Esq., Beechwood Park, Dunstable (gr., Mr. Freeman), showed Calanthe vestita ignea oculata, a strong spike of flowers French-white, having an orange-red blotch in the throat.

B. D. Knox, Caversham, Reading, exhibited a probably natural hybrid of Odontoglossum Pescatorei, to be known in the future as Knox's variety. The flowers possess broad sepals and petals, which are mainly yellow, although white at the base, on each are a few brown spots crossing them about the middle. This plant has since been sold by auction for 165 guineas.

Mr. G. W. Cummings, gr. to A. H. Smee, Esq., The Grange, Wallington, brought five plants of Cattleya citrina, some of which showed deviations from the normal form in having a white margined lip; Warscewiczella discolor, a dwarf Orchid, with curious dullish purple flowers; Scuticaria Hadweni, a flower in which the sepals and petals are of rich brown, barred in the lower half with yellow, the lip is pinkish and marked with pale brown.

W. C. Pickersgill, Esq., Blendon Hall, Bexley (gr., Mr. F. Moore), showed a grand specimen of Lycaste Skinneri gloriosa, literally packed with well coloured blooms; several cut blooms of other fine forms of L. Skinneri came from the same gardens.

A. J. Hollington, Esq., Fish Hill, Enfield (gr., Mr. E. Ayling), showed Odontoglossum Alexandræ roseum pictum, a pretty variety but a weak plant, carrying one bloom.

W. Lee, Esq., Downside, Leatherhead (gr., Mr. Woolford), showed Cypripedium Wallisi, a flower with a creamy-white sac, marbled greenish dorsal sepal, the tails of fully developed flowers averaging 15 inches in length, and of a light brown tint—a distinct and rare plant. C. Godefroyæ var. punctata was shown in the shape of cut blooms, the handsome markings of which are rarely found even amongst Orchids. The sac is of an opaque white slightly dotted with purple; the sepals and petals are of the same ground colour, but are more densely dotted with the same tint of purple. Cattleya speciosissima: some very fine cut blooms of this species; sepals and petals rosy-lilac, the lip convoluted, and deep purple in colour; the upper part of the throat orange fading into white. Epidendrum Stamfordianum, having attenuated spikes 2 feet in length of small primrose and green flowers.

H. M. Pollett, Esq., Fernside, Bickley (gr., Mr. W. Parks), exhibited cut blooms of hybrid Odontoglossums, viz., Andersonianum mulus, Schillerianum, insignes, Wilckeanum, and Pollettianum, all of which were nice varieties, and marked by good culture.

Sydney Courtauld, Esq., Bocking Place, Braintree (gr., Mr. Wright), showed Odontoglossum mulus Courtauldianum. The bloom is of a large size for an Odontoglossum, regular in form, the ground-colour being yellow, with large and small blotches of brown, the tip being yellow, with one or two spots of brown at the base.

R. B. Lemon, Esq., Moat Lodge, Beckenham (gr., Mr. H. Adams), exhibited Oncidium tetracopis Reichenbachi, the flowers having petals yellow spotted with brown, and sepals entirely of a brown hue, and the whole bloom of a wax-like texture.

Messrs. J. R. Pearson & Son, Chilwell Nurseries, Nottingham, exhibited several species of Dendrobium, viz, D. nobile variety, of rich tints; several varieties of D. Wardianum, differing much in their markings, but not so much in their forms.

Mr. H. J. Buchan, Southampton (gr., Mr. Osborne), showed Odontoglossum liliiflorum, a long spike, terminated by a raceme of pink blooms, spotted with purple. [See report of Scientific Committee].

Miscellaneous.

Messrs. J. Veitch & Sons, Chelsea, showed Daphne Blagayana, a dwarf-habited hardy shrub, with white flowers, arranged as in D. indica; Amaryllis Princess of Wales, a fine bloom of white ground colour, suffused carmine colour, the lower segments of the flower exhibiting more of the ground colour than the others; Amaryllis Crown Princess of Germany, also a white ground flower, but with a scarlet flame and stripe—distinct, striking, and in habit robust; Amaryllis Compton, of bright crimson, with bands of white low in the throat; Etoile, of brilliant scarlet; Amaryllis Pioneer was a small neat flower of a magenta colour. From the same nursery came Heleniopsis umbellata, a pink-flowered alpine; and the green-flowered curiosity, Korolkowkia Sewerzowi.

Mr. B. S. Williams showed his fine Clivea Ambroise Verschaffelt, noticed in our remarks on his nursery last week; Araucaria Vervaetiana, as seen in the young state a well-coloured, compact-growing variety; Vriesia hieroglyphica, nice healthy plants; and Aralia regina, a handsome variety with digitate foliage, likely to be useful as an indoor decorative plant when small.

Mr. W. Bealby, Roehampton, showed Azalea indica Sacountala, a full double flower of pure white.

Mr. G. F. Wilson, Weybridge, showed Megasæa speciosa; the Alice Wilson Primrose, of purplish-blue, distinct and telling in colour; and Primula denticulata varieties.

Sir Trevor Lawrence, Bart., M.P., showed a grand group of varieties of Anthurium Scherzerianum, viz., Rothschildianum, a pale red spathe; Wardi, a scarlet extra large spathe; Devansyanum, white, densely blotched with scarlet, very handsome; Hendersoni, a fine scarlet; Pygmeum, a small and vividly coloured spathe; Palmeri, a long scarlet spathe; a number of seedlings of the A.

Scherzerianum type, showing considerable variety of form, were also shown; and of large-leaved species there was shown the deep rose-coloured Archduke Josef, with a robust habit, probably climbing, and having cordate leaves.

Messrs. H. Cannell & Sons, Swanley, showed Pride of Penshurst Carnation, of a clear yellow colour and good shape, and C. L'Alegatière.

Messrs. Lane & Sons, Great Berkhamstead, showed an orange-coloured Azalea mollis Lewis E. Thomas, and a considerable number of forced hardy Rhododendrons, well furnished with trusses of bloom. A Silver Banksian Medal was awarded.

Mr. F. Perkins, 51, Regent Street, Leamington, showed decorative Pelargonium Volonté National, both in bunches of cut blooms and in pots. This is a variety that should continue to find favour for its handsome white flowers.

E. G. Loder, Esq., Floore, Weedon (gr., Mr. G. Goldsmith), showed Myositidium nobile, a plant with Funkia-like foliage, and the flowers of a Forget-me-Not. It is a distinct herbaceous plant.

A splendid collection of Primroses, which unfortunately arrived too late for exhibition, was sent by the Hon. and Rev. J. T. Boscawen, Lamorran, Cornwall. Every variety of shade, from pure white to a fine rich yellow, and from white through pink to a splendid red, was to be seen in these blooms, which were of wonderfully fine substance and large size. All the colours were very clean and brilliant, but at the same time were most delicate. It was indeed a loss that they were not staged.

DAFFODILS.

Undoubtedly the greatest feast of Daffodil's presented to the public this season was that seen at South Kensington on Tuesday. Not only were the collections very large and varied, but the flowers were in many instances marvellously fine, and some novel types, particularly in the collection set up by Messrs. Barr & Son, King Street, Covent Garden. The Daffodil Committee had a busy time of it under the chairmanship of the Rev. C. Wolley Dod, and the sitting lasted until quite late in the afternoon. It is undoubtedly the fine Trumpet Daffodils that hit the public taste—the maximus section. It is difficult to detect in some of these the slight differences experts perceive between them, but a small departure from the type appears to constitute a variety: but this is true of all flowers of which the florist makes a specialty. The collection put up by Mr. T. S. Ware, Hale Farm Nurseries, Tottenham, had examples of such fine varieties as maximus, spurius, obvallaris, Lincolnshire Yellow, and Henry Irving. These have the perianth and trumpet golden. Those having a sulphur perianth and golden trumpet are Emperor, princeps, rugilobus, Incomparabilis, Sir Watkin, and bicolor Dean Herbert. The two best with a white perianth were Horsfeldi and Empress, the latter very charming. A few are altogether white, such as albicans and amabilis. Of the poeticus section there were representatives of poetarum and ornatus. The double trumpet Daffodils were represented by Telamonius plenus, capax plenus, and sulphurea plena. This collection was set up in handsome bunches, flanked on one side by a fine collection of single blooms of Anemone coronaria. A Silver Banksian Medal was given.

The most extensive and best representative collection was that from Messrs. Barr & Son, who also obtained a Silver Banksian Medal, and it occupied a considerable space of tabling. At the back were large patches of six or eight bunches of leading varieties, which helped to make an imposing display. Here, as indeed in all the collections, the single trumpet varieties were largely prominent. Sir Watkin was a striking form, with its broad and stout perianth and fine trumpet; and there were such distinct new forms as Henry Irving, pale yellow, with golden trumpet; Mrs. H. J. Elwes, pure yellow—very fine; Challenger, yellow; Golden Spire, deep golden-yellow—very fine; Cervantes, pale sulphur with golden cup, the edge of the trumpet much recurved; and Gwendoline, white perianth, with a singularly soft, bright pale yellow trumpet—very charming. N. Leedsii was in good form, and with it many fine varieties, such as Fairy, sulphur, the trumpet margined with orange; Glory, having deep gold instead of orange margining the cup; Acis, white and gold; and C. J. Backhouse, the cup all orange—very fine and distinct. N. Barri conspicuus was awarded a First-class Certificate of Merit; it has a broad spreading yellow perianth, and a broad short cup, with a deep orange-red margin. Other fine forms were Octorus, poeticus ornatus, cernuus pulcher, with its white perianth and delicate sulphur trumpet; the true form of Narcissus orientalis, one of the Polyanthus section having a white perianth and yellow and gold cup, &c. This collection was edged by bunches of cut flowers of such choice hardy subjects as Anemone fulgens, A. blanda, Fritillaria Thunbergi, F. tristis, Sisyrinchium grandiflorum and its white variety, Ophrys aranifera, O. Arachnites, Orchis longicornu, O. pauciflora, Trillium ovatum, Gladiolus Watsonianus, &c.

Messrs. Collins Bros. & Gabriel, 39, Waterloo Road, who were awarded a Bronze Medal, also had a fine and diverse collection; prominent were examples of Horsfieldi, rugilobus, Van Sion (single), obvallaris, Sir Watkin, Empress, princeps, Empress, spurius, Henry Irving, albicans, and moschatus, as representing the single trumpet varieties; Incomparabilis, Stella and Mary Anderson, Leedsii amabilis, poeticus ornatus and angustifolius, &c., all represented by very fine forms; and in addition a collection of very fine cut blooms of Anemone coronaria, A. fulgens, A. pavonina fl.-pl., Freesias Leichtlinii and refracta alba, Tulipa Griegi, T. Chesiana, &c.

Some remarkably fine examples were shown by Mr. J. Walker, Whitton, Hounslow, who had a smaller but striking collection. It included Horsfieldi, very fine; Sir Watkin, John Bright, cernuus, albicans major, &c. A Bronze Medal was awarded. There were several fine varieties with the shortened chalice, such as Burbidgei, white and deep orange; Mandarin, Mrs. Syme, T. M. Absolom, Cynosure, John Bull, &c. This collection was also contained a remarkable sport from Sir Watkin, having a very deep, almost reddish-golden trumpet.

A small collection came from the New Plant and Bulb Company, Lion Walk, Colchester, which, in addition to some fine trumpet varieties, some very curious double forms of a distinct character, a Bronze Medal being bestowed.

FIRST-CLASS CERTIFICATES.

To W. Lee, Esq., for Cypripedium Wallisi.

To S. Courtauld, Esq., for Odontoglossum mulus Courtaldianum.

To G. F. Wilson, Esq., for Primrose Alice Wilson.

To E. G. Loder, Esq., for Myositidium nobile.

To Messrs. J. Veitch & Sons, for Amaryllis Princess of Wales.

To Messrs. J. Veitch & Sons, for Amaryllis Crown Princess of Germany.

To B. D. Knox, Esq., for Odontoglossum Pescatorei, Knox's var.

To W. C. Pickersgill, Esq., for Lycaste Skinneri Gloriosa.

To Sir T. Lawrence, Bart., for Anthurium Scherzerianum Devansyanum.

To Sir Trevor Lawrence, Bart., for Masdevallia racemosa Crossi.

To Messrs. P. Barr & Son, for Narcissus Barri conspicuus.

Fruit Committee.

Present: T. F. Rivers, Esq., in the chair; and Messrs. H. Veitch, W. Denning, J. Burnett, F. Rutland, W. Paul, J. E. Lane, J. Smith, J. Ellam, J. Woodbridge, W. Warren, T. Saltmarsh, G. Goldsmith, C. Silverlock, T. B. Haywood, and R. D. Blackmore.

Mr. G. W. Cummings, gr., The Grange, Wallington, showed a collection of fruit consisting of fifty dishes of Apples and six of Pears, culinary and dessert. A Bronze Medal was awarded for the collection, which attracted some attention by reason of the good condition in which many kinds had been preserved. Among the Pears were Madame Millet, a valuable late variety, and Beurré de Rance, still the most trustworthy of late Pears; there were Beri Mai and Duchesse Tardive. In good condition among the Apples were Clove Pippin, Alfriston, Springfield Pippin, Ord's, Sturmer Pippin, Ribston Pippin, Northern Spy, Lady Hayes, Herefordshire Pearmain, and Dumelow's Seedling. A Bronze Medal was awarded.

Mr. Stephen Castle, West Lynn Vineyard, showed a basket of Gros Colmar Grapes, very well kept, being plump, green-stalked, and with unblemished bloom.

Narcissus Committee.

A meeting of the Narcissus Committee was held at South Kensington on Tuesday, April 13, when a large number of specimens were exhibited, including, amongst others of special interest, seedlings from Captain Nelson and Mr. Engleheart, and a great many wild varieties of different types. There was not sufficient time to go thoroughly into all the collections which were received, but the following is a brief account of what was submitted for inspection, and the decisions taken:—

1. Incomparabilis, from Mr J. Dickson, of Chester, not known, but apparently a form of Incomparabilis from the Pyrenees. Particulars requested of its history.
2. Nobilis, from Dr. Wallace, Colchester, collected by Mr. Maw. Deferred to another year.
3. Golden Spur, from Dr. Wallace. Correctly named.
4. A form of Pseudo-Narcissus, from Mr. H. Collins. Not considered worthy of a distinctive name.
5. Calathinus, of Redouté, from Mr. Barr. True to the figure.
6. Tom Thumb, Mr. Barr. Deferred.
7. Automedon, a good variety of Pseudo-Narcissus, from Mr. Tyerman. Name registered.
8. Henry Irving, a spurius of Dutch origin, from Mr. Barr. Name registered.
9. Challenger, a strong growing variety with foliage resembling Rugilobus, from Mr. Llewellyn. Name registered.
10. Pseudo-Narcissus, from Mr. Tyerman. Not considered worthy of a name.
11. Some small forms collected in the Maritime Alps, and ranging from deep yellow and lemon self-coloured shades to yellow trumpets with white perianth. From Mr. Serase Dickins. Accepted as varieties of Minor.
12. White Ajax, from Miss Owen. Identified as Colleen Bawn.
13. Irish cernuus, from Miss Owen.
14. A small straw-coloured Daffodil, from Miss Owen. Named as Minor citrinus.
15. A flower from Mrs. W. B. Hartland, similar to the last in shape and size, but white. Named as White Minor.
16. A Polyanthus Narcissus, from Mr. Archer Hind, collected in woods near Ostia. Not recognised.
17. A form of Pseudo-Narcissus, from the Rev. Mr. Wilks, described by him as the earliest, strongest, and most floriferous sort he has ever met with. Named Troilus.
18. A seedling from Tottenham Yellow, more robust in form, from Mr. Wilks.
19. A seedling from Captain Nelson, in appearance like a white Telamonius.
20. A seedling from Captain Nelson, like a pale Exquisite.
21. A seedling from Captain Nelson of a deep gold colour.
22. A short crowned moschatus, from Rev. Mr. Engleheart. Name registered as Niobe.
23. Some forms, single and double, found growing between Telamonius plenus and wild Pseudo, which had been planted in concentric rings round the stems of trees, showing strong evidence of being hybrid seedlings between the two (Rev. Mr. Engleheart).
24. Specimens of Pseudo-Narcissus of various forms and colours, from Rev. C. Wolley Dod.
25. Corbularia nivalis, from Mr. Corder, true; Triandrus pulchellus, and some other forms of Triandrus.
26. A collection of forms of Spurius from Mr. A. E. Barnaart, including Golden Spur, Spurius coronatus, and Henry Irving; and several others not recognised by distinctive names.
27. A collection of Italian Trumpet Narcissus, from Mr. Morse, of Epsom.
28. A report, with dried specimens of N. Triandrus, was presented to the committee from Professor Henriques, of Coimbra.
29. A collection of white Ajax was brought by Miss White. One large variety, known sometimes as tortuosus tenuifolius, was registered under the name Leda. It had the peculiarity of being strongly scented like old Oak.
30. Bishop Man, a very tall growing Moschatus, from Mr. W. B. Hartland. Deferred.
31. Minnie Warren, a small Moschatus, from Mr. W. B. Hartland. Name registered.
32. Gladys, another small white form. Name registered.
33. A very interesting collection of forms of Incomparabilis, from Mr. W. Godolphin Osborne, collected by him in the Pyrenees, varying considerably in the colour of the crown and perianth.
34. Muticus and juncifolius, and a Corbularia, from the same source.
35. A white Ajax with buff-coloured trumpet, very distinct; and a variety of Sir Watkin, with deeply stained crown, were shown by Mr. J. Walker.
36. A collection of various sorts from Mr. J. H. Krelage, for verification of names.
37. Some flowers were shown by Mr. Ware, which were accepted as true nobilis. The roots were collected in the Pyrenees, and had been in cultivation in England for two years.
38. A number of single and double Pseudo-Narcissus and Telamonius from various sources, sent in reference to the question of the conversion from single to double. *C. R. Scrase Dickins, Hon. Sec.*

ROYAL BOTANIC.

THE second spring show of the above Society was held on the 14th inst. The variety of plants shown was not at all great, and, in fact, the alpines and hardy plants, especially the former, constituted the only really interesting feature; the other plants, however, were of good quality. Exhibits were not so numerous as we should have expected.

HARDY HERBACEOUS PLANTS

were shown by Messrs. Paul & Sons, Cheshunt, whose collection embraced some very beautiful little plants—Anemones in variety, Dentaria polyphylla, and numerous species of Primula. The 1st prize was awarded to this group, and the next to Mr. G. Wheeler, gr. to Lady Louisa Goldsmid, Regent's Park, N.W., who had in his collection, among other plants, Iris pumila azurea—a pretty little pale blue flower.

ALPINES.

These, as before stated, formed an attractive feature. Mr. T. S. Ware, Hale Farm Nursery, Tottenham, staging the 1st lot, which contained a number of species and varieties of European and other Primulas—P. verticillata, which has yellow flowers, attracting great attention, as did a fine clump of P. rosea. Saxifrages were also plentiful and Orchis was represented by O. Robertiana, O. pauciflora, and O. provincialis, which latter appears to be a more robust form of O. pauciflora. Among the Anemones, A. stellata fulgens and A. apennina alba were chiefly noticeable. Very many other plants of great interest were shown, but we cannot find room to notice them.

Messrs. Paul & Sons, Cheshunt, followed in order of merit, with plants which were almost the same as Mr. Ware's, the most attractive specimen being a large pan of Primula viscosa var. nivalis: the flowers were of a very clear white. Numerous Saxifrages and Primulaceous plants constituted the greater part of the collection.

AURICULAS.

Mr. C. Turner, Slough, was the only exhibitor of both forms of these plants, and showed very fine specimens.

AMARYLLISES

were well shown by Messrs. Paul & Sons, Cheshunt, the individual blooms being very fine, and ranging from deep red to almost white, and of all sizes. Messrs. J. Veitch & Sons, Chelsea, also staged a good

lot, together with Daphne Blagayana and Heleonopsis umbellata.

DAFFODILS, &c.

were nicely shown in quantity as usual, by Messrs. Barr & Sons, who were awarded a Silver Medal for their exhibit; and also by Mr. Ware and Messrs. Collins Bros. & Gabriel, each of whom were awarded a Small Silver Medal. There was nothing to call for particular mention.

AZALEAS AND RHODODENDRONS.

Azalea indica was shown in very good style by Messrs. C. Turner, Slough. The plants were well flowered, and the colour was most clear and brilliant. Mr. H. James, Castle Nursery, Lower Norwood, and Messrs. Cutbush & Son were respectively 2d and 3d, with very fair plants.

Amateurs stood well, Mr. W. Webster, gr. to A. Heaver, Esq., Tooting, taking the highest place among them.

A good collection of A. mollis was shown by Messrs. H. Lane & Son, Great Berkhamstead, who also staged the only group of Rhododendrons.

ORCHIDS.

Mr. Hill, gr. to H. Little, Esq., Hillingdon Place, was awarded a Silver Medal for a group of Orchids, which were very large. A great many varieties of Lycaste Skinneri were shown, one of which, with brilliant rose petals, was very attractive. Angræcum sesquipedale, Dendrobium Dalhousieanum, a large number of Odontoglossums—gloriosum, triumphans, &c.—and a specimen plant of Cattleya Trianæ, with twenty-eight flowers on it, were also included.

SHOW PELARGONIUMS

were best exhibited by Mr. D. Phillips, gr. to R. Mann, Esq., Langley Broom, Slough. The plants here were large and well flowered, and looked very healthy. Messrs. H. Williams & Sons, Fortis Green, Finchley, obtained the 2d prize with plants which ran Mr. Phillips closely

ROSES.

were exhibited only by Messrs. Paul & Son, Cheshunt, as usual in fine condition. Innocenti Pirola and White Baroness were the most attractive white forms, and Beauty of Waltham the finest red.

CINERARIAS

were exhibited much better than they were at the last show of this Society. Mr. F. J. Hill's plants deservedly gaining the 1st prize; the 2d was awarded to Mr. D. Phillips, whilst Messrs. H. Williams & Sons were 3d. All these exhibitors had staged very fine plants, especially Mr. Hill, whose specimens were well flowered and of good colour and substance.

A GROUP

of foliage and flowering plants was staged by Mr. B. S. Williams, Upper Holloway, consisting of Anthuriums in variety, Cyclamen, Orchids (chiefly Odontoglossums), Amaryllis, Clivia, Ericas, &c., and a very good specimen of Ochna multiflora in fruit which was most effective. Tillandsias and numerous species of Palm, together with Adiantums, set the above off to advantage.

The following Certificates were awarded :—

BOTANICAL CERTIFICATES.

To Messrs. E. G. Henderson & Son, Pine-apple Nursery, Maida Vale, for Adiantum fragrantissimum.

To Mr. T. S. Ware, for Cypripedium macranthum.

To Messrs. Paul & Son, for Dentaria polyphylla.

FLORAL CERTIFICATES.

To Messrs. J. Veitch & Son, for Amaryllis Crown Princess of Germany, Amaryllis Hedila, and for Amaryllis Pioneer.

To Mr. B. S. Williams, for Amaryllis Joseph Broome; and for Amaryllis Marshalli.

EDINBURGH BOTANICAL : April 8.

THE Society held its sixth meeting for this session in 5, St. Andrew Square, Dr. Cleghorn, Vice-President, in the chair.

The following communications were read :—

I. "The recent Geographico-Botanical Exhibition at Copenhagen." By M. Carl Hansen, Professor of Agriculture and Horticulture at the Royal Academy of Copenhagen. Communicated by A. Taylor.

With the aid of the Botanic Gardens and nursery establishments an exhibition of indoor plants in pots, representing fully twenty plant-geographical regions was opened in Copenhagen during April, 1885, and excited great interest in botanical geography, especially amongst the young. Prof. Hansen argued for the multiplication of such exhibitions, which could easily be established in towns round which nurserymen centred. In the course of the discussion following the paper, Mr. A. Buchan gave some interesting details of the way in which he had seen botany taught in the common schools of Sweden. A plant representing one of the most important natural orders was placed before a pupil, and he was required at the same time to fill up its natural characters on a schedule of foolscap paper. The written exercise was returned to him criticised and corrected; and so, too, with the other natural orders, till the pupil became an expert in plant naming, at the same time receiving invaluable mental training in judgment and comparison. Dr. Cleghorn thought that the Geographical and Botanical Societies might conjointly spread an interest in the study in schools.

II. "Report on the Work of the Botanical Camp at Glen Lyon." By W. Watson, M.D., and J. M. Macfarlane, D.Sc.

Amongst the finds of the expedition was a specimen of Carex ustulata, discovered by Mr. Brebner, of Dundee, on Ben Heasgarnish at an altitude of nearly 3000 feet. A specimen of Polypodium flexiles was recorded from Ben Cruachan, being the third locality in Scotland in which this plant had been discovered. It was mentioned by Professor Bayley-Balfour that a recent addition to British flora, the Carex helvola, identified by Mr. Bennett, of Croydon, had been discovered about forty years ago by the late Professor Balfour at Lochnagar, but had not been identified.

The botanical camp is to be pitched next summer in the neighbourhood of Loch Torridon, Wester Ross-shire.

III. "Microscopic Exhibition of Algæ from the Firth of Forth, with accompanying Notes." By G. W. Traill.

IV. "Report on Temperature and Vegetation at the Royal Botanic Garden, Edinburgh." By R. Lindsay, Curator.

"The month of March will long be remembered as one of the coldest on record. Frost was registered on twenty-one occasions, indicating collectively 134° as against 82° for the corresponding month last year, which was also below the average for March. The lowest readings of the thermometer occurred on the 6th, 22°; 7th, 14°; 8th, 22°; 9th, 20°; 10th, 20°. The highest morning readings were on the 22d, 46°; 23d, 52°; 24th, 45°; 25th, 55°; 26th, 48°. The lowest day temperature was 34°, which occurred on the 2d, and the highest 64°, on the 23d. Fine mild weather set in on the 18th, which continued till the 30th, during which time vegetation made rapid progress. The various species of Scilla, Crocus, Iris, and other spring flowers burst suddenly into bloom, and were extremely fine and well coloured, although of short duration. Deciduous trees and shrubs are very late in developing their leaves, many of them being nearly a month late. Ribes sanguineum, which usually has flowers expanded early in February, is not yet in flower. The effects of the severe winter are now becoming more apparent on many plants. Yews, Portugal and Bay Laurels, particularly old plants in exposed situations have a scorched and blighted appearance. Several half-hardy plants which have stood out-of-doors unprotected during the last two winters are destroyed, amongst which are Eucalyptus globulus, and species of Cistus and Ceanothus, but on the whole most plants have come through a most trying season with comparatively little injury. On the rock garden forty-seven species and varieties came into flower during March, being about half the number which come into flower in ordinary seasons for that month. Among the finest flowered were Chionodoxa Lucilиæ and C. sardensis, Corydalis angustifolia, Crocus Olivieri, Daphne Mezereum, Erica herbacea, Narcissus pumilus, Primula denticulata and P. marginata. Saxifraga oppositifolia and vars., S. Burseriana and its yellow variety Boydi. Of the forty spring flowering plants whose dates of flowering are annually recorded to the Society, fifteen came into flower during the month, viz. :—

Arabis albida, March 4	Rhododendron atrovirens, March 23
Crocus vernus, March 17	Scilla bifolia, March 19
Daphne Mezereum, March 23	,, ,, alba, March 21
Erythronium dens-canis March 26	,, taurica, March 20
Iris reticulata, March 20	Sisyrinchium grandiflorum, March 21
Narcissus pumilus, March 25	,, album, March 21
Nordmannia cordifolia, March 20	Symplocarpus fœtidus, March 23
Orobus vernus, March 28	

V. Miscellaneous Communications :—

The following subjects were exhibited :—A collection of cut Orchid blooms, consisting of twenty species, from W. Sanderson, Esq., Talbot House, Ferry Road; a large and finely-flowered plant of a good variety of Primula obconica, from P. H. Normand, Esq, Whitehill, Aberdour. From W. B. Boyd, Esq., Faldonside, came a plant of Androsace carnea eximia in flower; and from the Royal Botanic Garden cut flowers of a variety of Napoleona imperialis from Calabar, and plants in flower of Primula Allioni and P. integrifolia, Saxifraga Burseriana Boydi, &c. Messrs. T. Methven & Sons, Warriston Nursery, sent a plant of Richardia æthiopica, having a leaf coloured like a spathe.

SCOTTISH HORTICULTURAL ASSOCIATION.

THIS Association opened its tenth session on Tuesday evening, the 6th inst., in 5, St. Andrew Square, Edinburgh, when the President for the year, Mr. Alexander Milne, of Messrs. James Dickson & Sons, delivered the inaugural address, which consisted chiefly of a review of the aims and work of the Association. As its name implied it included in its membership horticulturists from all parts of Scotland, while it sought to educate and lead, as well as to be a guide in gardening matters. The Association was formed for the promotion and advancement of the science and practice of horticulture, and for the dissemination of a knowledge of such branches of natural history as were connected therewith. In these fast-moving times of ours, the President continued, the thirst for learning was becoming more keen, so that it behoved them to strain every nerve in order to discover the nearest road by which the end in view might be obtained.

The theory and practice of horticulture were then dealt with at some length, and he reviewed the work of the Association for the past nine years, mentioning a few of the subjects which he thought ought to take up its time during the present session, and urging the claims which the Scottish Horticultural Association had upon the gardening community. One hundred and eight nights, it was pointed out, represented the number of monthly attendances, besides numerous Council and adjudicating committee meetings, while 142 papers in all had been delivered and discussed. The exhibits which had been tabled reached the grand total of 399. Certificates of merit and culture to the number of 89 had been adjudicated by the several committees. The total income from all sources, it was stated, amounted to £292.

Mr. Malcolm Dunn, Dalkeith Gardens, proposed a vote of thanks to Mr. Milne for his excellent address. In the course of some remarks, he said he was sorry to see that decorative gardening had fallen behind, but the Waverley Market that night showed that there was no falling off in the cultivation of decorative indoor plants. Alluding to the backwardness of the young gardeners in taking part in competitions, he said he was much afraid it was due to the mistaken idea that practice only, and not theory or intelligence, was wanted to carry a man through the world. Mr. Mackenzie, Warriston Nurseries, seconded the motion, and said that in his opinion theory and practice were both required in order to make a successful gardener. After remarks by Mr. Hugh Fraser, the motion was adopted. A communication with reference to the starting of a cheap horticultural paper in Paisley was referred to a committee.

Mr. Calder, Cannonmills, exhibited three new seedling Primulas of his own raising. *Robertson Munro, Secretary.*

Obituary.

ABRAM STURROCK.—At the last meeting of the Perthshire Society of Natural Science Dr. Buchanan White read an appreciative obituary notice of the late ABRAM STURROCK, head-master of Rattray school, and discoverer of Nais flexilis in Loch Cluny, near Blairgowrie, as well as of Potamogeton Sturrockii and Chara fragilis var. Sturrockii, and other rare aquatic plants in the series of lochs running from the vicinity of the latter village to that of Dunkeld. The Society agreed to inaugurate a movement for placing a memorial headstone to their late councillor in Blairgowrie public cemetery. Other botanists interested in a life-long devotion to the investigation of local Naiadaceæ, Characeæ, and their allies, may send their mites for the erection of the headstone, to Mr. James Grimond, Oakbank House, Blairgowrie.

—— COLONEL WILLIAM S. CLARK, ex-President of Amherst Agricultural College (U.S.A.), who died March 10, has long been associated with the educational and agricultural interests of the State. He was born in Ashfield, July 31, 1826, and graduated at Amherst College in 1848. He studied chemistry and mining at the Gottingen University, received the degree of Ph.D. in 1852, and received the degree of LL.D. from Amherst in 1874. He took part in the great war in 1862, resigning his commission April 22, 1863. His connection with the Agricultural College included a Professorship of Chemistry and the Presidency of the College, which he resigned in 1872. He was a member of the Legislature in 1864 and 1867. Colonel Clark was a teacher in Williston Seminary for two years after his graduation from college, and upon his return from Germany, where he had an enviable reputation as a chemist, was appointed Professor of Chemistry at Amherst, which position he held till the opening of the war. In 1877 Colonel Clark was

invited by the Japanese Government to organise the Imperial Agricultural College at Sapporo, where he passed a year, leaving the institution in the most flourishing condition. His last years have been spent in absolute retirement.

—— PROFESSOR EDWARD TUCKERMAN.—The recent death at Amherst of the distinguished scholar and botanist, Professor Edward Tuckerman, is a sad loss not only to his immediate friends, but to the country and to the scientific world generally. Forty years ago, in the secluded valley of the Saco, in New Hampshire, was the homestead of the elder Crawford. Its situation, upon a narrow intervale, hemmed in on both sides by the dark, forest-clad mountains, was most inviting to the lover of the beautiful and of the picturesque. Not many were the travellers to the mountain regions in those days, but year after year, among the few congenial spirits attracted by the beauties of the spot, was Edward Tuckerman. No man loved Nature more, not only for its own sake, but for the sake of that absorbing science in which he was even then a master-spirit. In the pursuit of his darling study no portion of the mountain region, however dark its glens or inaccessible its peaks, was untrodden by his footsteps. Neither the lowly lichen nor the more alpine flower escaped his well-practised eye. *Boston Transcript.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, APRIL 14, 1886.

MONTH AND DAY.	BAROMETER		TEMPERATURE OF THE AIR.						HYGROMETRICAL DEDUCTIONS FROM GLAISHER'S TABLES 7TH EDITION.		WIND.		RAINFALL
	Mean Reading Reduced to Sea Level.	Departure from Average of 18 years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 39 years.		Dew Point.	Degree of Humidity. Sat. = 1000	Average Direction.		
April	In.	In.	°	°	°	°	°	°					In.
8	29.07	—0.67	53.0	37.0	16.0	45.0	— 0.4	38.9	79		S.S.W.		0.25
9	29.38	—0.36	44.5	36.5	8.0	40.4	— 5.2	35.1	83		W.NW.		0.06
10	29.44	—0.30	47.5	31.5	16.0	39.8	— 5.9	35.0	84		S.W.; W.S.W.		0.09
11	29.47	—0.27	48.1	32.0	16.1	40.0	— 5.8	34.3	80		W.NW.; N.N.E.		0.07
12	29.87	+0.13	52.7	32.0	19.8	43.4	— 2.5	31.4	62		W.NW.		0.00
13	30.10	+0.36	53.2	35.0	18.2	45.4	— 0.7	30.6	72		W.; W.NW.		0.00
14	30.05	+0.31	49.9	43.5	6.4	45.4	— 0.9	40.9	87		N.		0.03
Mean	29.63	—0.11	49.8	35.5	14.3	42.8	— 3.1	36.0	78		variable		0.50

April 8.—Dull day; frequent showers of rain.
— 9.—Showers of hail and rain.
— 10.—Fine and bright at times; frequent showers of rain.
— 11.—Dull morning; sun shining in afternoon.
— 12.—Fog in early morning; fine bright afternoon.
— 13.—Fine morning; dull afternoon.
— 14.—Dull day; drizzling rain about 4 P.M.

LONDON: *Atmospheric Pressure.*—During the week ending April 10, the reading of the barometer at the level of the sea increased from 29.94 inches at the beginning of the week to 29.95 inches by 9 A.M. and decreased to 29.86 inches by 5 P.M. on the 4th, increased to 29.94 inches by 9 A.M. on the 5th, decreased to 29.67 inches by 9 A.M. on the 6th, increased to 30.01 inches by 9 A.M. on the 7th, decreased to 29.22 inches by 5 P.M. on the 8th, increased to 29.60 inches by 5 P.M. on the 9th, decreased to 29.59 inches by 9 A.M. on the 10th, and was 29.62 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.69 inches, being 0.18 inch lower than last week, and 0.23 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 57°.2, on April 5th; on the 9th the highest temperature was 44°.5 The mean of the seven high day temperatures was 50°.2.

The lowest temperature was 31°.5, on the 10th; on the 6th the lowest temperature was 45°.5. The mean of the seven low night temperatures was 38°.1.

The greatest range of temperature in one day was 16°, on the 8th and 10th; the smallest, on the 6th was 6°.6. The mean of the seven daily ranges was 12°.1.

The mean temperatures were, on the 4th, 45°.2; on the 5th, 49°.5; on the 6th, 48°.3; on the 7th, 41°; on the 8th, 45°; on the 9th, 40°.4; and on the 10th, 39°.8; of these the first three were above their averages by 0°.4, 4°.6, and 3°.3 respectively, and the last four were below by 4°.2, 0°.4, 5°.2, and 5°.9 respectively.

The mean temperature of the week was 44°.2, being 3° lower than last week, and 1°.1 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 108°.5 on the 5th. The mean of the seven readings was 95°.5.

The lowest reading of a minimum thermometer placed on grass was 28°.0, on the 10th. The mean of the seven readings was 34°.0.

Rain fell on five days, to the amount of 0.43 inch.

ENGLAND: *Temperature.*—During the week ending April 10, the highest temperatures were 59°.4 at Cambridge; 58°.0 at Truro; 57°.2 at Blackheath; the highest at Bradford was 52°.6, at Brighton, Sunderland, and Newcastle 53°.0. The general mean was 55°.4.

The lowest temperatures were 29°.5 at Cambridge; 29°.8 at Wolverhampton; 31°.5 at Blackheath; the lowest at Plymouth was 37°.9; at Truro and Newcastle 37°.0. The general mean was 33°.8.

The greatest ranges were 29°.9 at Cambridge, 25°.7 at Blackheath, 24°.6 at Wolverhampton; the least ranges were 16°.0 at Newcastle, 17°.3 at Brighton, 18°.0 at Bradford. The general mean was 21°.6.

The mean of the seven high day temperatures was highest at Cambridge, 54°.8, at Truro 53°.4, at Plymouth 53°.2; and was lowest at Liverpool and Newcastle, 49°.0, at Bradford 49°.2. The general mean was 51°.1.

The mean of the seven low night temperatures was highest at Plymouth, 43°.1, at Truro 41°.7, at Bristol 40°.6; and was lowest at Wolverhampton, 34°.7, at Hull, 36°.4, at Cambridge and Sheffield 37°.2. The general mean was 38°.7.

The mean daily range was greatest at Cambridge, 17°.6, at Wolverhampton, 15°.6, at Sheffield 14°.0; and was least at Bristol, 9°.7, at Newcastle, 9°.8, at Plymouth, 10°.1. The general mean was 12°.4.

The mean temperature was highest at Plymouth, 46°.7, at Truro 46°.2, at Cambridge, 44°.6; and was lowest at Wolverhampton, 41°.1, at Hull 42°.0, at Liverpool 42°.3. The general mean was 43°.6.

Rain.—The largest falls was 1.16 inch at Bradford, 0.9 inch at Truro, 0.79 inch at Sheffield; the smallest falls were 0.32 inch at Newcastle, and 0.43 inch at Blackheath, Nottingham, and Liverpool. The general mean fall was 0.64 inch.

SCOTLAND: *Temperature.*—During the week ending April 10, the highest temperature was 55°.6, at Aberdeen; at Glasgow the highest was 50°.0. The general mean was 52°.2.

The lowest temperature in the week was 31°.0 at Aberdeen; at Leith the lowest temperature was 33°.5. The general mean was 32°.1.

The mean temperature was highest at Leith 43°.2, and lowest at Greenock, 40°.8. The general mean was 42°.4.

Rain.—The largest fall was 2.65 inches at Greenock; and the smallest fall was 0.24 inch, at Aberdeen. The general mean was 0.85 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ABIES, PICEA: *G.* In a case like this, where so much diversity of practice has existed, you can please yourself which you adopt. It is, except in one or two instances, of no moment which you use—you will be understood perfectly well in either case. For our own part, we prefer to apply Abies to the Silver, Picea to the Spruce—(1), because we believe that is the more correct usage and in conformity with classical precedent; (2), because it is generally adopted by European and American botanists, and we see great advantage in securing as great uniformity as possible; and (3), because it is the nomenclature used after careful consideration by Messrs. Bentham and Hooker in the *Genera Plantarum*, the standard book on generic nomenclature. We take it that every one should consider it binding on him to follow the standard book, unless and until he can show adequate reason to the contrary.

AZARA MICROPHYLLA: *A. D. W.* The plant has come into flower unusually early.

BOTANICAL LENS: *P. T. I.* Apply to J. Browning, Strand, London, W.C.

BULBS AND EUCHARIS MITE: *J. James.* Yes; the mite was present on the bulbs.

CHANGE OF COLOUR IN ORCHIDS: The change is due to the fact that some of the flowers have been fertilised, while others retain their virgin purity. Some wandering bee is probably responsible for the change.

CORRECTION.—In the List of Plants in Flower at Shirenewton Hall, April 3, p. 437, for Ornithogalum maritimum, read Odontospermum maritimum.

DOUBLE MUSHROOMS: *W. F.* Of very common occurrence. See column of Answers to Correspondents for April 3 last.

EMPLOYMENT IN THE COLONIES: *A Would-be Emigrant.* We cannot advise any colony in particular. None of our colonies offer much inducement to professional gardeners seeking employment as such; but if a person be provided with a little capital, so as to be enabled to start fruit, vegetable, and flower growing near a large town, he might find a profitable investment for it.

GRAPES CRACKING, RED-SPIDER, AND SYRINGING: *B. F. J.* This state of the Vine may be brought about variously, as by deluging the roots with water after a long period of drought; by suddenly denuding the plants of large portions of their foliage whilst growth is active; by letting cold air reach the bunches, thereby producing "rust," which sometimes induces the berries to crack. Avoid these various causes, and cracking of the berries should not reappear. Many good growers do not syringe their Vines, but obtain enough moisture for all purposes by damping all surfaces in the house several times daily, and by keeping the evaporating troughs filled with water when the heating apparatus is in use. If you like to use the syringe, you may do so from the time the Grapes are set till the first appearance of colouring. Red-spider infests Vines owing to too dry an atmosphere in the house.

INSECT: *C. Roberts.* A species of weevil. See answer to J. Kitley.

INSECTS IN VINERY: *J. Kitley.* A species of weevil. They are very destructive to vegetation. Shake them down suddenly on to a sheet spread beneath the Vines, which is best done at night, whilst the insects are feeding. Dashing scalding water into their hiding-places under stones and other objects will materially thin their numbers.

NAMES OF PLANTS: *A. W. W.* Odontoglossum nebulosum candidulum.—*A. J. H.* A very fine Oncidium Papilio majus.—*W. C. & Son.* Malvastrum capense.—*R. F. S.* Celsia Arcturus.—*R. C. K.* 1, Odontoglossum odoratum var.; 2, Catasetum fimbriatum; 3, Odontoglossum crispum, which will probably be white next time it flowers; 4, Oncidium Schlimii; 5, Odontoglossum gloriosum.—*J. R. P. & Sons.* Magnolia fuscata.—*C. H.* Corydalis solida.

RIPENING OF THE WOOD: *G.* There is an excellent article on this subject in the *Journal of the Horticultural Society*, vol. iv. (1849), p. 200, by the late Mr. Lovell, gardener to the Marchioness of Hastings.

TREES AND SHRUBS INJURIOUS TO CATTLE: *G. F.* Certainly the shoots are likely to be injurious to sheep or cattle if eaten in quantities.

WARTY VINE LEAVES: *J. S. C.* The vinery has been kept too moist and warm. Give more ventilation, and earlier in the day.

*** All communications intended for publication should be addressed to the "*Editor.*" Such communications should be *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

INTELLIGENT READERS, DO PLEASE NOTE.—*Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* NOT *to the Editor.*

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUES RECEIVED.

JOHN WATERER & SONS, Bagshot, Surrey—Trees, Shrubs, &c.

M. A. M. C. JONGKINDT CONINCK, Tottenham Nurseries, Dedemsvart, near Zwolle—Plant Catalogue.

COMMUNICATIONS RECEIVED.—A. H. S.—E. H. Brace, Salbris, France.—F. P. P.—S. H.—Prof. Sargent, Boston, U.S.A.—W. B. & Sons.—R. A. R.—C. Wolley Dod.—J. T. Boscawen.—Prof. Caspary, Konigsberg.—R. L., Edinburgh (with thanks).—A. Franchet, Paris.—W. Trelease, Cambridge, Mass.—Cassell & Co.—Blackwood & Sons.—F. Sander & Co.—P. T. T.—A. E. S.—W. H. F.—C. E., Genoa.—J. C.—W. J. M.—J. W.—A. D. W.—Prof. Henriques, Coimbra.—Prof. Wilkomm, Prague.—J. Ritzema Bos, Wageningen, Holland.—H. E., Ryde.—G. D.—Marshal Wilder, Boston, U.S.A.—T. Bush.—A. D.—A. L.—B.—N. E. B.—J. S.—X.—J. P. C. B.—B. T. L.—J. F.—Gardener.—A. Nesbit.

DIED.—On April 7, at Hildenle, ANN ELIZABETH, wife of Sir CHARLES W. STRICKLAND, Bart., aged 42 years,

Markets.

COVENT GARDEN, April 15.

A SLIGHT rise in new Grapes, now old ones are nearly finished. Strawberries, with a better supply, are easier. Trade steady. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0–	4 0	Pears, per dozen	12 0	15 0
— Canadian, barrl.	8 0–	21 0	Pine-apples, Eng., lb.	1 0–	..
Grapes, new, per lb.	5 0–	8 0	— St. Michael, each	2 6–	8 0
Kent Cobs, 100 lb.	40 0–	..	Strawberries, per lb.	4 0	10 0
Lemons, per case	8 0–	10 0			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0–	..	Mint, green, bunch	1 0–	..
Asparagus, Eng., 100 10	0–	..	Mushrooms, punnet	1 0–	1 6
— French natural, per bundle	3 0–	8 0	Mustard and Cress, do.	0 4–	..
— Spanish natural, per bundle	4 0–	..	Onions, per bushel	5 0–	..
Beans, Kidney, lb.	3 0–	..	Parsley, dozen bunch	2 0–	3 0
Beet, red, per dozen	1 0–	2 0	Parsnips, per dozen	1 0–	..
Broccoli Sprts., bush.	5 0–	..	Potatos, per cwt.	4 0–	5 0
Carrots, per bunch	0 6–	..	,, kidney, per cwt	4 0–	5 0
Cauliflowers, per doz.	3 0–	4 0	Salsafy, per bundle	0 9–	..
Celeriac, per root	0 4–	..	Savoys, per dozen	3 0–	5 0
Celery, per bundle	1 6–	2 0	Scorzonera, p. bundle	1 0–	..
Coleworts, doz. bunch	8 0–	..	Seakale, punnet	1 6–	..
Cucumbers, each	0 9–	1 0	Shallots, per pound	0 3–	0 9
Endive, per dozen	1 0–	2 0	Spinach, per bushel	4 0–	6 0
Herbs, per bunch	0 4–	..	Sprouts, per pound	0 9–	..
Leeks, per bunch	0 0–	..	Sprue Asparagus, per bundle	1 0–	..
Lettuce, per dozen	1 0–	1 6	Tomatos, per lb.	1 6–	2 6
			Turnips, bunch	0 6–	..

POTATOS.—Market all lower than last week by 5*s.* to 10*s.* per ton.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0–	18 0	Ficus elastica, each	1 6–	7 0
Arum Lilies, dozen	9 0–	12 0	Ferns, in variety, per dozen	4 0–	18 0
Azaleas, per doz.	24 0–	42 0	Foliage Plants, various, each	2 0–	10 0
Begonias, per dozen	6 0–	12 0	Genistas, per dozen	10 0–	15 0
Bouvardias, doz	12 0–	18 0	Hyacinths, per doz.	6 0–	9 0
Cinerarias, per doz.	6 0–	10 0	Lilies, per dozen	12 0	24 0
Cyclamens, 12 pots	12 0–	24 0	Marguerite Daisy, per dozen	8 0–	12 0
Cyperus, per dozen	4 0–	12 0	Myrtles, per dozen	6 0–	12 0
Dracæna terminalis, per dozen	30 0–	60 0	Palms in var., each	2 6–	21 0
— viridis, per doz.	12 0–	24 0	Pelargoniums, doz.	18 0–	24 0
Ericas, various, per dozen	12 0–	24 0	— scarlet, per doz.	4 0–	8 0
Euonymus, in var., per dozen	6 0–	18 0	Spiræa, per dozen	9 0–	15 0
Evergreens, in var., per dozen	6 0–	24 0	Tulips, 12 pots	6 0–	9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Anemone, French, 12 bunches	3 0–	6 0	Marguerites, 12 bun.	4 0–	8 0
Arum Lilies, 12 blms.	4 0–	8 0	Mignonette, 12 bun.	3 0–	9 0
Azaleas, 12 sprays	0 6–	1 0	Pelargoniums, per 12 trusses	1 0–	1 3
Bouvardias, per bun.	0 6–	1 0	— scarlet, 12 trusses	0 6–	1 0
Camellias, 12 blms.	1 0–	4 0	Primulas, double, per bunch	0 6–	1 0
Carnations, 12 blms.	1 0–	3 0	Roses, Tea, per doz.	0 9–	3 0
Cyclamens, doz. blms.	0 4–	0 6	— red, per dozen	2 0–	6 0
Daffodils, per bunch	0 3	0 6	Spiræas, 12 bunches	6 0–	9 0
Eucharis, per dozen	4 0–	6 0	Tropæolum, 12 bun.	2 0–	3 0
Gardenias, 12 blooms	2 0–	6 0	Tuberoses, 12 blms.	2 0–	3 0
Hyacinths, per box	2 0–	6 0	Tulips, doz. blooms	0 9–	1 0
Lapageria, red, 12 blooms	1 0–	2 0	Violets, 12 bunches	0 9–	1 6
Lilac, French, bunch	2 0–	7 0	— Czar, Fr., bunch	1 0–	2 0
Lily-of-the-Valley, 12 sprays	0 6–	1 6	— Parme, French, per bunch	4 0–	6 0

SEEDS.

LONDON : *April* 14.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report to-day's market thinly attended with, for the time of year, but little business doing. The supply of home-grown Clover-seed, both new and yearling, exceeds the demand, and quotations, consequently tend downward. Very low rates now prevail in London for Alsike, white and Trefoil seeds. There is a fair inquiry for perennial and Italian Ryegrasses on the moderate terms characteristic of this season. No change in spring Tares. Canary seed is steady. Hempseed cheaper, some Danubian seed having been sold at 24*s.* per quarter *c. i. f.* Less money is accepted for Linseed. Haricot Beans and Blue Peas move off slowly on last week's terms. Sowing Rapeseed is scarce and firmer.

POTATOS.

BOROUGH AND SPITALFIELDS : *April* 13.—A dull trade all round, without much change in prices. Quotations :—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 95*s.*; and Champions, 55*s.* to 65*s.* per ton.

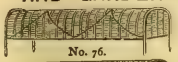
COLUMBIA (East London) : *April* 14.—Quotations :—Champions, 45*s.* to 55*s.*; Victorias, 50*s.* to 70*s.*; Regents, 50*s.* to 65*s.*; and Magnums, 50*s.* to 80*s.* per ton.

STRATFORD : *April* 13.—Quotations :—Magnums, 60*s.* to 70*s.*; Champions, 50*s.* to 60*s.*; and Heros, 60*s.* to 65*s.* per ton.

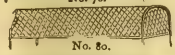
Imports.—The imports into London last week consisted of 11,004 bags from Hamburg, 5 from Rotterdam, 1000 from Harlingen, 101 bags 155 boxes 194 cases from Malta.

Government Stock.—Consols closed on Monday and Tuesday at 100⅛ to 100⅜ for both delivery and the account. Wednesday's final quotations were 100⅛ to 100⅛ for delivery, and 100$^{7}/_{16}$ to 100 $^{9}/_{16}$ for the account : the same figures were recorded on Thursday.

THOMAS'S PEA GUARDS, AND GARDEN REQUISITES.


No. 76.

3 feet long. Galvanised after made. Either Pattern. Price, 6*s.* per Dozen. Two End Pieces included with each dozen. Four Dozen Carriage Paid, on receipt of remittance for 24*s.*


No. 80.


No. 81.

GALVANISED PEA TRELLISES in Panels.
6 feet by 3 feet, 2*s.* each.
6 feet by 4 feet, 3*s.* each.
6 feet by 5 feet, 4*s.* each.
Any size Panels made to measure at 2*d.* per square foot.
DOUBLE STANDARDS, as per Illustration, Galvanised, 2*s.* 6*d.*, 2*s.* 9*d.*, 3*s.* each.

J. J. THOMAS & CO., 87, QUEEN VICTORIA STREET, E.C.; 285 and 362, EDGWARE ROAD, LONDON, W.

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S. A. SANDS
(Successor to J. W. HAYTHORN),
Manufacturer of Hexagon and Chiswick GARDEN NETS.
Warranted to Protect Bloom from Frost, Winds, Hail, and Fruit from Birds, Wasps, &c.
Pattern and Prices Free per Post.
Address—S. A. SANDS, 20, CLUMBER STREET, NOTTINGHAM.

GREENHOUSE and FRUIT TREE SHADINGS, GARDEN NETTING. RUSSIA MATS, RAFFIA FIBRE, SACKS and BAGS, At remarkably low prices. Catalogue and Samples post-free on application. JAS. T. ANDERSON, 149 Commercial Street, London, E.

HORTICULTURAL SHADINGS, NETTINGS, TIFFANY, and SCRIM CLOTH, COTTON WOOL and WADDINGS.—For particulars, apply to JOSEPH COOKSON, 21, New Cannon Street, Manchester.

GARDEN NETTINGS. HOTHOUSE SHADINGS. TIFFANY.
Buyers should apply for prices to Rigby, Wainwright & Co., MANUFACTURERS. NEPTUNE WORKS. MANCHESTER
COTTON WOOL and WADDING for Florists and Nurserymen.
THE TRADE SUPPLIED.

PROTECTION for FRUIT and FLOWERS.
GARDEN NETTING, 2 yards wide, 1½*d.*, or per 100 yards, 10*s.*; ditto, 4 yards wide, 3*d.*, or per 100 yards, 20*s.*
SCRIM CANVAS, 1 yard wide, 3*d.*; 1½ yard, 4½*d.*; and 2 yards, 6*d.* per yard.
TIFFANY, 38 inches wide, in 20-yard pieces, 3*s.* 6*d.* per piece, SHADING BLINDS made up any size.
RICK CLOTHS, TARPAULINS, Corn and Potato SACKS, FLAGS, TENTS, &c., for Sale or Hire
From HY. VAN AND CO. (the oldest London House in the Trade, established 1780), 17, Tooley Street, London Bridge, S.E.

To Nurserymen, Seed Merchants, and Florists.
J. BLACKBURN AND SONS are offering Archangel MATS lower than any other house in the Trade. Also Petersburg MATS and MAT BAGS, RAFFIA FIBRE, TOBACCO PAPER, and Shading Materials. Prices free on application.—4 and 5, Wormwood Street, London, E.C.

EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½*d.* per yard; 4 yards wide, 3*d.* per yard; or 2 yards wide, 10*s.* per 100; 4 yards wide, 20*s.* per 100 yards. New TWINE NETTING, 1 yard wide, 2*d.* per yard; 2 yards wide, 4*d.* per yard; 4 yards wide, 8*d.* per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7*d.* per yard run. W. CULLINGFORD, Forest Gate, E.

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MARENDAZ and FISHER can offer the above at lower prices than any firm. To the Trade only. James Street, Covent Garden, W.C.

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ROLL TOBACCO PAPER AND Cloth (English) for Fumigating
is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb, 10*s.*; 28 lb., 20*s.*; carriage paid to London or any railway station in Kent. 2¾ lb., 2*s.* 6*d.*; 4¾ lb., 4*s.*; 6 lb., 5*s.*; 6¾ lb., 5*s.* 6*d.*; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8*s.* 6*d.*; 28 lb., 16*s.* TRADE INQUIRIES SOLICITED.
Manufacturers, Merchants, and Importers,
DARLINGTON BROS., NEW ROAD, CHATHAM, KENT.
Post-office Orders, &c.—DARLINGTON BROS., Chatham.

FLAGSTONE EDGING (neatly Worked), for Garden Walks. Prices, 8*d.*, 10*d.*, and 12*s.* per run. Enquiries promptly attended to. J. A. ROBINSON, Stone Merchant, Brighoas, Yorks.

HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite. BENJAMIN FIELD, F.R.H.S. (Son-in-law and Successor to J. Kennard), Swan Place, Old Kent Road, London, S.E. Established 1854.

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5/ per doz. PEA PROTECTORS, galvanized, 3 feet lengths. Two dozen carriage paid. REGISTERED PEA TRAINER and WIRE-WORK. List Free. T. WILKINSON, Newton-le-Willows, Canes.

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THE NEW CANVAS SHADING
Sold by BENJAMIN EDGINGTON will defy the action of all weather. It is perfectly rot-proof, keeps sound under conditions where other fabrics have shown fungoid growth and incipient decay.
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VENABLES' ALL-WOOL FRENCH CASHMERES, in 5 qualities and 25 colours, from 11. 6½*d.* to 3*s.* 3*d.* per yard (sold elsewhere at 3*s.* 11*d.*)
VENABLES' ALL-WOOL FRENCH BEIGE, 25 inches wide, 4 qualities, 15 colours, from 6¾*d.* to 1*s.* 0¾*d.* per yard (sold elsewhere at 1*s.* 6*d.*).
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FRENCH and ENGLISH COTTON FABRICS.
The most complete set of Patterns of these Goods (from 4¼*d.* to 1*s.* 6¾*d.* per yard), which embrace every quality and novelty, far too numerous to set forth in the compass of an advertisement.
SILKS, VELVETS, VELVETEENS, &c.
Black and Coloured Satins, Duchesse Dress Satins, Black Broché Silks and Velvets, Silk Plushes Velveteens (guaranteed fast Pile), of the very highest qualities, from 1*s.* 6¾*d.* per yard.
Ladies may rely upon our reputation of over 60 years' standing to supply the very best, yet the cheapest goods.
Our Illustrated ALMANAC and Price LIST for 1886 (82 *pages*), *and Patterns, post-free.*
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Imperishable and Cheap—The New
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MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
W. M. PRYOR, IRONMONGER,
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A Liberal Discount to the Trade.

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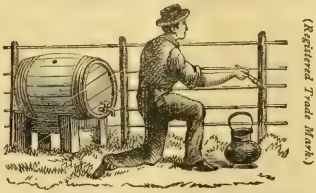
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The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

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Plain and Ornamental Pavings.
Tiles for Lining Walls of Conservatories.
ART POTTERY, including JARDINIERES AND OTHER
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Oil Paint no Longer Necessary.
HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.



This VARNISH is an excellent substitute for oil paint or any outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of forty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of most of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom

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CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
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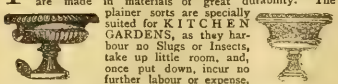
GARDEN POTS, TO THE TRADE,
BEST QUALITY. Largest Stock. 1½ to 30 inches diam. 1 doz. or 100,000 sent.
LARGE STOCK. LONG TOMS, and others. STATE QUANTITY.
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
SEND FOR *PRICE LIST.*

FLAGSTONE EDGING for Kitchen Gardens, or Walks under Trees. Prices, 8d., 10d., and 1s. per yard run.
The GREAT SLEAD QUARRY, Brighouse, Yorks.

Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME" FRAMES, PLANT COVERS, and PROPAGATING BOXES: also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price LISTS Free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Design, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
F. ROSHER AND CO., Brick and Tile Merchants.
See Addresses above.

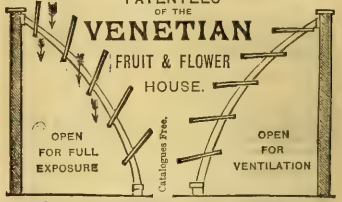
SILVER SAND, fine or coarse grain as desired. Price, by post, per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
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SILVER, £5 5s. GOLD, £12 12s.



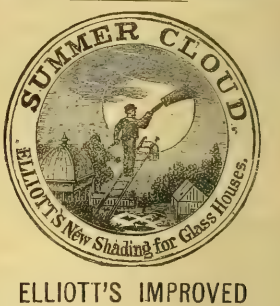
Invented for Rough Wear. *With Crystal Glass.*
The "Ludgate Watch" is an English Lever for Rough Wear, of my BEST LONDON MAKE, WITH
"Special Strength" Three-quarter Plate Movement.
Jewelled throughout in rubies—true Chronometer balance—adjusted for extremes of temperature with damp and dust-proof patent ring-band, and extended barrel—massive dome cases, crystal glass. *Winds, set hands and opens at back.*
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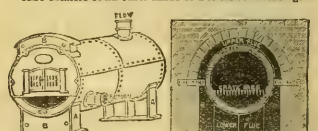
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For Greenhouses, Conservatories, Skylights, and all Glass Structures, that require Shading Material.
It combines EFFICACY with APPEARANCE, CONVENIENCE with ECONOMY, and its effects are LASTING.
Sold in Packets, 1s. each, with full directions for use; and in Bags, 14 lb., 28s.; 28 lb., 50s. May be obtained from all Seedsmen and Nurserymen.
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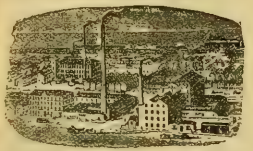
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PARHAM'S PATENT PLANT PRESERVERS, and CUCUMBER FRAMES.—*Glazed without Putty* on channelled wood rafters. Incomparably superior to Puttied Glass.

N.B.—A broken glass can be replaced in one minute; Angle-iron corner plates; lights turn over; patent ridge dispenses with internal obstruction. No charge for packing. Carriage paid.

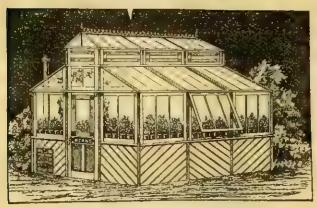
Price, painted, with ends, and 21-ounce glass:—

6 feet by 4 feet .. £2 15s. od. | 12 feet by 4 feet .. £4 15s. od.
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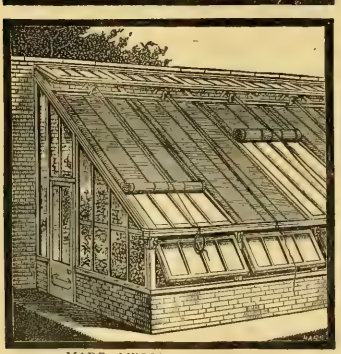
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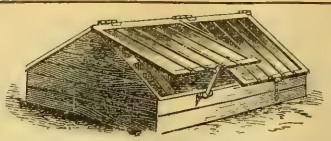
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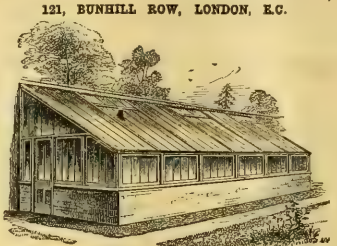
6 feet long, 4 feet wide, packing cases free £2 15 0
12 feet long, 4 feet wide, „ „ „ 4 15 0
6 feet long, 5 feet wide, „ „ „ 3 15 0
12 feet long, 5 feet wide, „ „ „ 6 10 0

The glass is nailed and puttied in.

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LASCELLES' NEW ROCKWORK material in various colours. Samples can be seen and prices obtained at 121, Bunhill Row, and 35, Poultry, Cheapside, E.C.

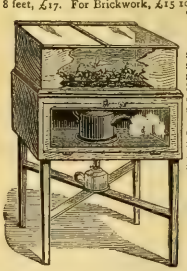
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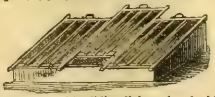
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Cucumber Frames, with sliding lights, glazed with 21-ounce glass, and painted three coats, ready for use, 6 feet by 4 feet, £1 7s.; 12 feet by 4 feet, £2. Cases, 5s.

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Price Lists free.

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Agents Wanted to sell Wood's Boilers.

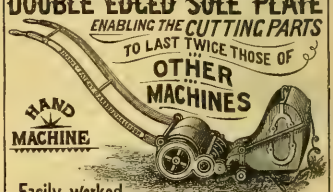
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THE ONLY LAWN MOWER FITTED WITH
DOUBLE EDGED SOLE PLATE
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— WHERE REPAIRS CAN ALSO BE EXECUTED —
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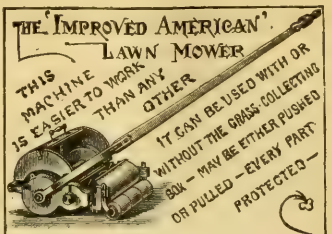


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12 inch Machine,	4.0.0.	16 inch Machine,	5.10.0.

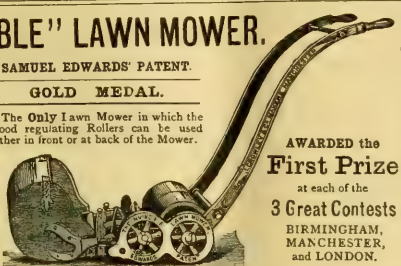
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WHEEL BARROWS.
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Side Delivery.

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30s.	40s.	50s.	60s.	70s.	90s.	110s.	130s.	150s.	170s.	190s.	£22	£26	£30

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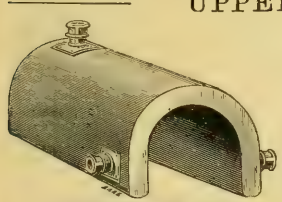
SHEET

14×12	20×15
16×12	20×16
18×12	22×16
20×12	24×16
16×14	20×18
18×14	22×18
20×14	24×18

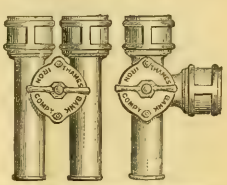
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and all Castings for Horticultural Purposes.
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8 „ ...	0	5	0	19 „ ...	0	10	6
9 „ ...	0	5	6	20 „ ...	0	11	0
10 „ ...	0	6	0	21 „ ...	0	11	6
11 „ ...	0	6	6	22 „ ...	0	12	0
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NOTICE!—COMMITTEE MEETINGS. Fruit and Floral, at 11 A.M., in the Conservatory: Scientific at 1 P.M., in the Lindley Library, on TUESDAY NEXT, April 27.

FOURTH PROMENADE SHOW and Small Band of the Royal Horse Guards, from half-past 3 P.M. Admission, 2s. 6d.

N.B. Entrance for Fellows and the Public, North-east Orchard-house, Exhibition Road; and Exhibitors' Entrance, East side of Royal Albert Hall.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

FLORAL MEETING at the Town Hall, Manchester, on TUESDAY, the 18th inst. The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1886, will open at the Gardens on JUNE 11. Schedules may be had from the undersigned,

BRUCE FINDLAY, Royal Botanic Gardens, Manchester.

ROYAL AQUARIUM, Westminster.—In consequence of an extension of time for holding the exhibition by the Kennel Club in June next, the ROSE SHOW announced for June 25 and 26 is unavoidably WITHDRAWN; and the STRAWBERRY SHOW and FÊTE on July 2 and 3 is for the same reason POSTPONED until JULY 9 and 10.

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TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

SALES BY AUCTION.

Wednesday Next.

AZALEAS, PALMS, FICUS, FERNS, and other PLANTS from Belgium, 400 Named Dwarf ROSES (English grown), 300 CARNATIONS and PICOTEES, PHLOX, PÆONIES, PYRETHRUMS, IRIS, HERBACEOUS and MISCELLANEOUS PLANTS.

MESSRS. PROTHEROE AND MORRIS will SELL the above, by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, April 28, at 12.30 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

NEW ODONTOGLOSSUM.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to include in their SALE, on FRIDAY NEXT, April 30, a splendid ODONTOGLOSSUM. The lip is white and the upper half reddish-brown, sepals and petals very deeply blotched.

On view morning of Sale.

Friday Next—Established Orchids.

MESSRS. PROTHEROE AND MORRIS are honoured with instructions from the Right Hon. Lord Rendlesham, to include in their SALE on FRIDAY NEXT, April 30, about 60 lots of choice ESTABLISHED ORCHIDS, to be sold in consequence of the space being required for the growth of cool-house Orchids. They will comprise amongst others, the following fine plants:—Maxillaria Turner, Cœlogyne cristata from Mr. Rucker, Odontoglossum sceptrum, 5 spikes, Oncidium ardorinum, 7 leads, Cattleya Skinneri, large plants with from 28 to 35 bulbs and fine varieties, Cattleya Warneri (Rucker's), 12 bulbs, Cattleya gigas, Oncidium splendidum (true) very rare, Odontoglossum nævium majus, (true), Vanda cœrulea, &c.

On view morning of Sale, and Catalogues had.

Friday Next.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander, to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, April 30, at 12 o'Clock precisely, a grand Importation of ODONTOGLOSSUM PESCATOREI, collected from the same mountains where the famous Knox's variety was obtained. The whole are in the best possible condition, and some large and distinct looking masses are among them. Also splendid consignments of the following ORCHIDS:—Odontoglossum blandum, O. Phalænopsis, Cattleya aurea, Lycaste Skinneri, fine masses, Lycaste Skinneri alba, few fine pieces, Oncidium cucullatum, Lælia anceps, pure white form, extra massive, Chysis tricuscens, Cattleya Mendelii, C. citrina, Oncidium Papilio, Anguloa Clowesii, together with a very fine lot of ODONTOGLOSSUM ALEXANDRÆ, the large and broad petalled type.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next.

THE FIRST PORTION of the VALUABLE COLLECTION of ESTABLISHED ORCHIDS formed by H. Lovatt, Esq., of Low Hill, Wolverhampton.

MR. J. C. STEVENS has received instructions from H. Lovatt, Esq., to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, April 28 and 29, at half-past 12 o'Clock precisely each day, without the least reserve, the first portion of his choice COLLECTION of ESTABLISHED ORCHIDS, comprising amongst other fine things:—

Cattleya Trianæ alba
" Mendelii, with thirty-two breaks (grand var.)
" Skinneri alba
" Morganæ (very fine plant)
Dendrobium Ainsworthii
" Schroderi
" suavissimum (extra fine)
" nobile, extra var.
" Goldieana
Lælia anceps Dawsoni (true)
" elegans (fine plant)
" Brysiana
" xanthoglossa
" purpurata (extra fine plants)
Masdevallia Veitchii (fine plants)
" Harryana
" " (bull's blood, true)
" Lindeni
" chimæra
" Backhousiana
Cymbidium Lowii (two extra fine plants)
Anguloa Ruckeri } grand
" Clowesi } plants
Saccolabium guttatum
" Holfordi (plant)
Cattleya Schilleriana (splendid
Cœlogyne Massangeana (finest plant in the country, with thirty bulbs)
Cattleya maxima decora
" Wagneri
" Crawshayana
" labiata
" " (autumn flowering)
Odontoglossum vexillarium
" Andersonianum
" Chestertoni
" Œrstedii
" Alexandræ, in var.
Pilumna nobilis (very fine plants)
Vanda suavis Veitchianum
" tricolor Dodgsoni
" Sanderiana
Aerides Lobbi
Cypripedium caudatum roseum
" Veitchii
" Spicerianum
Oncidium macranthum
" Lanceanum, grand variety.
Cymbidium eburneum,
Sobralia macrantha (four splendid plants)
" sanguinea (grand specimen

On view mornings of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, MAY 5, at half past 12 o'Clock precisely, the Collection of ESTABLISHED ORCHIDS formed by the late J. J. Barran, Jun., Esq., of Burley, Leeds, including fine plants of C. gigas, C. Mossiæ, C. Mendelii, C. Percivaliana, Lælia anceps alba, Oncidium Rogersi, O. Lanceanum, O. tigrinum, Dendrobes, Masdevallias, and Cypripediums of sorts; a quantity of Odontoglossum Alexandræ, O. Pescatorei, O. Rossi majus, &c.

Further particulars in future Advertisement.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in FLOWER will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12; and he will be glad if gentlemen desirous of entering plants for this Sale will please send particulars of same as soon as possible.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

Duke Street and Tooley Street, London Bridge, S.E.

By order of the Executors of the late Mr. Alexander Tod, in consequence of the sudden death of the late Mr. William Adams Tod.

MESSRS. A. SAVILL AND SON have received instructions to SELL by AUCTION, at the Auction Mart, Tokenhouse Yard, Lothbury, E.C., near the Bank of England, on MONDAY, May 3, at 2 o'Clock, precisely, the valuable LEASEHOLD PREMISES, known as 16 and 17, Duke Street, and 41, Tooley Street, Southwark, S.E.; also the valuable Goodwill and Interest of the old-established Business of a Potato Salesman, carried on at the above premises for over fifty years so successfully by the Messrs. Tod.

Particulars and Conditions of Sale may be obtained of Messrs. DRUCES AND ATTLEE, Solicitors, 10, Billiter Square, E.C.; at the Auction Mart, Tokenhouse Yard, E.C.; at 17, Duke Street, S.E.; and at the Auctioneers' Office, 39, New Broad Street, E.C.

Ashford, Middlesex.

TO MARKET GARDENERS, BUILDERS, AND OTHERS.

MR. H. J. E. BRAKE will SELL by AUCTION, at the "Angel and Crown" Hotel, High Street, Staines, on THURSDAY, May 6, at 6 o'Clock in the evening to the minute, a valuable FREEHOLD MARKET GARDEN, containing 8a. 1r. 9p., situate at Ashford, Middlesex, well stocked with thriving Fruit Trees.

A valuable corner Plot, with frontages to the Kingston and Feltham Roads at Ashford, containing 0a. 3r. 3p., with the well built Eight-roomed House, Out-buildings, Conservatory, Stable, &c., and good Garden.

Also 28 Plots of valuable FREEHOLD BUILDING LAND, each having a frontage of 30 feet to the Richmond and Feltham Road, and a depth of 200 feet.

Particulars and Conditions of Sale may be had of W. E. FOSTER, Esq., Solicitor, Aldershot; and the Auctioneer, Farnborough, Hants.

TO BE DISPOSED OF, a well-established and genuine FLORIST BUSINESS. Large and convenient House, well let, which clears rent. First-class opportunity for adding Fruit and Vegetables for a good family trade.

Apply on the Premises, 2, Swiss Terrace, next Swiss Cottage Station, Metropolitan Railway.

London, W.

Re Boller, Deceased.

By order of the Executors.—Important to Florists.

TO BE SOLD, the well-known Property, The WOODFIELD NURSERY, Harrow Road, W., noted for the growth of Succulents. There are numerous Greenhouses. Terms moderate.

Apply, for full particulars, to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

Important Market Town 12 Miles from London.

FOR SALE, owing to ill-health of the Proprietor, a GENERAL NURSERY and JOBBING BUSINESS. Established over 40 years. 4 Acres of Land, Dwelling-house, and several Glass Erections. Incoming about £1000. Open to offer.

Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

FOR SALE, the LEASE and GOODWILL of the Old-established NURSERY, known as Waverley Nursery, Waverley Place, St. John's Wood, N.W., together with the Retail Shop, in good position close by, and Greenhouses in the rear, with a first-class Jobbing connection.

For further particulars apply, W. A. CLINGO, 18, Finchley Road, St. John's Wood, N.W.

London.

Within easy distance of Covent Garden.

AN EXCELLENT MARKET and FORCING NURSERY, suitable for two persons. There are numerous Greenhouses, all well heated. Low Ground Rent. Terms moderate, to be arranged.

Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

To Florists and Others.

TO LET, a splendid position in Belgravia, with fine Frontage and Office. Rent moderate.—G. PRESTON, 12, Wilton Place, Belgravia, S.W.

ARTISTIC and ECONOMIC IMPROVEMENT of ESTATES, and LANDSCAPE GARDENING. *Principal*—Mr. H. E. MILNER, A.M. Inst. C.E.

This division of the Crystal Palace School of Art, Science, and Literature is carried on in Mr. Milner's Offices, situated on the Aquarium Terrace, Crystal Palace. The Student secures both theoretical instruction and the advantage of Practical Outdoor Work. During the employment of the Student in Practical Work, a certain salary may be allowed. The Profession undertakes to Improve Land, and enhance its value by Artistic and Scientific treatment other than Agricultural. The term of Studentship is Three Years, one year at least of which is devoted to outdoor work. The premium is £300, payable to the Crystal Palace Company in advance. During his second and third year the pupil will receive a salary of £50 per annum, under conditions.

LECTURER ON ARCHITECTURE: Mr. R. JULIAN, A.R.I.B.A.
LECTURER ON PHYSIOLOGICAL BOTANY, SOILS, &c.: Mr. R. HOUSTON, F.L.S.

The next Term opens on May 1. Prospectus in the Library, Crystal Palace.

F. K. J. SHENTON, F.R.Hist.S.,
Superintendent of the Educational Department.
Crystal Palace, Sydenham—April, 1886.

To Landed Proprietors, &c.

A McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots, 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.
RICHARD SMITH AND CO., Worcester.

ASPARAGUS (true Giant).—Special Offer to clear ground:—2-yr., 20s.; 3-yr., 30s.; 4-yr., 40s. per 1000.
NEW POTATO (Bird's Doctor Bob), 4s. per stone.
Trade prices on application.
JAMES BIRD, Nurseryman, Downham.

BEDDING PLANTS.—10,000 for disposal; also 200 MISCELLANEOUS STOVE and GREENHOUSE PLANTS.
Apply to Mr. A. BYE, Gardens, Hampton Court, Leominster.

100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

CHRISTMAS ROSES.
HELLEBORUS NIGER, common variety, 4s. p. doz.
" " ALTIFOLIUS, large Aberdeen variety, 12s. per doz.
" " ANGUSTIFOLIUS, pure white Cheshire variety, 9s. per dozen.
" OLYMPICUS ALBUS, 6s. per dozen.
" " PURPUREUS, 6s. per dozen.
One well-rooted Plant of each sent free by post for 3s. 6d., cash with order.

Hepaticas.

HEPATICA TRILOBA, single blue, 2s. per dozen.
" " double blue, 18s. per dozen.
" " single red, 3s. per dozen.
" " double red, 2s. per dozen.
" " single white, 3s. per dozen.
One well-rooted Plant of each sent free by post for 2s. 6d., cash with order.
MORRISON BROTHERS, Nurseries, Aberdeen.

OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c., on application.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

Dr. Parry's Spruce Fir.

ABIES PARRYANA.—Among all the hardy Conifers introduced into this country during the last few years, none is more promising as a grand and ornamental tree than the above. It is a native of the Rocky Mountains of North America, and combines the characters of the finest types of the Norway Spruce with the long and massive foliage of the Himalayan A. Morinda. Young trees alone exist as yet in Europe, but every year adds to the charm, and each plant may be called a "specimen."

Our plants are in excellent condition for present planting:—
12 to 18 inches, 63s. per 100, 10s. 6d. per dozen, 1s. each.
18 to 24 " 105s. " 15s. 0d. " 2s. 6d.
2 to 2½ feet, 168s. " 24s. 0d. " 3s. 6d.
2½ to 3 " 252s. " 36s. 0d. " 5s. 6d.
JAMES BACKHOUSE AND SON, The Nurseries, York.

PALMS.—A few hundreds of splendidly grown Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, and P. lutescens, 2 inches high, 4s. per dozen, 25s. per 100. Latania borbonica, Seaforthia elegans, and Euterpe edulis, 20 inches high, 12s. per dozen; less quantity, 1s. 3d. each. Larger Palms equally cheap. Packages and Parcels post-free.
GARDENER, Holly Lodge, Stamford Hill, London, N.

W. H. ROGERS, Red Lodge Nursery, Southampton, offers the following at low prices:—
CRYPTOMERIA ELEGANS, 2 to 4 feet.
CUPRESSUS MACROCARPA, 2, 3, and 4 feet, all transplanted late last spring.
" LAWSONIANA, 2 to 5 feet.
" LAWSONIANA DENSA, 1 to 2 feet. [spring.
PINUS INSIGNIS, 1, 1½, and 2 feet, all transplanted late last
RETINOSPORA PLUMOSA AUREA and ARGENTEA,
" LEPTOCLADA, 1 to 3 feet. [1 to 3 feet.
THUIA LOBBII, 3 and 4 feet.
THUIOPSIS BOREALIS, 2 to 3 feet.
" DOLABRATA, 1 to 3 feet.

Cheap Bedding Plants.

WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off:—
TRICOLORS: Mrs. Pollock, 22 per doz., 15s. per 100; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s. 6d. doz., 18s. 10d.; 12 sorts, 6s.
BRONZE: McMahon, Black Douglas, The Czar, 2s. doz., 12s. 100.
SILVERS: May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.
GOLD-LEAF: Crystal Palace Gem, 1s. 6d. doz., 10s. 100: Happy Thought, 2s. doz., 15s. 100.
SILVER TRICOLORS in variety: best sorts, 2s. doz., 12s. 100.
ZONALUM: Vesuvius, Jean Sisley, 1s. 6d. doz., 8s. 100; Madame Vaucher, Virgo Marie (white), 1s. 6d. doz., 10s. 100; Master Christine, Mrs. Levers, Jenny Dodds (pinks), 1s. 6d. doz., 10s. 100; Waltham Seedling, 1s. 6d. doz., 8s. 100; Henry Jacoby, Bonfire (crimsons), 1s. 6d. doz., 12s. 100; Mrs. G. Smith (fine salmon), 1s. 6d. doz., 10s. 100; White Vesuvius, 1s. 6d. doz., 10s. 100.
BEST WHITE ZONAL: Queen of the Belgians, 4s. doz., 25s. 100; Niphetos, 2s. doz., 15s. 100.
LOBELIAS: Blue Stone, Pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. doz., 15s. 100.
CALCEOLARIAS: Golden Gem, 5s. 100, 40s. 1000; Camden Hero, 6s. 100.
HELIOTROPE: Jaun des Amours, Miss Nightingale (light), 5s. 100, 50s. 1000.
AGERATUM: Imperial Dwarf (blue), the best bedder, 5s. 100, 40s. 1000.
TROPÆOLUM: Vesuvius, good dwarf crimson, 8s. 100; coccinea elegans, 10s. 100.
CENTAUREA: candidissima, healthy seedlings, 20s. 100.
FUCHSIAS: a good collection of single and double, 6s. 100.
PELARGONIUMS: Show and Fancy, good free sorts, 3s. doz., 20s. 100.
DOUBLES: F. V. Raspail (fine scarlet), M. Baltet (white), Madame Thibaut (pink), 1s. 6d. doz., 12s. 100.
IRESINE LINDENI, 5s. 100, 40s. 1000.
VERBENAS: see separate Advertisement.
Packing included. Terms, cash with order.
Cemetery Nursery, Gravesend.

Verbenas—Verbenas.

WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 6s. per 100, 50s. per 1000. Post-free 3d. per 100 extra. Terms cash, packing included
Cemetery Nursery, Gravesend.

ROSES.

20 Acres of grand Plants, in best varieties.

BUSHES, H.P., 8s. per dozen, 60s. per 100. } *Packing and Carriage FREE*
STANDARDS, H.P., 15s. per dozen, 105s. per 100. } for Cash with Order.
CLEMATIS (80,000), 12s. to 24s. per dozen.
ROSES, in Pots (80,000), 15s. to 36s. per dozen.
FRUIT TREES (74 Acres).
VINES (6000), 3s. 6d. to 10s. 6d.
ORCHARD HOUSE TREES, "Fruiting," in Pots.
STRAWBERRIES, 4s. per 100; Forcing, 15s. to 25s. per 100.
ASPARAGUS, 2s. 6d. per 100; Forcing, 12s. 6d. per 100.
SEAKALE, strong Forcing, 16s. per 100.
EVERGREENS, CONIFERS ORNAMENTAL TREES (or Acres).
FLOWERING SHRUBS, 8s. per dozen.
STOVE and GREENHOUSE PLANTS, in great variety, cheap.
HERBACEOUS and ALPINE PLANTS. One of the largest and best collections in the world. Good selections from 25s. per 100.
FOREST TREES, HEDGE PLANTS, UNDERWOOD, &c.

SEEDS

Of Finest Quality.

Descriptive LISTS of above and BULBS free.

RICHARD SMITH & CO.,
WORCESTER.

PINES—PINES.

B. S. WILLIAMS can offer well rooted suckers of the following varieties:—
SMOOTH CAYENNE, CHARLOTTE ROTHSCHILD, BLACK JAMAICA, WHITE PROVIDENCE, RIPLEY QUEEN. Early orders solicited.

THE VICTORIA AND PARADISE NURSERIES, UPPER HOLLOWAY, N.



PINE-APPLE NURSERY,
MAIDA VALE, LONDON, N.W.

LIST of Cheap Offers in Ornamental Plants, sent on application, for the Stove, Greenhouse, and Garden. Choice quality. Healthy young plants.

HENDERSON & SON.

100 STOVE or GREENHOUSE PLANTS, beautiful flowering and ornamental foliage, in 100 varieties, for 63s. and 105s.; or in 50 varieties, 42s. the 100.
12 **AZALEA INDICA**, splendid varieties, for 18s. and 24s.
12 DRACÆNAS, 12 sorts, very ornamental, 6s., 9s., 12s., 18s.
12 CROTONS, beautiful sorts, 6s., 12s., 18s.
12 Greenhouse RHODODENDRONS, 9s., 18s., 30s.
12 Choice ORCHIDS, 21s., 42s., and 63s.
12 MAIDENHAIR FERNS, 12 sorts, 6s., 9s.
12 PALMS, Ornamental varieties, 6s., 9s., 12s., 18s.
12 EUCHARIS AMAZONICA (Amazon Lily), 6s., 9s., 12s.
12 AFRICAN ASPARAGUS, a lovely plant, 12s., 18s., 30s.
12 ABUTILON (Balloon Flower), 12 varieties, 6s., 9s.
12 TREE CARNATIONS, choice, 6s.; yellow-flowered, 1s. each.
100 Varieties of HARDY HERBACEOUS PLANTS, strong, 21s. and 30s.

CALADIUMS, BEGONIAS, GLOXINIAS.

The following Free per Parcel Post:—

12 GLOXINIAS, mixed, 4s. and 6s.; choice named, 10s. 6d. and 21s. Seed, 1s. 6d. and 2s. 6d.
12 GESNERAS, mixed, 3s. 6d.; named sorts, 5s.
12 ACHIMENES, 1s. 6d., named sorts; mixed, 8d.
12 CALADIUMS, named sorts, 6s. and 12s.; choice and rare, 21s., 42s.; 50 varieties, 63s.
12 BEGONIAS, tuberous, mixed, 4s. and 6s.; named sorts, 10s. 6d., 15s. Seed, 1s. and 2s. 6d.
GESNERA HENDERSONI, the finest, 1s. 6d., 2s. 6d.

Seeds, first quality, of Calceolaria, Cineraria, Primula, Cyclamen, Begonia, Carnation, Hollyhocks, Petunia, Mimulus, and Pansies. See CATALOGUE. 1s. and 2s. 6d. per packet.

SPECIMEN HOLLIES.

STANDARDS, on stems of various heights, and of such kinds as GOLD QUEEN, MILKMAID (Weeping), NEW GOLDEN WEEPING, BRONZE, &c.

7s. 6d., 10s. 6d., 15s., 21s., 31s. 6d., 42s. each.

HANDSOME PYRAMIDS of the above, **5s.** to **21s.**

Now is a Capital Time to Plant.

RICHARD SMITH & CO.,
WORCESTER.

FOR SALE, fine Specimen FERNS, Platycerium alcicorne, also Neottopteris nidus, and others. The first-named two have been exhibited and taken Prizes. Also a small COLLECTION of ORCHIDS; also of CACTUS. Also about 150 EUCHARIS AMAZONICA, and about 80 Bulbs of PANCRATIUM. Apply by letter to Mr. HOARE, Wolvers, Reigate, when full particulars will be given, and the Plants can be inspected by appointment.

LILIUM AURATUM.—Ten Thousand of the Finest Bulbs ever imported into this country of this charming hardy Lily. In splendid condition for immediate planting. Mammoth Bulbs, 8 to 9 inches in circumference, 9d., 1s., 1s. 6d., and 2s. each; 5s., 8s., 10s., 15s., 20s., and 25s. per dozen; sent packing and carriage free on receipt of remittance. Cases as imported, containing 50 fine Bulbs, 25s.; 100 fine bulbs, 45s.; packing and carriage free.
CARTERS', Direct Importers of Japanese Lilies, 237 and 238, High Holborn, London, W.C.

ALPINE and HERBACEOUS PLANTS a Specialty.
50,000 of the most desirable sorts, established in pots, and many other varieties growing in the open ground. To ensure flowers at all seasons, plant at once and do not delay. Special LIST of varieties on application. 4s., 6s., and 9s. per dozen. Cheaper if taken by the 100 or 1000.
R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

Seed Potatos.

H. AND F. SHARPE having a surplus stock of the following varieties of SEED POTATOS, are prepared to make very low offers to clear out:—Rivers' Royal Ashleaf, Sutton's Early Regent, Myatt's Prolific Ashleaf, Reading Russet. All selected stocks, and fine quality.
Seed Growing Establishment, Wisbech.

To the Trade.

MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.
Seed Growing Establishment, Wisbech.

W. H. ROGERS, Red Lodge Nursery, Southampton, offers in any quantities the following:—
ANDROMEDA FORMOSA, 50s. per 100. [40s. per 100.
AZALEA PONTICUM, strong and bushy, 1 to 2 feet, 20s. to
MENZIESIA POLIFOLIA ALBA and RUBRA, 20s. per 100.
PERNETTYA MUCRONATA, nice plants, 30s. per 100.
RHODODENDRONS, fine standard, named, with nice heads full of blooming buds, 3s. 6d. and 5s. each.
" dwarf, named, upwards of 50 sorts, £5 per 100.

RHODODENDRONS.
WHOLESALE SPECIAL OFFER.
50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.
5,000 HYBRIDUM and CATAWBIENSE.
1,000 NAMED VARIETIES, the Choicest Sorts.
GREEN HOLLIES, RHODODENDRON, BRIER, and GRIFFERII STOCKS, selected for Working.
For prices and particulars, address:—
FOREMAN, Birch Nursery, King's Thorn, near Hereford.

CHEAP BEDDING PLANTS.
GERANIUMS, strong autumn-struck plants.
" Vesuvius (scarlet), Jean Sisley, Dazzler (crimson), Master Christine, Madame Thaubert, Happy Thought, 2s. per dozen, 12s. per 100, from single pots.
LOBELIA (true), from cuttings, "Emperor William," 2s. 6d. per 100, 20s. per 1000.
DAHLIAS, Single, named sorts, of all shades of brilliant colours, including White Queen and Paragon, 2s. 6d. per dozen, 18s. per 100, from single pots.
" Double, best named show varieties, 2s 6d. per dozen, 18s. per 100, from pots.
CHRYSANTHEMUMS, selection of finest named Show varieties, strong, and well-grown, 2s. 6d. per dozen, 18s. per 100, from single pots.
Package free. Plants allowed for carriage. Terms cash.
CATALOGUE gratis.
H. I. HARDY, Stour Valley Florist Grounds, Bures, Suffolk.

FERNS A SPECIALTY.

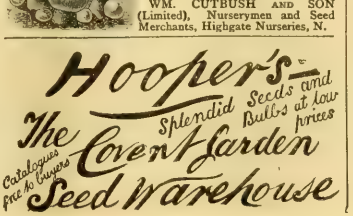
An IMMENSE STOCK, in SPLENDID CONDITION.

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LEAF MOULD, best only ..
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Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows :—

Cod Fish and Potash.		Herring and Potash.
Per Cent.		Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15.0
10.0	Magnesia	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.
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IN BAGS, 7 lb., 2*s.* ; 14 lb., 4*s.* ; 28 lb., 6*s.* 6*d.* ; 56 lb., 10*s.* 6*d.* ; 1¼ cwt., 20*s.* ; 2 cwt., 30*s.* Bags free.

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Sold in Packets, 6d. and 1s. each, and in
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7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

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C. & L. also supply Crushed Bones, Bone Dust, Peruvian Guano, Sulphate of Ammonia, and Nitrate of Soda, in best qualities only.

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COCOA-NUT FIBRE REFUSE.
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Can also be had from all Nurserymen and Seedsmen.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

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FOR
VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES,
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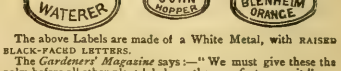
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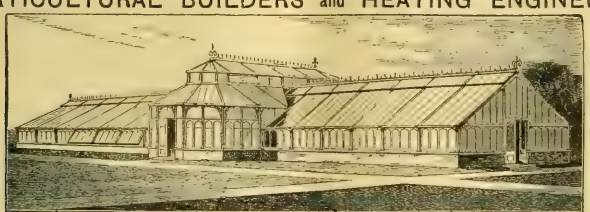
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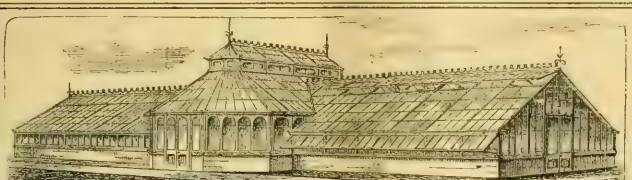
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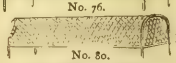
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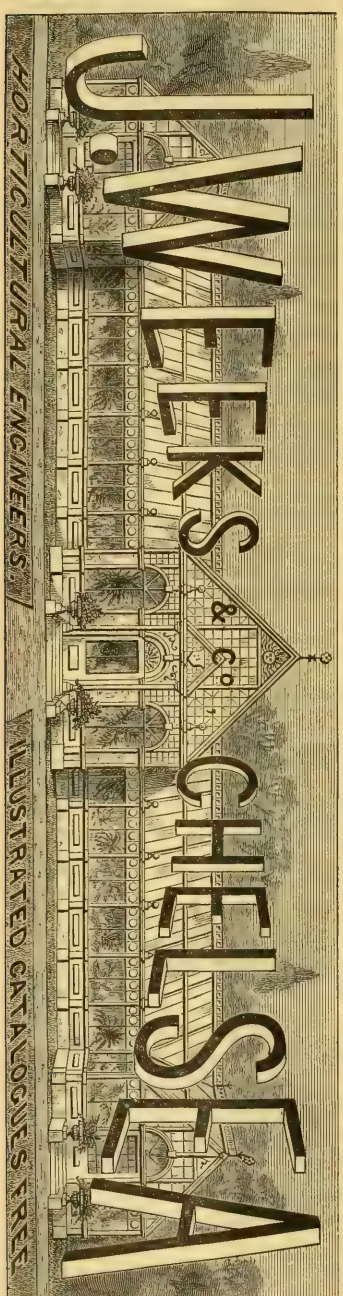
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THE

Gardeners' Chronicle.

SATURDAY, APRIL 24, 1886.

ORIGIN AND HISTORY OF THE FLORISTS' AURICULA.*

IN treating the origin and history of the Florists' Auricula, in the interest of the Primula Conference, it is a matter of plain propriety to remark that I discoursed on the same subject in this place on April 25, 1882, and the text of my thesis was published in the horticultural papers. With the present important task before me, I have again reviewed the history of the flower that takes highest floral rank amongst the Primulas, and shall endeavour to submit to your consideration matters that are possibly of importance, and that, I hope, will at least prove interesting. It will be convenient to dispose of established truths in the first instance, in order to obtain a proper basis for speculations on things unknown. The origin of the Auricula we will, for the present, assume to be unknown, but we have at command much of a trustworthy character in relation to its history during the past 300 years, and it will be a safe, even if a dull procedure, to rummage the books and set forth a few of the more promising facts and figures before tackling the portentous question of the origin of the flower.

A direct hint as to what to avoid as well as what to attempt may be derived from the reference to the Auricula in Beckmann's *History of Inventions.* He quotes from Weismantel's *Des Blumisten* to the effect that Ovid, Pliny, and Columella knew the flower. Well, those writers were also acquainted with Garlic, Barley, and Figs; but we pay no attention to them until they offer some special information illustrative of the arts, customs, or necessities of the times in which they lived. It is somewhat to the purpose, perhaps, that Pluche, in *Spectacle de la Nature* (ii., 49), states that the Auricula was carried from Switzerland to Brussels by Walloon merchants. The second volume of this work was published in 1733, and it gives no clue to the date of the carrying. But the statement is of importance in connection with the general belief that the Auricula was cultivated in the Netherlands long before it was introduced into this country; and that the garden varieties of the flower were introduced by refugees from the Low Countries about the year 1570. We find mention of the flower in the works of Fuchsius, Matthiola, Clusius, Turner, and Dodoens. But the sixteenth century botanists were but little better informed on the subject than the writers of the later Roman period; and it would be waste of time to attempt to formulate their scraps of information. Matthiola figures the true Auricula admirably at p. 706 of *De Plantis Epitome* (1586). In the superb edition of Dodoens printed at Antwerp by Plantin it is very badly figured at p. 148. By both it is described as Auricula Ursi, and by the name of Bear's Ears it was generally known

* Read by Shirley Hibberd, Esq., at the Primula Conference, April 21.

amongst the sixteenth century botanists and gardeners.

In the year 1570 many artisans, driven out from the Netherlands, settled in this country, and they brought their favourite flowers with them, including the best of their Auriculas. We begin business at the old shop, for Gerard, who published his *Herbal* in 1597, described and figured half-a-dozen varieties. On p. 640 the contrast between the yellow and the purple Bear's Ears, although shown in drawings that are truly execrable, is full of instruction in respect of the question before us. The other figures are of little consequence, but the two that lead the way speak emphatically of the distinction between the true Auricula and the flower known to us as the alpine Auricula. In plain truth they were as distinct then as they are now, and John Gerard's bad drawings hit the truth admirably. It is important also to note the remark of Johnson in his edition of Gerard, published 1633, to the effect that there are divers varieties, differing in the leaves which are green or hoary, and in the flowers, which are white, yellow, red, and purple—the gardens of Mr. Tradescant and Mr. Tuggie being well furnished with such.

These things prepare us for what the immortal John Parkinson has to say. In his *Theater of Plants* (1640) he copies the bad figure from the Antwerp Dodoens, and describes twenty-six kinds of Auriculas. It is of the highest interest to note that amongst them occur a "stript purple," which he describes as singularly changeable; also a particoloured red and white, "heard of but not seen." The Collie, that he describes as "somewhat sad but very lively," and the "Purplish Blew," appear both to have been of the class known to us as selfs while "Heavens Blew," "Paler Blew," and "Bright Crimson," were of the class now known as alpines. Of yellows he says there were many, but so mixed "I cannot expresse them.' This is just what might be expected, and it may be fair to add that, as a matter of course, they were the least valued, because not far enough removed from the wild flower of the mountains, for the opinion appears to have prevailed that there was only one kind of wild Auricula.

In the *Paradisus* there are twenty varieties described, a few of which are admirably figured. Of these nine had green leaves without meal, and the remainder were more or less mealy. The flowers are presented as varying in colour, and some have a centre of the kind we call "paste," while others are without it. The colours are just as we find in border Auriculas of the present day, comprising shades of red, purple, violet, maroon, yellow, and white. We are certainly in the midst of Auriculas, not only of the mountain, but also of the garden. It appears that we have in the *Paradisus*—inexhaustible treasure as it is—the fountain of diversity as revealed to the penetrating eye of "Thine in what he may," the author of what he himself in his dedication designates "this speaking garden."

This paper should be something like a catalogue of evidences, and I invite your attention to the description of "the great straw-coloured "Beares eare," at p. 238 of the book last mentioned:—"This hath almost as mealy leaves as the last, but nothing so large; the flowers are of a faire strawe colour, with a white circle at the bottom of them." These three last (that is, the great yellow, greater yellow, and great straw) "haue no shew or shadow of any other colour in any part of the edge, as some others that follow haue."

The "blush Beares eare," the "Haire-coloured Beares eare," and the "yellow variable Beares eare" are described as edged flowers. For example, "the Blush has a ground colour of a dark or dunne-yellow, shadowed ouer a little with a shew of light purple, which, therefore, we call a blush colour, the edges of the flower being tipt with a little deeper shew of that purple colour, the bottome of this flower abiding wholly yellow, without any circle, and is of very great beauty." The Hair-coloured is of a brownish-yellow, edged with a show or shadow of a light purple colour. The Yellow variable is of a fair yellow, "dasht about the edges onely with purple, being more yellow in the bottome of the flower then in any other part." I seem to hear our friends the florists say that these were flowers with shaded edges, of which we have many at the present day. Yes, the history of the flower is before us, and the *Paradisus* appears to provide us with the very first record of that kind of edging. Parkinson reserved a *bonne bouche* for a wind-up of his feast of Auriculas. It is the "Variable green Beares eare." "This hath green leaves snipt about the edges; the flowers are yellowish-green, having purple edges; these have no circles at all in them." This variable green with a purple edge might, for present purposes, be assigned the position of a pole star in the floral firmament; at all events, I, for one, feel attracted to it, and expect it to afford assistance in tracing out the order of the stars in the two constellations of Ursa major and Ursa minor that "in earth's firmament do shine;" for these stars seem to be now coming home to us.



FIG. 96.—CENTUNCULUS MINIMUS.

Adult plant to the left; germinating plant to right, with branched radicle, sessile cotyledons, and single stem.

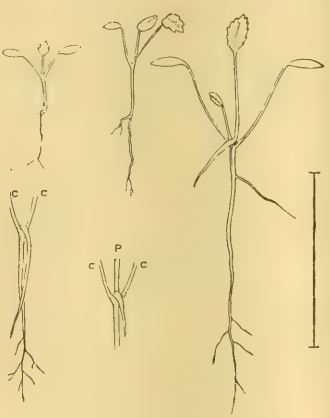


FIG. 97.—GERMINATION OF PRIMULA RETICULATA.

Showing radicle, caulicle, long-stalked cotyledon, c, plumule, p, and an adventitious root springing from the stem above and between the cotyledons.



FIG. 98.—ANDROSACE ELONGATA.

There is no special interest for the present occasion, in the progress of the Auricula in what appears to have been its early conditions as regards range of colour, and variation of leafage. It is only when it assumes what, for convenience sake, may be termed its exhibition character, that it becomes more than ordinarily attractive, not only for the delight of the eye, but as a subject for scientific study. Let us then consider the position of the edged flowers in the history. The one presented us by Parkinson is very different to the florists' Auricula of the present day; but it is probably a true Auricula, for the leaves "do turne and fold themselves a little backwards," the flowers are less expanded than some others, but, alas! they have no circles in them, and the variety is not figured. This, we will say, is the most remarkable of all cultivated flowers, a small wonder, but a true one; a great achievement of art or a most extravagant freak of Nature. When did the first properly edged flowers appear? That question is now forced upon us, and is full of significance, even if judged by this first record of a green flower with a purple edge. A very trifling change would give us a purple flower with a green edge, and changes of that kind are common enough.

Strange to say, edged flowers were not received with open arms by the faculty. They had to win their way slowly to the favour of the florists, and on the principle that the world knows not its greatest men, the gardening world in general was for a long time ignorant of this unique production—this most precious of all the jewels in the diadem of Queen Flora. The proof of this will furnish matter for a paragraph.

In Miller's *Dictionary*, first published 1731, the edged flowers obtained no recognition, but Miller provided a good code of judging Auriculas, minus, of course, certain points that are of peculiar importance now. The fact proves that the flower had acquired extensive popularity, and inspired some kind of corporation that for present purposes may be designated the Auricula fancy. Even in 1676, fifty years after Parkinson had so nearly witnessed the making of the florist's Auricula, John Rea, in his *Florilege*, described striped flowers, and advised the selection of flowers "with white eyes that will not wash."

The subject obtains scientific treatment in Hill's *British Herbal* (1756), and the author, John Hill, M.D., boldly declares that many of the so-called species of authors "are no other than varieties of this plant rising from culture." At p. 98 he speaks of the yellow Auricula as standing alone, and apart from those that produce red and purple flowers. Of these last he says there are three species not directly related to the yellow Auricula, and these he describes as narrow-leaved, round-leaved, and long-leaved. To one of the descriptions he adds the remark tha "there is no judging by what one sees in gardens, where the accidents occasioning varieties are endless but in those collected wild there is no error."

In Hill's *Eden*, by the same John Hill, published 1757, Auriculas are fairly treated of, but edged flowers are not mentioned. Hanbury's *Body of Gardening*, 1770, gives a hint in the way of our search in speaking of variegated Auriculas. It is a question of some importance whether the variegated flower of Hanbury was the striped flower of Parkinson, or a modification of that edged flower that had been noted as a curiosity 150 years before. There is clear evidence in the *Florist* of 1849 that in the year 1732 the edged flowers were not generally recognised; but in a code of rules for judging Auriculas, "flakes" and "stripes" are mentioned as important adornments of the flowers that were in favour in 1732. Mr. Slater, in his *Amateur Florists' Guide* gives a list of proper edged flowers that were in cultivation in 1776, and in my

paper, read here in 1882, I assumed—as I still think properly—that some of these were in existence in 1750, or earlier. The varieties known as Potts' Eclipse, Rule Arbiter, and Hortaine, were in cultivation in 1757. About 1785 the edged varieties were plentiful, and amongst them were Grimes' Privateer, Popplewell's Conqueror, Gorton's Champion, and Wrigley's Northern Hero, which are still in cultivation, not as archæological curiosities, but because they are good, and have retained their initial vigour as cultivated plants for upwards of a hundred years.

In fixing a date for the earliest record of an undoubted edged flower, I am indebted for valuable aid to my friend Mr. Harrison Weir, who, in a communication to the *Gardeners' Chronicle* of May 6, 1882, refers to Sir Thomas Moore's *Flower Garden Displayed*, published 1734. In this work many Auriculas are described, some of them introduced from Holland, and others raised in this country. It is important to note that the Dutch and the English varieties appear to differ as alpines and true Auriculas, both classes finding favour here, but the English raisers having an especial affection for Auriculas proper, as apart from the alpine section. Now, it is of the highest importance to observe, that amongst many flowers of a class known as "painted ladies," because delicately improved, as the ladies of that day were, with a dusting of white powder, several are described as striped, and one as distinctly edged. The edged flower is called Honour and Glory; it is said to have "a good white eye, and the flower striped with a dark redish-purple on a white ground, so as to leave the edge of the flower white." I repeat that this contribution to the history is important, because it not only places before us an undoubted edged flower, but it shows that the difference between stripes and edges was recognised. More than this, it shows that striped flowers were much valued, for one called the Royal Widow was sold for 10 guineas, but the value of the edged flower is not suggested. It would be delightful could we find in the winning stands of the present season an example of the edged flower of 1734, which was very different to Parkinson's green with purple edge. As we cannot find the flower, we look for Honour and Glory of a larger kind. Perhaps in the soundness of our work, and the sweetness of our tempers, and the earnestness of our hopes, we may be promoting a higher and wider appreciation of the Auricula, in which case honour and glory are secured, and we may safely proceed in the good old way, according to the sacred precept, "Whatsoever thy hand findeth to do, do it with all thy might."

Let us now ask the question, Whence came the florists' Auricula? Charles Darwin, in *Forms of Flowers*, p. 43, derives it from Primula pubescens, which is represented as a hybrid between P. Auricula and P. hirsuta. Herbert, in *Horticultural Transactions*, vol. iv., p. 19, considers P. Auricula, P. helvetica, P. nivalis, and P. viscosa to have been concerned in the parentage; indeed, Mr. Herbert considered he had raised a powdered Auricula from P. nivalis, which may be regarded as a white-flowered variety of villosa of Jacquin. As he gives no description, it is impossible to say whether his plant would pass for an Auricula if brought up for judgment here to-day; but he was not the kind of man to make any glaring mistake, and his plant must have differed from nivalis to entitle it to such special mention. Mr. Herbert, at the same reference, suggested that P. Auricula, P. helvetica, P. nivalis, and P. viscosa are but varieties of one and the same species. To the list may be added hirsuta, pubescens, minima, and nivea; for in truth we are now trading in names, and we shall have to be careful that we do not mistake shadows for substances. In his *Die Geschicte der Aurikel* Professor Kerner avows his belief that Primula Auricula is not subject to variations, and that it probably did not keep a place in gardens for any length of time beyond the middle of the seventeenth century. But then he obtains for the making of the garden flower the blood of P. Auricula and P. hirsuta, which he regards as the parents of P. pubescens; and from this last, a reputed hybrid, he derives both the edged and the alpine varieties. This proposal will not be accepted by many of the raisers of seedlings, whose experiences have rendered them familiar with the peculiarities of both classes. It affords but poor promise of an explanation of the persistency of the yellow colour and the farinose decoration of the show flowers. Nor does it satisfactorily explain the shaded margin and the persistently naked leaf of the alpine section. As regards the yellow of the show flower it does not

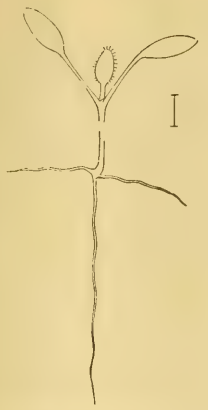


Fig. 99.—Primula geranifolia,

Showing radicle, lateral roots spreading horizontally, caulicle, and stalked cotyledons.



Fig. 100.—Primula floribunda: seedling plants.

The line to the right indicates the real size.

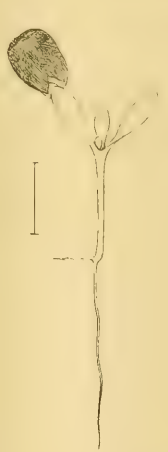


Fig. 101.—Primula kingii,

Showing radicle, a lateral horizontal rootlet, the caulicle, and two cotyledons, one just disengaging itself from the seed. The line to the left shows the real size.

appear in its true proportions to the casual eye; but if you will carefully wash away the paste, you will find that it is laid upon a yellow ground. It seems to be the function of paste to play a game of deception. Kerner's views have been partially approved by Mr. J. G. Baker, of Kew; but he appears to lean to Primula Balbisi as a prominent progenitor, and he associates the edged flowers and the alpines as at least not specifically distinct. The Rev. F. D. Horner, who combines experience as a raiser with knowledge of species and a fine faculty of observation, reckons Primula farinosa, P. scotica, P. marginata, P. intermedia, and P. viscosa as concerned in the parentage; and it remains a question if he would separate the edged flowers from the alpines, as of different origin.

Finally, I propose to you that we may with advantage regard the edged or show Auricula, and the alpine Auricula as, for present purposes, specifically distinct. The general agreement of the alpines is with P. commutata and P. Pedemontana, the last-named being emphatically reflected in it. On the other hand, P. ciliata of Moretti, may be associated with P. Auricula as concerned in the formation of the florists' flower.

But, after all, this is like arguing in a cirle. The two that I have selected as begetters of each group are specifically one or two at the discretion of the botanists, as they may take broad, or narrow views. We are in the same plight as regards the Primulas, as we were in regard to the Daffodils before the Congress operated, when, as you will remember, a great reduction of the species was carried into effect. I will venture now to say that the employment of names in the expression of our ideas as to the origin of the Auricula, must be subject to the possible reduction of names by the revising committee. I can find a dozen or more so-called species that are possible parents of the Auricula, but as I question their specific independence I do not feel that making a catalogue is, in this case, the solution of a problem in biology. As for Palinuri, I cut short the connection by dismissing it as a possible progenitor of Auriculas.

Let us now make a brief study of an Auricula with reference to the facts that are before us. In certain characters it is constant. The leaves are stout in texture, often leathery, sometimes slightly cartilaginous. The flowers are always in a many-flowered visible umbel, never, like those of the Primrose, appearing singly from a concealed umbel. The floral bracts are short, never, like those of P. calycina, longer than the flower-stalks. The corolla is distinctly contracted below into a tube, and expanded above into a salver; it is never contracted into a cup or goblet, as in P. sikkimensis. The dusting with protective meal is not a distinguishing feature; but its abundant appearance as a decorative character of the exhibition flower is strikingly characteristic, and though it may be said that by long-continued crossing and selecting its appearance there may be regarded as the work of the artist called man, yet his work is limited, not only by the capabilities but by the disposition of Nature. The powder belongs to the face of the flower, although its quantity and arrangement may be an exaggeration of Nature's intentions. The show of yellow in the colouring of the flower is a constant character. This is a colour wanting in many of the supposed parents. It should be borne in mind that the flowers of highest quality represent long-continued and severe selection; and therefore in an exhibition, or even in the general stock of the cultivator, we do not see the entire character and possibilities of the flower. The seed-bed offers the raiser many that he will simply destroy, because of their noncomformity to rules, and amongst the condemned will be many of the so-called fancy flowers, that have no body colour, and approximate to the species. It should be remembered, too, that all the edged flowers have green edges; for although classed as green, grey, and white, it is only the relative density of the meal that marks the difference. It has been boldly declared that this green colour is a monstrosity, indicative of a return of the flower to the status of a leaf, but we will defer the serious consideration of that proposal until we see the flower take the form of the leaf in addition to a touch of colour, which, from the florists' point of view, is one of its distinguishing beauties. It would be more reasonable, perhaps, to regard the green colour as a remainder of the original colour of the flower, for, according to the doctrine that has found general acceptance, the flower should be first green and then yellow, with the potentiality of changing to red and ultimately to blue.

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Considering Professor Kerner's proposal in connection with these facts, it may not be irreverent to say that it leads us nowhere. We are to derive two groups of plants that differ by larger degrees than many that are recognised as distinct species, from a parent plant that is a reputed hybrid, and that possesses only a few of the characteristics required. We are assured that the purple and maroon colours that are so prominent in the edged Auriculas cannot be derived from a species known as affording only shades of yellow. Those who make the declaration evidently forget the wide range of colouring of the common Primrose, wherein we have almost every colour except true blue. Linnæus grouped Primroses, Oxlips, and Polyanthuses, as forms of one species; and that view, though for long repudiated, is now generally accepted, and the point is especially insisted on by Bentham in his *Handbook of the British Flora*. Between yellow and blue there may be somewhat of a gulf fixed, especially in the variations of a species; but from yellow to shades of red and purple is a transition far from uncommon. We have examples not only in the Primrose, but also in the Chrysanthemum, Hyacinth, Tulip, Pansy, Carnation, Hollyhock, and Antirrhinum. If you wander about in search of a source of the red and purple tones in show Auriculas, you will never find means to account for the brilliant violet-blue body colour of the variety known as Colonel Champneys, while others may be found that are apparently equally far removed from the possibilities of the botanical colourist. The truth appears to be that the colours we cannot by direct descent account for, are in reality self-evolved, and belong to the category of changes that accompany and follow cultivation. In other words, these colours, with other characters that might, with equal reason, perplex us, are, in a certain sense, laid on by the hand of the cultivator. It is the fear of the botanist, who cannot recognise any merit in his brother the florist, that prompts him to find in this or that flower that the hand of man has left untouched, the sources of properties that the florist has developed by long-continued cultivation in view of an ideal model, towards the realisation of which he is ever striving, but never attaining, though happy in the endeavour, and justly though quietly proud of what so far has been actually accomplished. To obtain the two great classes of Auriculas from Primula pubescens is a greater extravagance on the part of Professor Kerner than any florist has ventured on as yet; but the florists have discovered long since that seeds derived from show flowers do not produce alpine varieties; and, on the other hand, it is all in vain to hope for edged varieties from the seeds of the alpine section. The general acceptance by the botanists of the proposal of Professor Kerner shows how much they need in their researches the aid of men who have acquired experience in the raising of new varieties of garden flowers, and in the management of garden plants generally.

Parkinson, 250 years ago, had a green flower with a purple edge. That must have been in existence long anterior to the writing of the *Paradisus*. It is not extragant to entertain the supposition that it had been in existence hundreds or thousands of years before. In the same collection were striped flowers, and these appear to have increased until in the early part of the eighteenth century they abounded. Then, again, we hear of an edged flower called Honour and Glory in the year 1732, when Sir Thomas Moore described it. Since then the edged flowers have increased in number, and now constitute a race that has all the needful characteristics of a species. The green has proceeded outwards to the margin and settled there; the stripes have moved in the same direction and formed a ring within the margin; and the farina has accumulated around the centre to form what is termed paste; while a rich tone of yellow marks the centre, and gives accent to the green of the primal flower, the result being an arrangement of colours in four orderly masses, three of them in circles of definite geometrical proportions. The Carnation offers a nearly parallel example, for here we see the flakes of the flower moving outward to the edge to fashion the Picotee. It is like the action of centrifugal force, the colours appearing desirous of moving off into space. What is termed the thrum does not appear to demand special notice in connection with the origin of the flower, but I shall not seriously interrupt the study of the subject by remarking that Charles Darwin found the short-styled flowers the most productive of seed, and thus the taste of the florist in this respect is in strict accord with the frugal notions of Nature. The rich yellow of the thrum is another feature favourable to the flower, which is as hardy and vigorous as any of its kindred, although commonly represented by the traducers of the florists as a debilitated thing that requires a man and a boy to hold it up.

The Auriculas naturally divide into two groups—the alpines leaning to Primula villosa, the Auriculas to Primula Auricula. There does not appear to be any necessity for the admixture of Primulas that has been hypothecated for the formation of these flowers. The facts of history suggest that in all their more distinctive forms those two sections represent only two species, and that each in its essential characters is self-contained and self-containing. We have no proof at any time of distinct hybridity, but it must be acknowledged as a fact favouring the view of a considerable range of parentage that the allied species breed freely together. The Primulas that most often come into contact with man are, like him, of a sportive nature. The laced Polyanthus might perplex us with its golden edge, and there may be many edged Oxlips in the present exhibition, and some that display stripes and incipient edgings, and that are probably in a condition of change corresponding with the Auriculas of Gerard and Parkinson.

New Garden Plants.

ODONTOGLOSSUM RETUSUM, *Lindl.*

It is a very great satisfaction to have a fine fresh branch of this at hand, surpassing the few scraps I got alive before it was kindly sent by Baron von Hruby of Petschkau, who, as well as Consul Kienast of Zurich, would appear to become a strong rival of excellent English orchidists. It had been sent by Mr. F. Sander two years ago, and thus must have been collected by Mr. Hübsch, a very good Sanderian collector, born in Bohemia as I learn from Mr. E. Klaboch. It is quite a peculiar thing, and I am the more pleased to see the possibility of its being grown to a higher perfection. A long while ago it had been imported by Messrs. Backhouse, who had it from Dr. Krause. There had been then "many alive;" and the collector had stated there had been seen 100 to 150 flowers in one inflorescence. The sketch showed brick-red sepals and petals, and yellow lip. It has also been collected by the late Mr. Wallis for Director Linden. Wallis stated it was terrestrial.

The discoverer was Hartweg, whose specimen was described by Dr. Lindley, whose statement of the small flowers is a little severe. There are smaller flowered Odontoglossums; some varieties, as that of Baron von Hruby, and fine inflorescences sent by my late friend Professor Jamieson, have far larger flowers. The fresh flowers now before me have that rigid strong tissue that proves fine health; the stalked ovaries are mauve. Sepals and petals are of dazzling vermilion with some mauve in the middle of the sepals and petals outside, and even a little such hue inside. Lip vermilion, and not at all yellow.

Great inflorescences of this and of Odontoglossum Edwardi (named in honour of Mr. Edward Klaboch, whom I had the great satisfaction of seeing recently going home to his beloved Bohemia), might be very attractive ornaments of Orchid conservatories. Mr. v. Faus is the present gardener to Baron von Hruby. *H. G. Rchb. f.*

Influence of Plants on the Atmosphere.—The Willimantic (Conn.) Thread Company some time since accidentally illustrated the influence of plants on the atmosphere. The nature of the operations of this company demanded a reasonable and constant humidity of the atmosphere in their shops. To obtain this they had employed two men and a spraying machine; but Colonel Barrows, desiring to increase the comfort and pleasure of his operatives, commenced the cultivation of plants around the factory and placed many in the rooms, employing one gardener to take care of them. The atmosphere was at once changed in character; the spray machine was no longer needed, one man's wages were saved, and the operatives were surrounded by beautiful flowers, and their lives made more pleasant. *American Paper.*

ON THE ROOT-STRUCTURE AND MODE OF GROWTH OF PRIMULACEÆ IN RELATION TO CULTIVATION.*

For practical purposes it is very serviceable to consider a living plant in the light of a piece of mechanism, constructed and put together to do certain work as efficiently and as economically as circumstances permit. The comparison may serve our purpose without it being necessary to point out where it fails, and wherein lies the great difference between a machine begotten of its predecessors, and who had the like structure and endowments with itself, self-sustaining, supplying its own power from sun and air and water, built up and adapted by its own energy, and one constructed by the art of man, dependent on artificial means for its support and its power, and with no innate faculty of self-adjustment to varying circumstances. Availing ourselves, therefore, of the comparison we may proceed to discuss what it is our machine is called on to do, how it is enabled by its conformation to do what is required of it, and, incidentally, how we may help or mar its action. The Primulaceæ will afford us as good illustrations of these matters as any other family of plants. It is the group which is expressly selected to furnish a text for these remarks, and which, moreover, are, as prescribed, to be limited to a part only of the machine—the root. It is permissible, however, on such an occasion to use the term root in the broad sense in which it is usually employed by gardeners, and not in the more accurate and strictly limited sense in which it is made use of by physiologists.

The Requirements.

What, then, is our machine—the root—called on to do? In all cases to lay hold of the soil and secure the plant mechanically. How it does this will be sufficiently though incidentally illustrated later on, and is not a subject on which we as cultivators need linger long. The plants we have now to deal with may be lifted out of the ground by frost, but they are hardly likely to be washed away by floods or uprooted by winds. To pot firmly and press the crown firmly into the soil in transplanting are lessons which common experience teaches, lessons which the conformation of the root, to be presently noted, do but accentuate.

Another universal duty imposed on the root is to feed the plant. There is soil-food and there is air-food. The leaves, stimulated by light and heat, collect and transform the one; the roots, influenced by heat, absorb and digest the other. How they do these things is beyond the purpose of this paper to explain, but reference to any modern botanical text-book, and in particular to the truly marvellous revelations contained in the chapters on root movements in Darwin's *The Power of Movement in Plants*, will supply the information and afford indications of the processes of absorption, of solution, of fermentation, of transformation, which, with or without the agency of minute Bacterian organisms, constitute each root-tip, each root-hair, a laboratory and a workshop. Each root-tip, each root-hair, moreover, is as sensitive as a nerve, not only responding to a touch, but transmitting impressions from the spot touched to adjoining cells. It is as mobile as a muscle, turning towards what is useful to it, bending away from what is noxious or obstructive, threading its way through the soil, and adapting itself to circumstances as if it really possessed intelligence. It acts like the brain, says Darwin; and truly as a sentient organ, receiving and transmitting impressions and directing the course of growth and movement, it would be hard to say wherein its inferiority to the nervous system of the lower animals consists.

In the case of annual plants which live their life within the compass of a few weeks or months, there is little else for the root to do than to secure the plant in the ground and to go in search of food and turn it to account when found.

But in the case of perennial plants such as most of our Primulaceæ, another duty becomes incumbent—that of providing a store-place for water and for food. The food so stored, principally starch and allied substances, is not absorbed directly by the root and

* For the communication of numerous specimens illustrative of these notes I am specially indebted to Mr. Dewar, of the Royal Gardens, Kew; Mr. Barron, of Chiswick; Mr. Correvon, of Geneva; Mr. Douglas, and other friends. For some of the drawings I have to thank Mr. Sandgren, of Kew.

packed away, but partly by root-action and soil-food, partly by leaf-action and air-food, is manufactured in the leaves and afterwards transferred and deposited in the root or in the root-stock.

A similar formation of starch takes place in annual plants, but it is used up in process of growth, or stored in the seed to be turned to use by the seedling plant when it begins life on its own account. In any case the storage requirements of an annual are small in comparison with those of a perennial. To ascertain how and in what manner the food is obtained, transformed, stored, and employed is surely to put ourselves in possession of information, of any that could be named, the most important for cultural purposes.

Another phase of work which it falls to the lot of the root (*sensu latiori*) to achieve is that of propagation, and by observing how this is effected spontaneously we may surely obtain some useful hints for our own artificial procedures.

Such, then, in very general terms, is the nature of the work to be done; such, in merest outline, are the requirements of the case.

The Mechanism.

In the following remarks it is proposed to give a few illustrations of the machinery by means of which the work just alluded to is done, for while the work is in all cases the same, the machinery by which that work is accomplished is manifold in detail.

Annuals.

Very few cultivated Primulaceæ come under this head. Some of the Androsaces and Anagallis are annuals; but speaking from a cultivator's point of view, they might be passed over if it were not for one circumstance, frequently ignored or overlooked, though one of great importance—the fact that seedling plants even of those species destined to be perennial are, to all practical intents, annuals. Barring the slender resources stored up in the seed, the seedling plants have little store to draw upon, and thus, like the annuals, they must have good food within easy reach, and be provided with rapid means of utilising it else they wither away.*

Centunculus minimus. — A weed no cultivator would bestow a thought upon, unless it were to compass its destruction, may, nevertheless, serve as a useful illustration (fig. 96). It sends down into the soil a slender tap-root, which speedily ramifies just below the surface, branches and branches again till it, as it were, invades a considerable area of soil. There are no great "hold-fast" roots—none are needed, but, on the other hand, there is a great multiplication of small fibres, and a consequent extension of absorbent surface. Notice, too, that there is no caulicle; in other words, the radicle comes straight away from beneath the two cotyledons without there being any perceptible internode (stalk between the base of the seed-leaves and the top of the root. In a seedling Primrose may generally be observed the radicle, giving off branches, then an erect cylindrical portion bearing the cotyledons or seed-leaves, but sometimes reduced to very small dimensions; this is the caulicle or tigellum. Above the two seed leaves is the plumule, consisting of the first leaf or leaves above the cotyledons. In these seedlings it is curious to see how, whilst the primary roots descend vertically, the secondary ones pass off horizontally (figs. 99, 100, 101).

It is quite clear that the seed in Centunculus was not buried deeply, for the caulicle is a minus quantity. It is clear also the soil for such a plant should be light, open, rich, well drained. Contrast this with the germination of Primula reticulata, in which not only is the tigellum very long, but the two cotyledons are also raised on long, erect, or ascending stalks, as if the plant grew in the clefts of the rocks, and had a long distance to thrust its seed-leaves into the light and air (fig. 97). The requirements of seedlings are, it need hardly be said, of the same character. We all know the care that is requisite to secure the germination and the rearing of these delicate organisms.

"In the morning sow thy seed, and in the evening withhold not thine hand." *Eccles.*, xi., 6.

The mode of growth of the Androsaces is similar. They are, it is true, for the most part not annuals, but in their root-growth some of them (the cæspitose species) follow the mode of annuals. The seedling plants have roots of the annual character, with a long radicle giving off numerous branches (fig. 98). The adult plant has little provision for storage, but consists of a dense tuft of leaves, from the axils of some of which proceed long slender runners, like those of a Strawberry, and which bear at their ends a tuft of leaves like the parent from which they sprung. From the under-surface of this tuft proceed roots like those of the Centunculus, and, like them, destined, not for any lengthened use, but only for a temporary purpose; no long time indeed elapses ere the tuft throws out new runners and thus repeats in another generation the process of its own genesis (figs. 102, 105). It would seem from this peculiar mode of growth that the Androsaces speedily exhaust the area in which their roots spread, and having done so haste—

"To-morrow to fresh woods and pastures new."
Milton, *Lycidas*, t. 193.

Whether this is not an indication of value to the cultivator I leave to others who have had more experience to decide. My own want of success with these plants cannot in fairness be attributed only to neglect of the indication!

Perennials.

In these, as for annuals, there is need for daily supplies during the growing period, and further, there is the necessity for replenishing the stores. It is necessary, therefore, to consider the root-growth of these plants from two points of view—that of food-collecting and that of food-storage.

The actual absorption of water is, of course, effected in the same way in the roots of perennials as in those of annuals, but the perennial habit allows more time wherein to work, and frequently secures a wider root-range than is possible in an annual. In a perennial, *cæteris paribus*, the roots can travel further, or penetrate deeper in search of food, than in the case of an annual.

In an annual the roots, as gardeners say, "keep at home," and there is not much necessity for a system of conduits to convey the water from its source to the stem; but in perennials it often happens that the best food supply is at some considerable distance from the stem, and the consequence is that the fibrous roots collect the liquid from the feeding-ground, and convey it in so many conduits to the stem. The thicker root-fibres have, as every one knows, little or no power of absorption, that faculty being mostly limited to the thinnest extremities of the root-fibres, and to the root-hairs (where present). Of course the number, length, and degree of branching of the roots depend very greatly on the physical nature of the soil in which the plant happens to be growing—

"Pinguibus hæ terris habiles, levioribus illæ."

But when due allowance is made for these circumstances each plant has more or less its own distinct character. The roots of most species of Primula, for instance, are very different from those of Androsace, and indicate different requirements. [See Irmisch, in *Journ. Hort. Soc. London*, vol. viii. (1853), p. 217.] But even in the same genus we get variations in this respect. In the common Primrose and Polyanthus, in P. cashmiriana, P. capitata (fig. 103), P. amœna, P. Auricula, P. denticulata, P. nivalis, P. longiflora, P. cortusoides, &c., the roots are generally rather thick and fleshy, descending more or less vertically for some little distance without branching, and then giving off short nearly horizontal branches with few root-hairs (except in P. Auricula in which, in some cases at least, the roots are covered with a velvety coat of hairs. Such roots are not surface-feeders, but are capable of penetrating to a considerable depth in search of food, while their succulent habit and reserve store of water obviate the necessity for that dense network of fibrous roots that other species present. Primula rosea (fig. 104), P. Kaufmanniana, P. involucrata, and Cortusa Matthioli, afford instances of this densely matted and comparatively superficial root development. They have few if any large root or conduit fibres; but, on the contrary, an intricate mass of fine fibrous roots, penetrating in every direction, and availing themselves, as it were, of every scrap of soil within reach. Surely we have here an indication of the necessity in cultivation of supplying these plants with ample depth and breadth of light, rich, moist, not to say wet soil. The utility of a mulch in hot dry weather is also indicated as a means of preventing the drying up of the surface roots.

In some of the Androsaces we find provision for keeping the roots moist and free from the risk of drought. In seedling plants of A. elongata, for instance, the caulicle is very long and the slender radicle descends vertically for a long distance without branching, and then gives off near its tip a leash of much branched fine filaments (fig. 106.)

In Soldanella we have a tuft of rather thick fibres, which descend vertically into the soil, and are unbranched till near the points, where they give off numerous relatively short horizontal fibres.

Storage and Rest.

In perennials we have specially to consider the arrangements for storage of food in convenient places for use when required, and the modifications of structure associated with the periodic alternations of active growth and relative rest. Of a Primrose, whether "by a river's brim," or elsewhere, whether a yellow Primrose or one of other hue, it may be said that at one season its constant care is to increase its store, while at another its aim is to make all snug for winter. Of course the Primrose is not peculiar in these matters, but we may perchance profit somewhat if we make use of it as an illustration of general application.

The Rootstock.

The body which emits roots on the one side or beneath and throws up leaves and flowers on the other is the "rhizome," or rootstock. It is usually subterranean, and so gets called a root, but inasmuch as it produces leaves, buds, and offsets, and has the internal structure of a stem, botanists will not admit its claim to be considered a root, for a root, under ordinary circumstances (*exceptis præmissis*), does none of these things. It is a development of the plumule or of the caulicle, or of both together. Usually it is more or less horizontal in its direction, as in the Primrose, in other cases it is vertical, as in the Auricula, where it thrusts itself above-ground, and gives off buds or offsets in such a way that no one can mistake it for a root. Horizontal or erect, it throws down feeding-roots into the soil, and these roots are usually fleshy, serving, indeed, not only as feeders, but as storeplaces as well, thus sharing the office of the stock itself. At the free end of the stock is a bud, or a cluster of buds, by means of which the plant grows (figs. 109, 110, 111, 112, 115, 116) From these buds upspring the leaves and the flowers.

Polarity of the Stock.

Owing to this position of the buds the stock grows at one end, and extends and pushes itself into new territory, while the other end of the stock, having yielded up its store of water and starch to the growing bud, gradually decays. Thus the plant effects very quietly and gradually a change of residence—an indication of the desirability of occasional transplantation. This progressive decay at one end suggested to old Auricula growers the "removal of the end of the Carrot," and there was nothing to be said against the process provided their surgery was confined to dead portion only, and did not include the healthy and (potentially) active roots also. In such a case the stock would be put to the trouble of making new roots, which, to say the truth, it would not fail to do speedily under propitious circumstances.

The progressive growth at one end associated with progressive decay at the other, is a very marked feature in Primulaceæ. Moreover, it is often manifested in the earliest period. The root apparatus of the seedling plant seems destined for the use of the seedling only (which is thus, as before noticed, practically an annual), and when the plumule developes gradually into a permanent stem with its leaves and potential flowers, new roots are thrust out from the plumule, as may be seen in the illustrations of Primula reticulata, P. elatior (figs. 97, 108c, 110), and in P. verticillata.

The development of the tufted stem from the plumule is well exemplified in the case of the Cowslip, as pointed out to me some years since by Mr. Holland. The seedling plant germinates in the usual way, but after a time the weight of the rapidly growing plumule causes the caulicle to bend downwards and become more or less horizontal. Adventitious roots are then thrown out from the top of the

* "Some [seed] fell upon stony places, where they had not much earth: and forthwith they sprung up, because they had no deepness of earth: and when the sun was up they were scorched: and because they had not root, they withered away." *Matthew*, xiii., 5, 6.

original caulicle or the base of the plumule, which gradually decays, leaving the young plant independent. (Henfrey's *Elementary Course of Botany*, ed. 4, p. 654.)

PROTECTION.

One other provision with reference to the root-stock may here be noted, and that is the manner in which in most species, notably in P. latifolia, P. graveolens, P. Palinuri, the deeply descending rhizome is protected from loss of heat, as also from mechanical injury by the dense covering afforded by the remains of the old leaves. Contrast this state of things with the way in which Auriculas thrust themselves out of the ground, their rootstalks showing little or no trace of the leaves beyond the scar, which indicates the place whence they have fallen. It would be interesting to ascertain whether these peculiarities in the Auricula may not be connected with the development of offsets (buds) from the side of the rhizome (figs. 114, 115).

TUBERS.

The tuber of a Cyclamen (a development originally from the tigellum) is essentially the same as the root-stock, differing only in its more or less globular form. It throws off feeding roots from its base or its sides, and it forms a bud or buds at the top. Its fleshy tissue is laden with starch and building material for new growth.

WINTER BUDS.

In Primula rosea and P. involucrata, P. farinosa, P. rotundifolia (herbarium spec.), and probably in



FIG. 102. ANDROSACE VILLOSA.

many other species, we find what may be termed winter buds. In point of fact the stock in these cases decays away almost entirely, leaving only the buds which form at its extremity, or at the ends of its branches. These buds are made of dilated leaf-stalks densely packed one over the other, like the similar parts in a "head of Celery." They are furnished at the base with numerous root-fibres, very fleshy in P. involucrata (fig. 116), fibrous in P. rosea (fig. 116), and which serve to supply sufficient moisture in the dry season. Carefully stowed away in the centre of the leaves is the inflorescence whose tiny pearl-like flowers may be seen securely nestling, even in mid-winter, beneath their protective wraps exactly as in the case of bulbs, or Cabbages in which the leaves "turn in" well. P. denticulata is not so fortunate. In this plant the leaves spread widely and do not close up to cover the inflorescence, the consequence of which is the latter is apt to be stimulated by the capricious and unseasonable gleams of sun that we get in some winters, and bursts into bloom at a time when "a frost, a killing frost," is only too likely to damage the blossoms, or, if this does not happen, the flowers are liable to be rotted with wet or snow. Of course this is easily prevented by laying a Fir branch or other protection over the plant.

The formation of a thick root stock of tubers, of fleshy roots, or of large winter buds, may all be taken as indicative that the plant is thrifty enough to lay by a provision for the future, and, moreover, that it adapts itself to falling temperature and other untoward circumstances, and goes to rest. To afford such rest in our uncertain climate is, as all gardeners know, occasionally a difficult matter. In my own experience, which, if personally small, is vicariously large, I find much virtue in a covering of Fern, straw, or a Fir branch.



FIG. 103.—PRIMULA CAPITATA,

Showing long rhizome giving off numerous horizontal branches.

The foregoing remarks apply to plants growing in the open air, or with no other protection than a cold frame in winter. Under glass the requirements are somewhat different, and the conditions likewise. The plant is grown for some special purpose, and the gardener considers not so much the natural "habit" of the plant under normal circumstances, and the way in which he may promote *its* welfare, as the manner in which he can induce it to adapt itself to *his* requirements, and the conditions *he* offers. He may even find it requisite or advantageous to invert the natural course of things—to force when the plant, left to itself, would go to rest, to check growth when the natural tendency would be to progress. For instance, the formation of the Cyclamen tuber is an indication that the plant, under natural circumstances, has a season of rest; and before Cyclamen culture had reached such a pitch of perfection as it has now attained, growers were wont to give the tubers an enforced rest by drying them off. Now,



FIG. 104.—ROOT SYSTEM OF PRIMULA ROSEA.

that practice is quite reversed; and that such an amount of rest as the old growers gave the plant is not necessary under artificial conditions is shown by the fact that the foliage of the Cyclamen is persistent, and no deficiency of food to sustain this prolonged season of growth is to be feared, for food the gardener can give freely and at times when Nature herself might close her stores. This justifies the treatment of the Cyclamen as if it were a bulb with evergreen foliage.

Servile imitation of Nature—such imitation, that is, as we can compass!—is, to say the least, not very much better than mechanical routine. The wisdom of the gardener is shown first in his knowledge of plants and their ways, and next in the skill and judgment which he brings to bear in inducing or helping the plant to adapt itself to unnatural conditions, and to the fulfilment of artificial requirements.

Whether from the point of view of the physiologist, or from that of the cultivator, a thorough study of the life-history of plants is absolutely essential to complete success. It is not given to any to reach the highest standard, but it is a satisfaction to know that every step in the way is a real gain—a link in the chain of true progress—a progress which, at least as far as the community at large is concerned, knows no countermarch. *A paper of which a résumé was read by Dr. Masters at the Primula Conference, April* 21.

IMPROVEMENT OF THE GENUS PRIMULA.*

I ONLY take up this question at the direct request of my brother-florist, Mr. Samuel Barlow, of Stakehill. The subject could not have been in better



FIG. 105.—ANDROSACE LANUGINOSA,

With a side-bud produced on the runner. If pegged down, roots will be produced from this part.

hands than his, nor associated with a name more known and honoured among florists. There is, however, this one thing to temper my regret that I must take his place, and to add value to my paper, that the question I am to introduce is a very old and interesting one between Mr. Barlow and myself. Through all the years of our intimate friendship have we stood together over the Auricula in bloom, and taken careful thought as to the yet richer development of this highly cultured flower, a favourite with us both from boyhood.

THE AURICULA.

Mr. Shirley Hibberd in his introductory paper, historical and descriptive, will have given some definite idea of what the florist's Auricula is; so that I shall not here be using technical terms altogether strange to those not conversant with the properties of the flower, some of which had not been acquired in the dawn of its culture some 300 years ago, nor are even dimly visible in the simplicity of its supposed wild ancestry. If any of the points for improvement should seem minute—perhaps fanciful—I can only say that the highest qualities have, as a rule, been gained only by such gentle gradients and slight curves as these. It is often some delicate touch, small in itself, but great in its effect, that raises a flower at once above the inferior or commonplace. To the accustomed eye the Auricula has an intense individuality, and very slight variations of feature alter an expression, and enhance or detract from a type of beauty.

In a breadth of its brilliant bloom there is the effect as of many eyes turned steadfastly upon their admirers; and there are faces in the flowery crowd on which one may read many expressions of a life and character super-floral. Like as in a bed of Pansies there are many comical casts of countenance, expressive of

* "In what Directions should Efforts be made with the View of Improving the Florists' Flowers belonging to the Genus Primula?" a paper read at Primula Conference for the Rev Francis D. Horner, Lowfields, Burton-in-Lonsdale.



Fig. 106.—Androsace germination,

Showing radicle, caulicle, cotyledons, and primary tuft of leaves

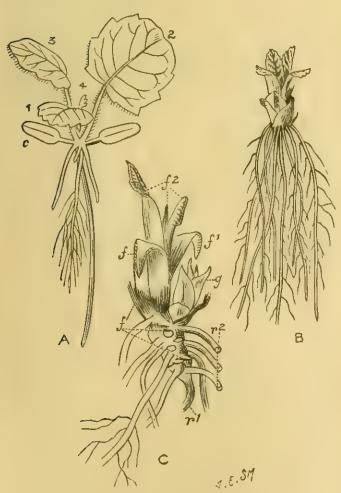


Fig. 107.—Primula elatior.

A, Seedling plant; c, Stalked cotyledon at the top of the caulicle, from which also protrude numerous roots; 1, 2, 3, 4, Plumulary leaves. B, Winter bud arising from the decay of the stock and the detachment of the bud. C, the same, enlarged; r 1, r 2, Roots; f 1, 2, Leaves; g, Side-buds (After Warming.)

astonishment, anxious inquiry, perplexity, and brown study; so here, in an exhibition of the Auricula, as representative of its beauty as can possibly be made, the flowers look all gentleness, candour, honesty, simplicity, and refinement.

Glaring faults that impart a low and evil look are all absent here; and hence I am not able to submit to you how impudent and barefaced is the "pin-eyed" flower, wherein the stigma, protruding from the hollow throat, is like a tongue thrust out. Neither, how loose and vacant is the expression of the inordinately large

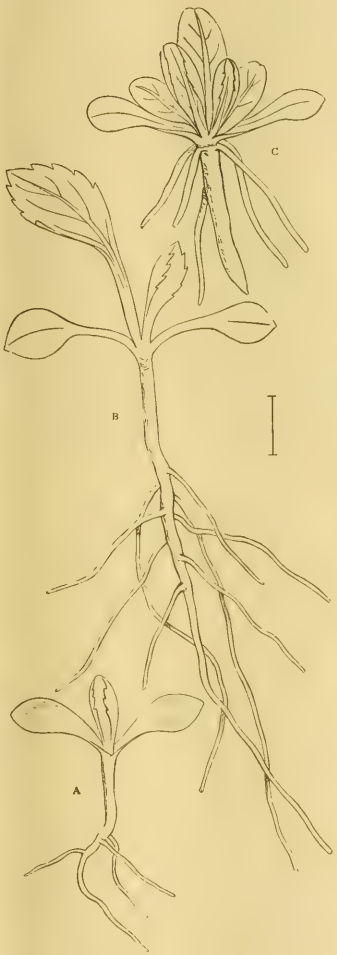


Fig. 108.—Primula vulgaris.

A, Shows the radicle, the caulicle above the radicle supporting the two cotyledons, between which is seen the first leaf with its revolute edges; B, Further stage of the same; the line by the side indicates the real size; C, Stage still further advanced; roots are being given off from the base of the plumule.

tube; and how cunning and cold that of one too small. Nor how lack of breadth in the eye or "paste" of the flower is like that in other eyes which cannot look you in the face; and how narrow ground colours betoken indecision and want of thoroughness. "Edges" have their own expressions, too; something like meanness when too narrow, and akin to bounce in over-breadth; for excess of edge is often concurrent with excess of size, and coarseness, almost inseparable from immensity in the Auricula, is one of its gravest faults.



Fig. 109.—Polyanthus,

Showing branching rootstock with numerous spreading roots and terminal and lateral buds.

Had it been practicable, a representative collection of failures in desired qualities would have formed a very clear illustration of mistakes. Yet I would not say it would be convincing; for invariably the uninitiated friend who comes to tell you, which of all you have, he likes the best, settles his admiration upon something, that has set at naught all proper principles,

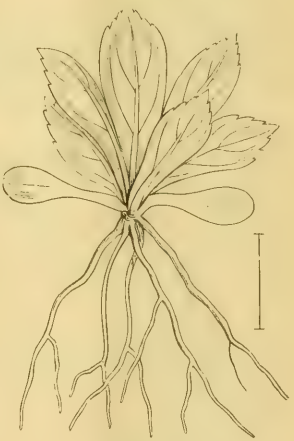


Fig. 110.—Primula verticillata,

Showing the branching and spreading secondary roots (the original radicle has already perished), the two seed-leaves and the tufted many-leaved plumule.

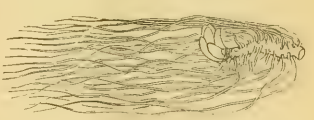


Fig. 111.—Rhizome of Primula cortusoides var. amœna: half real size.

and he does violence to your feelings by approving of it. But the greatest ordeal of praise I ever had was the remark, transparently innocent, of an old country parishioner, "They almost come up to artificials, sir!"

The question in what direction efforts should be made for improving the florist flowers of the genus Primula resolves itself, descriptively, into the statement of the shortcomings more or less prominent and obstinate; prospectively, into what the possibilities are of which hopeful shadows in faint shape are cast before; and practically, in what system of experiments we should seek to overcome the faults, and win into reality the promise of fresh beauties that a flower, inexhaustible in its powers of variation, naturally affords us.

As an experimentalist I will adhere to the practical; use bare description as little as I may, and bring young hopes downstairs from the nursery realms of imagination as considerately as I can.

Properties.

Form.—The first property to be worked for in the Auricula is, I submit, the perfection of that form upon which the colour-attributes of the flower will be the most effectively displayed. Colour can always be worked up to, and the florist may tarry patiently for this until he has the form of grace whereon to call it into play. I always choose as the maternal parent of Auricula seed the best flowers I have in breadth, circularity, flatness, substance, and smoothness of petal; while for male parentage I do not depart further than must be from form. Petals cannot be too broad, so long as they will expand equally and kindly. If they do not meet through narrowness or roughness, the beautiful design of the colour zones is interrupted by vacant spaces signifying nothing.

The edged classes and the selfs have each their own type of error in respect of form. In the "edges" it is generally a pointedness of petal; in the selfs a central notch or heart-shaped depression. In the edged flowers the fault has long been noticed and regretted, and has now been brilliantly overcome especially from the appearing of Lancashire's Lancashire Hero in 1846 onwards; but among the selfs until recent times there was hardly an exception to the rule of notch. The indented petal of the self seemed silently allowed to pass as the typical petal of the class.

Selfs.—For improvement of the self Auricula, my experience convinces me that the best results are to be obtained through entirely self parentage. I would not say that a correct self flower has never come from edged parents, for Mr. Campbell believed that his brown self Pizarro, the best flower in the class at the time, was raised from a green-edged parent, and Mr. Simonite that a good blue self of his was obtained from a white-edged seedling.

Certainly, however, my own best selfs have sprung from purely self parents, and latterly from a self descent comparatively ancestral. Selfs have generally a shorter duration of bloom than the edged flowers which possess greater stoutness of petal, and in which the green, whether pure or mealed, is a colour of greater and more leaf-like vitality.

It might be theoretical to suppose that if selfs were crossed with these, a greater substance of petal would be transmitted. In practice, however, it is found that all seed from purely edged parents produces a majority of self varieties, and vast numbers of these are notched, and frilled, and flimsy flowers. I have never had wilder flights of seedling selfs than from that grand grey-edge, George Lightbody. It would almost seem that an "edge" did not know what a good self ought to be.

I think that for selfs we should work patiently among themselves, advancing in substance as we certainly are by sure if slow degrees, and not weakening the newly acquired and most supreme point of the "rose-leaved" or perfectly rounded petal.

Another point to aim at in the development of the self is the addition of some that would be constitutionally later in blooming than most of those we have. Campbell's Duke of Argyll (rich crimson, but deeply notched) might transmit this habit, and be overruled in this fault.

The Auricula bloom in a collection loses much of its power and beauty when the quiet yet emphatic selfs are gone. It is like the beginning of the end, as when in the fading summer the swallows take their flight.

Edged Flowers.—With reference to improvement in form in the green, grey, and white edges, I would remark that in these, good form beyond its intrinsic value, has an influence inductive of other good properties. Rounded petals are associated with roundness of the white-mealed circle termed the "paste;" while with the pointed petal the paste is often, as by a kind of sympathy, drawn into corresponding irregularities, which only intensify the serious fault of an angular appearance.

For form's sake, naturally, such flowers as have the roundest, broadest petals will be selected; and such a variety as George Lightbody, among those well known and distributed at present, will serve as a type.

If good form in both parents should justify it, my conclusions are that edged flowers should be crossed with their class fellows; for one line of improvement in the Auricula certainly lies in doing all we can to intensify and magnify the class distinctions, gaining green edges as deeply green as possible, and white edges as densely mealed. The "undecided edge," too green for grey, and too grey for a pure green, is not desirable. Still the Auricula is so very sportive, that some decisive edges will be obtained from parents dissimilar in class; and the experiment is justified, of course, if there be no alternative, and if some marked improvement in form may be hoped for from it.

Petals.—Connected with form, in addition to the roundness and level disposition of the petals, may be mentioned their number. This is variable, even in different flowers on the same plant. Five is probably the normal number, for beyond this the Auricula will take a playful liberty with the proprieties of its Linnæan order, Pentandria, always producing just as many stamens as there may be petals; and if one be of inordinate breadth it is accounted as two, and decorated accordingly with two stamens. This may be a botanical misdemeanour, but is not an offence under florist bye-laws. The same is noticeable also in the florist Tulip, which is required to have petals neither less nor more than six, but is occasionally misformed with four or five, and seven or eight, when there is always one attendant anther for each. In the Auricula five or six petals are sufficient for a broad round flower, and more than eight begin to look narrow and laboured.

Colour.—When we turn from improvement in form to views of improvement in colours, both in richness and variety, a very wide field of development lies before the florist. Possibilities peep out but half concealed or only in the rough, revealing themselves in the rarer combinations of colours that a few seedlings crudely show; and these beckonings need but to be followed to obtain in time some new and beautiful combinations.

The Auricula is a most richly endowed flower, possessing already, singly or combined, all colours of the rainbow—violet, indigo, blue, green, yellow, orange, and red; and further still and rarer, that negation of all colours, black. In edges we do not look for a gift of other than the green, grey, and white, now so well known and fixed—while the colours of the paste and tube are constant and common to all. There remains but one more colour zone upon the flower, to give variety and play, and that is the ring or belt of velvety surface known as the "ground" or "body" colour.

Disposed between the green or powdered edge and the white mealed "paste," it is a solid band along its inner edge; while on the outer it flashes in lively pencillings, bold and blunt in some varieties, sharp and delicate in others, towards, but not dashing through to the petal edge. It is this lively characteristic of the body colour that entirely takes away any tameness or monotony, hardness or fixity that a series of strict concentric circles might be supposed to have. The body colour should most certainly have a good solid foundation before it begins to feather off, because a few slight pencillings only have a very feeble and scratchy effect, while a bold and rugged style of its outer edge is massive and handsome in the extreme. But by an expressionless ring of black, dreary as a black hatband round a white hat, I would not advocate taming the Auricula down to the miniature similitude of an archery target. Such a picture of utter and unbending primness (for which the botanical equivalent is not Primula) as a series of severe circles may indeed have been in old time perpetrated in hard diagram; but this was only as the bare skeleton which Nature in real life shall clothe with all fulness, softness, and grace and vivacity.

The body colour is the "iris" of the flower's eye, and black is at present the most settled colour. A good black is very safe and true, lasting well upon the flower, a most important point; and hence it has been a favourite colour, especially with florists in the North, and the more encouraged, pursued, and developed. Indeed other body colours were regarded with marked disfavour by old Lancashire florists, though if other colours had been worked up to the truth and steadfastness of the black, there is nothing but local fancy or prejudice to make them less valuable and less beautiful. Little encouraged in such variety, the Auricula has shown a capability, if only initial yet, of giving both blue and crimson as the ground colour in edged flowers. These will of course require cultivating up to intensity and steadiness, and I submit this as a very interesting new path of improvement.

One marked difficulty so far has been that of transmitting to any flower, whether self or edged, the all-important feature of a rich gold tube, if that flower has tints of violet or blue. Their tubes are pale or greenish-yellow, always a colour of low vitality and weak endurance. Some seedling blue selfs, however, by pollen from gold tubed varieties, are better in this respect than the old blues.

Memories come back to me here of some old flowers that might have been helpful towards new combinations of colours that are faint and timid, and wavering yet.

Such were Moore's Violet, a green-edged flower, with violet body colour, and a green edge of Traill's (Rev. George Jeans), in which the ground colour was of a lilac tint. In white edges were Ashton's Bonny Lass, with beautiful violet, and Maria, richer in colour. These, however, and others of like colour, all were weakened by a pale and watery tube; and further, the ground colour was not of one uniform steadfast shade, as it decidedly ought to be in both edged and self Auriculas. Red or crimson as a ground colour of edged flowers has not yet been obtained of any intensity. Lightbody's Fairy Queen and Star of Bethlehem, and also Smith's Waterloo, were green edges, in which the body tints were a shade of red-plum, and a white edge of McDonald's was lighted up with a brighter red. Chocolate-brown is another possible change in ground colours worthy of being followed up. It occurred in Lightbody's white edge Countess of Dunmore, and in Smith's Ne Plus Ultra. These red and brown ground colours are happily not associated with the weak tube colours of the blues.

Mr. Simonite, in his Heather Bell and Aurora, has better blue-grounded white edges than the old ones, and the tubes, though not of a strong yellow, have more stability. An offer of a red-grounded green edge occurs in a rather erratic seedling of Mr. Rolt's. The edge is pure but insufficient, and the red ground colour brightens with age but is too broad, and runs wildly out at the petal edges. Such a flower would be worth crossing with some green-edge seedling of fine form, in which existed the fault of a ground colour much too slight and narrow.

In new types of colour in selfs the last great acquisition came through Mr. Campbell's success in his efforts to produce a true crimson self. Some fifteen years ago he sent out, as the result of many years' work abounding in failures, two intensely crimson flowers — the one better than the other, both in its colour and its rich gold tube, but both of them notched in petal. These flowers have transmitted their colour well to seedlings of better petal.

Within the last two or three years another new and very beautiful break in self colours has occurred among both Mr. Simonite's seedlings and my own, showing yet another direction in which we may seek to enrich and improve the Auricula. This new colour is a very lovely and decided pink. The flowers have happily been nearly always gold-tubed, and the petal is a fully rounded type. This young colour, however, is not easy as yet to obtain solid—*i.e.*, unshaded and steadfast. Some have failed by growing slightly paler with age, or in losing with age the surface of the petal; so that what is velvet at first, is calico at last.

There is no doubt, however, that the true pink self is a coming flower, and I name it as one illustration more of the direction in which the Auricula may be improved.

I have spoken of the failures of this newly-won colour—the successes must speak for themselves when they can.

Adolescence.

There is something very curious in the blooming character of the first three years' life of an upgrown seedling which it is important to mark and allow for, because it certainly is connected with the practical part of our question.

It is not an invariable rule, but it is a frequent occurrence for a seedling that blooms with brilliant properties in its maiden year, to flower the second year in much inferior if not loose character. This is oftener the case with the complex edged flowers than with the simpler selfs. At the third year the flower may either return to its early promise, or go again astray. I do not know how to account for it, but it is a noticeable feature in a long experience.

It would seem as though the plant were affected by some unseen change or turning point in passing from its seedlinghood to becoming an established variety. Certainly some seedlings that show brilliant properties the first year never afterwards display them; and occasionally others, that one has gladly given away to friends with garden borders have, like the "ugly duckling" of the story, developed into very swans of excellence.

I mention this, not only that joy over some sudden acquisition may be tempered with gravity, but also that doubt may be not unlighted with hope.

I do not cease to feel some anxiety for a brilliant seedling, and some hope over a rather disappointing one, till I have seen them at their third bloom. Some faults are decisive, such as the pin-eye, the pale tube, the angular paste, the notched or pointed petal. Of such there is no hope. But if properties of tube and paste and petal are fine, I do not discard the seedling because, at its maiden bloom, the proportions and other qualities of the ground-colour and edge may not be correct. There may be a good flower in disguise.

Alpine Auriculas.

I pass on now to a brief notice of that other division of the Auricula as a florist flower, which is technically known as the Alpine. These very beautiful flowers possess, as features of distinction from the edged classes and selfs, a perfectly unmealed centre or eye, and petals richly shaded from the deepest to the lightest tints of that one colour which the flower has adopted. That shading cannot be in tints too numerous or too softly blended.

The tube of the alpine so closely follows in colour the centre of the flower that it should have an expression in form all the more marked, because there is the less power of contrast with the centre by colour. It is a great point of beauty in all Auriculas, that the mouth of the tube should be well defined, and rise fully to the level of the flower's face, otherwise there is the appearance of a weak and sunken eye.

The Alpine Auricula is divided into two sections, distinguished by the golden, and the paler, almost primrose-coloured centre. The golden centre is the higher type. In the Alpine, as in the edged flowers, it is again the flowers possessing violet or bluish colours that exhibit the palest yellows in the tube and eye. Flowers would no doubt be very highly valued in this class of violet shades if they could be obtained with the rich golden eye of those with crimson.

The Polyanthus.

I must not close this paper without including the florist Polyanthus, a lovely sister of the Auricula, and in sore need of reinforcement in sterling varieties. Some of the very best Polyanthuses, like Kingfisher in the red ground flowers, are lost to cultivation; and among black grounds of high merit, Lord Lincoln seems all but gone. Many garden strains of Polyanthus are termed "gold laced," but they are a far remove from the florist flower with its cultured properties. The resemblance in most of them looks nearest when seen at the greatest distance. The decision, purity and refinement of our Polyanthus are not in them.

Mr. Barlow's success in raising both black and red ground flowers of very high character, perhaps in red more especially, is a proof that though the flower may not be more ready than its radiant sister, the Auricula, to give the properties we would have, still it will repay all good care bestowed in judicious crossing.

I do not think that any foreign blood of strains outside the florist pale, however proudly spoken of, should be introduced under the plea of giving vigour, which the standard old sorts have, alas! too often lived to lack. From such extraneous source of robustness will come much unruliness. A more safe return to soundness of constitution will be naturally obtained through seedlings, because seedlings naturally possess it, and happily young blue blood is no exception to the rule.

For suggestions of improvement in the Polyanthus I can but briefly state the properties that require to be exemplified in as many living representations of their beauty as we can obtain. The two brilliant extremes of class colour will be a black ground, or a scarlet ground within the lacing of bright yellow. Whatever the body colour be, it must consist of one rich uniform shade; and the yellow, which is best when a clear lemon-gold, must be free at the eye or centre from any other shade of yellow. The gold of the lacing must exactly match that of the eye, and the lacing itself must be of exquisitely smooth edge and even width. It must both completely edge the petal and strike down through the centre of it to meet the golden eye. The central line of lacing is frequently broader down the middle of the petal than round the edge, but the nearer it is of the same width the better.

It is characteristic of the Polyanthus petal to be deeply notched in the centre, so that the circular edge of the Auricula petal is not looked for here.

The centre or eye of the Polyanthus should occupy a wide circular space upon the flower. It can hardly be too wide, and is often not wide and circular enough.

The mouth of the tube should be extremely well defined, and even most slightly raised above the level of the centre. As in the Auricula, the tube should be filled with bold anthers up to the surface, with the stigma almost sessile below; and all flowers should expand equally and well.

These are the points to be attained and strengthened in the improvement of the florist Polyanthus; and it will readily be seen how far these lines of beauty, which give such brilliance, purity, and refinement, lie beyond the comprehension of the common garden border strains, and how far too few are the beautiful florist Polyanthuses we have that fulfil this standard. *Francis D. Horner.*

The Flower Garden.

EDGING PLANTS.

Edgings of Echeverias may now be safely planted, the perpendicular style is unnatural, they appear to most advantage if the first line be planted on a slope and the second on the level. If not already done get all hardy edgings planted, also the groundwork for carpet beds. Where the beds become vacant as the spring occupants cease flowering, give a good dressing of well rotted manure, or well dust them over with bone-meal and blood manure, and have them dug up ready for the reception of intermediate stocks, or others of the more hardy sorts of bedding plants.

Herbaceous Beds and Borders.

These should have had attention as formerly directed, but many of the occupants are later in starting into growth than usual, and they may yet be safely divided and replanted. The winter tested the hardiness of most plants and some few have succumbed to the cold. Successional sowings of hardy annuals may be made, and a few of the half-hardy may now be also sown in sheltered positions where the soil is congenial; but where the soil is heavy, and consequently cold, it is better to raise all such under protection and plant them out in the latter end of May.

Rose Beds, &c.

All Roses should now be pruned and tied where necessary, also all climbers on walls and trelliswork. The present month has been favourable to all newly planted trees and shrubs, almost daily showers obviating the necessity of the waterpot and syringe. Let all turf laying be as speedily as possible brought to a close.

Propagation.

Push forward as rapidly as possible the propagation of bedding plants; Coleus, Alternanthera, and Iresine, may still be propagated, as they are amongst the last subjects to be transferred to the open ground. Pinch the points out of Pelargoniums to keep them stocky; these may be inserted as cuttings. They will soon root now, and come in handy for edgings or small beds. They are more serviceable for lifting in the autumn than larger plants, and plants lifted in autumn, and stored in boxes and potted into 4-inch pots in spring, flower more satisfactorily; and should the summer prove sunless and wet, the autumn-struck cuttings will be more liable to run to wood. Pinch the straggling points out of Calceolarias, and see that they do not suffer from want of water. Continue the hardening-off process with bedding plants; give no more water than is necessary, while the weather is so changeable, and water early in the morning should there be the prospect of a sunny day. Rather let all plants which have been removed from houses where artificial heat has been used be on the dry side for some time after being turned outside.

Keeping.

Neatness should now pervade all departments of the ornamental garden, grass should be frequently rolled and mown, grass edges should be trimmed with the edging shears after the mowing machine or scythe. Walks should be swept and rolled once a week—wet weather should be taken advantage of to roll them. The surface should be as smooth and even as pavement, so that the wearers of the thinnest soled boots may not be sensible of treading on gravel. *W. M. Baillie, Luton Hoo Gardens.*

Hardy Fruit Garden.

STRAWBERRIES.

For general purposes, and especially where the labour is limited, no better practice can be followed than that of annually planting out the necessary number of plants from the old forced stock to replace exhausted beds which are fruiting this season for the last time. As the plants are removed from the forcing-houses, at least the earliest batches, they should be placed under slight protection for a time, and when they have become inured to the lower temperature, finally planted out into the kitchen garden quarters with the least possible delay. The sooner the plants are transferred from the pots to the open ground the better the chance of a good crop of fruit the ensuing season. Plants growing in the open ground over which some kind of glass protection was placed several weeks ago will now be expanding their blooms. After the fruits are set they may be rapidly matured by syringing overhead and closing early in the afternoon. If mulching of the ground between the rows of main plantations has not yet been attended to, no time should be lost in doing so, as this work can now be executed much quicker and more efficiently than if left until the plants are more advanced.

Fruit Tree Protection.

Where Spruce branches, &c., have been used for the protection of the blossom of Peaches, Apricots, &c., care must be exercised that the branches are not allowed to remain too thickly, to the exclusion of light to an injurious degree. As soon as the fruits are set the branches should be removed by degrees, by cutting away a part in accordance with the weather and the advancing state of the foliage on the trees. Protecting in the shape of blinds on rollers or strips of tiffany removed and fixed daily should be still continued as a safeguard against early morning frosts, which otherwise might yet prove destructive if precautions are not taken.

Insects and Disbudding.

Black and greenfly often put in an appearance most unexpectedly, so that trees should be examined frequently to enable the remedy to be applied in time and before the trees are badly infested, or the labour of eradicating them will be quickly increased, and the young foliage much disfigured in consequence. Disbudding must be done lightly at first on outdoor trees, and nothing like so freely at the commencement as is generally practised with trees under glass. On the other hand, any particular shoots badly infested with fly should be disbudded freely, as the tobacco-powder can then be used more effectually. Affected shoots, after the first powdering should be thoroughly syringed every second or third morning, and the powder renewed as often as is necessary.

Raspberries.

Any good manure, or even half-decayed straw, can be usefully employed as a mulching between the rows of canes. A dressing of fertilising manure, such as from a cowyard, would greatly improve the size and quality of the fruit, and would add greatly to the chances of getting a more continuous supply should the season prove a dry one. *G. H. Richards, Somerley, Ringwood.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	April 27	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Show of the Royal Botanical and Horticultural Society of Manchester.
WEDNESDAY,	April 28	Sale of the First Portion of the Lovatt Collection of Orchids, at Stevens' Rooms (two days) Sale of Carnations, Roses, Greenhouse Plants, &c., at Protheroe & Morris' Rooms.
THURSDAY,	April 29	Continuation of the Sale of the Lovatt Collection of Orchids, at Stevens' Rooms. Meeting of the Société Botanique de France.
FRIDAY,	April 30	Sale of Imported and established Orchids, at Protheroe & Morris' Rooms.

WHY should the politicians have it all their own way? Why should they monopolise one of the fairest flowers that grow? Why should those who love red Roses and white ones too, be compelled to make choice of one or the other, and assume an aggressive attitude accordingly? In gardening we know none of these artificial distinctions. We may have our private opinions about alpines and selfs, pin-eyes and thrum-eyes, green-edges and paste, and meal, and all the rest of it, but we are all of us quite imperial and catholic in our love and cult of flowers; we none of us like to see our woods and hedgerows denuded of their fairest ornaments to make a party badge, whatever the party be. We are all staunch conservatives in this matter, and as conservatism is founded on self-interest we most devoutly hope that the genuine horticultural trade of the country may profit by the Primrose League, and that devotees will give such liberal orders to the nurserymen that they may be induced to grow what is needed, and obviate the wholesale destruction now practised by a ruthless proletariat. Nothing is more certain than that, if an adequate supply is to be kept up, Primroses must be grown; and when they are grown few will regret it even if they are used as badges. To turn an honest penny is one thing, to destroy Old England's floral constitution is another.

The Royal Horticultural Society, and the National Auricula Society, whether Southern section or Northern section, in their serene neutrality know no more of party badges than we do in these pages. Nevertheless there is no denying that the Primula Exhibition and Conference have been both opportune and successful.

Such an exhibition of Primulas and plants thereto allied has not been seen before in London or elsewhere. Auriculas and Polyanthuses, of course, have been shown before, and perhaps better than on this occasion, for the season has not been favourable to them. Cyclamens were absent, and even Chinese Primroses and the varieties of Sieboldi were scarcely represented; but of species of Primula proper apart from florists' varieties, never has such a collection been got together. After the display of quaint and gaudy Orchids of last year, or the luminous banks of Daffodils, the Primroses must be pronounced relatively ineffective in the mass; but when looked at individually the genus Primula, with its lovely soft tints of colour, from snow-white to lilac, from yellow to magenta and purple, may claim to hold its own with any. Probably every country in the world that grows Primroses was represented: there was the tiny Canadian P. mistassinica—so called from the lake on whose borders it was first found—to the magenta-flowered P. Rusbyi from New Mexico. The lordly P. japonica, as well as P. Sieboldi and obconica, represented the riches of Japan. The Himalayas yielded of their wealth and abundance the lovely P. rosea (some magnificent forms of which were shown), the wonderfully varied P. denticulata, the pale rosy-lilac P. erosa, the yellow floribunda, with its Strawberry-like runners; the pale lilac involucrata, with leaves more like those of a Cochlearia than a Primrose. These and a dozen more attested the wealth of those Indian mountains. Abyssinia sent its clear yellow P. simensis with its floury leaves, and which label-writers not unnaturally write simensis, unmindful of their *Chronicle!* - Turkestan was represented by the elegant and extraordinary Kaufmannia, shown by Professor FOSTER. Its soft Heuchera-like leaves and its nodding raceme of pale yellow funnel-shaped flowers are distinct from anything else so far as we know. Europe, of course, was largely represented. Many of the European species and hybrids were shown, including the rare (in cultivation) P. dolomitis, P. Obristi, the white Soldanella, and many others. If Australia found no place that is because, unfortunately for it, Australia has no Primrose.

Among home collections was a wonderful flower shown by Mr. R. DEAN, and appropriately named "Evolution." It is an Auricula which is very naughty indeed according to the florist's ideal, rough and unlicked, but with semi-double flowers of a deep lilac shading off into white, and 2 inches across, more like a double Petunia than a Primrose, and opening up a world of promise in the future. The doubleness consisted in a change of the "thrum" or anthers into petals. Miss OWEN showed another curiosity in the form of a Primrose with a green corolla, while, of course, our old friend Jackanapes, with its leafy calyx, and other varieties with petaloid calyx and hose-in-hose flowers, were not wanting. Dr. HOGG showed the true British Oxlip, the Bardfield Oxlip, and a seedling from it running into the Polyanthus type. Mr. WILSON had his remarkable blue Primrose Scott Wilson, with flowers of a deep blue tinged with red and a yellow eye.

Miss JEKYLL had a bank of border Primroses grouped on an undulating bank of moss—very charming, and Mr. BOSCAWEN sent from his woods such a collection of coloured Primroses as we never set eyes upon. Clearly in Cornwall there are more Primroses than yellow ones.



FIG. 112.—PRIMULA STUARTII.

For the details of all this galaxy of beauty—for the names of the prize winners and those of the plants—we must refer to another column; suffice it to say that many of our foremost amateurs followed the lead which Mr. LLEWELYN so well set them, and that many of the nurserymen showed how well they could supply the requirements alike of the curious and of the populace. From far off Transilvania came a small group of P. carpatica through the kindness of Professor KANITZ, of Kolosvar. Dr. ASA GRAY sent, through Messrs. VEITCH, P. mistassinica, and Dr. VON REGEL P. algida. Other foreign collections which had been promised were not sent, for the reason that in many cases the winter has not disappeared and the plants are not in bloom; Mr. SENTNER, of Munich,



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however, forwarded a most beautiful series of water-colour drawings of plants in his collection, some of which were mounted for exhibition by the kindness of the Kew authorities. Other contributions from abroad, in the shape of copies of a list of European species by Mr. Stein, and seeds of new and rare Indian species already alluded to.

Our Botanic Gardens, we are specially glad to see, were well to the fore. Naturally Kew took the lead, but Edinburgh and Glasnevin were not far behind. We look upon the presence of these official collections as particularly gratifying, and heartily thank the authorities for showing thus practically the intimate alliance between botany and horticulture. Horticulturists look to Botanic Gardens for novelties and new departures, for illustrations of available plants, and for hints and suggestions, such as can only be afforded by similar establishments. To Mr. Dewar, Mr. F. Moore, and Mr. Lindsay, great credit is due for their specially interesting and beautiful collections. Mr. Dewar, too, has added to our obligations by issuing under the authority of the Director at Kew, a complete list of all the known species and recognised forms of the genus Primula, copies of which were distributed at the Conference.

Hybrids artificially raised, and so-called natural hybrids, such as the lovely dark violet P. Dinyana × shown from Kew, were shown in abundance. Among the former were a hybrid raised by Mr. Llewelyn between the true P. Auricula of the Alps (of which numerous specimens were shown) and a self Auricula called Petronella. Its soft yellow flowers with a white paste were very beautiful. Another hybrid between P. Arctotis (nivalis hort.) and a yellow Auricula had large creamy flowers, that seemed more than half-way on the road to a white self Auricula.

Of the proceedings of the Conference mention is made in another page. All that we need here say is, that the papers were good, and that the discussion was excellent from a practical point of view, and alone justified the existence of the Conference. In addition to Mr. Sentner's drawings, Mr. Stein's pamphlets, seeds from Dr. Duthie and Dr. King, dried specimens of Turkestan species were communicated by Dr. von Regel from St. Petersburg, and similar specimens from Canada by Professor Maccoun. On the whole, it may be said that if the Royal Horticultural Society has had many more gorgeous and comprehensive shows, it has never had one more interesting, or in its way more useful, than this.



Fig. 113.—A primrose by a river's brim.

—— The Phylloxera in France. — This malady still makes great devastation in the wine districts in spite of the energetic measures taken against its diffusion. The prize of 30,000 francs offered by the Government has brought forward no remedy that answers the requirements, so that the means for the destruction of the pest are those which have been previously recommended and with only partial success hitherto. It is notified that several departments have become infected, and that others have received permission to employ the American Vines, which are either wholly or but little susceptible of injury from the Phylloxera. Since its introduction into France over 1,000,000 hectares have been destroyed, but so rapidly have new plantations been laid down that at the present time not more than 500,000 hectares are fallen out of Vine cultivation—about one-fifth of the whole area under Vines. By ministerial *décret* fields for demonstration (*champs de démonstration*) are to be set apart, wherein infected Vines will be practically treated for the instruction of the wine farmers, and from which good results are expected. The insect has appeared in a few vineyards in Algiers, and the difficulty of meeting the danger there is increased by the refusal of the shipping companies to transport the rather dangerous compounds used in its destruction.

—— Forms of Seedlings.—Sir John Lubbock is to deliver a lecture on this subject before the members of the Royal Institution on Friday, May 21.

—— THE COWTHORPE OAK.—The *Yorkshire Weekly Post* of March 27 contains a figure and a pleasantly written article on the Cowthorpe Oak, but we miss any account of the present dimensions of the tree, which would be of interest in comparison with the previous record in 1776, when it measured 16 yards in circumference, and 80 feet in height.

—— FLORA OF BRITISH GUIANA.—Mr. EVERARD F. IM THURN read an interesting communication thereon at the Linnean Society on April 15, more especially dealing with the curious vegetation of the celebrated Mount Roraima, which he ascended in December last. The top of this mountain is composed of a great plateau of sandstone, everywhere worn into most rugged and fantastic columns, the crevices of which are clothed with supersaturated vegetation, and the hollows filled with pools and marshes. Rain clouds continuously hang overhead, and the superabundant moisture overcharging the pools pours in great waterfalls here and there over the cliffs. The magnificent Cattleya Lawrenceana grows abundantly along the base of the Roraima. Three new genera and fifty-four new species of plants have been determined as the results of the expedition. The waters of Roraima send streams which pass in different directions, and respectively flow into the rivers Orinoco, Essiquibo, and Amazon. Roraima, and the neighbouring Mount Kukenam, are therefore probable centres whence peculiar vegetable forms may have originated and distributed themselves over a wide area. Regarding the flora of Guiana as a whole three distinct zones of vegetation may be distinguished — one, the cultivated strip of coast land, another the forest which clothes the upper slopes of the country, and the third the high savannahs of the interior.

—— ABIES DOUGLASI.—Mr. WEBSTER sends from Penrhyn Castle a singular growth in the Douglas Fir precisely similar to the specimen we lately figured of Pinus silvestris. The mass is some 7 inches in diameter, and its present state, with its bright green leaves and prominent red buds, is very attractive. It would make a desirable plant on the rockwork.

—— COLONIAL AND INDIAN EXHIBITION.—We hear that the services of Mr. DICK, the able clerk to the Royal Horticultural Society, have been kindly granted by the Council to the Commissioners of the Colonial and Indian Exhibition, for whom he will act in the capacity of superintendent of entrances.

—— EXHIBITION FIXTURES.—The East Gloucestershire Rose Society's Exhibition will take place at Moreton-in-the-Marsh on July 13, and as liberal money prizes are offered, a good show will doubtless result. The annual exhibition of the Acton Horticultural Society will take place on Wednesday, July 28.

—— NORTH OF SCOTLAND HORTICULTURAL ASSOCIATION.—The usual monthly meeting of this Association was held on Friday, April 16, in the Christian Institute, Aberdeen. Mr. D. M. SMITH, in the absence of the President, occupied the chair. There was a fair attendance of members. The Secretary (Mr. REID) read a paper from Mr. P. W. FAIRGRIEVE, The Gardens, Denhead, Dunkeld, on "The Formation of Fruit Borders for Hardy Fruit Trees." The communication was certainly practical, but not so comprehensive as might have been expected. A capital discussion followed the reading of the paper, at the close of which a cordial vote of thanks was passed to Mr. FAIRGRIEVE for his communication. Six bunches of Chrysanthemums were exhibited from Mr. M'GREGOR, Sunnybank, near Aberdeen, for which he was awarded a Cultural Certificate. A vote of thanks to Mr. SMITH for his conduct in the chair terminated the proceedings.

—— PULTENÆA ROSEA.—More than seventy species of this Australian genus are known, consisting of small or slow-growing evergreen shrubs. A considerable number have been introduced from time to time, but few of them are represented in collections at the present day owing probably to the neglect suffered by hard-wooded plants in general of that class. P. rosea, with clear rose-coloured Pea-flowers, is one of the few exceptions with regard to colour in the genus, the greater number being of some shade of yellow or orange. The species under notice is of comparatively recent introduction, and well adapted as a companion plant for contrast with the yellow-flowered kinds. It is dwarf, twiggy, and much branched, judging from a specimen flowering in the greenhouse at Kew, and from its apparently slow rate of growth may never much exceed 18 inches in height. One singular feature of this plant is the apparent narrowness of its leaves. This arises from their margins being rolled inwards, nearly hiding or covering the entire upper surface, just as they are revolute in Heaths. This is characteristic of a dry atmosphere in its native country, and doubtless bears some relation to the distribution of the stomata and the structural anatomy of the leaf. The flowers are produced in an apparently terminal fascicle or cluster surrounded by bracts, but growth commencing the axis soon elongates, bearing leaves, and showing the flowers to be lateral. This plant is figured in the *Floral Magazine*, N.S., t. 259.

—— HORTICULTURAL CLUB.—The usual monthly dinner and *conversazione* were held on Tuesday last, at the rooms, 1, Henrietta Street, Covent Garden, when there was the largest attendance that there has been during the present session, amongst those present were Mr. John Lee (Chairman), the Rev. C. Wolley Dod, the Rev. F. H. Gale, Dr. Hogg, Messrs. H. J. Veitch, Cousins, G. Paul, W. J. Jefferies, T. W. Girdlestone, J. D. T. Llewelyn, G. Prince, C. P. Wheatstone, C. T. Druery, R. B. Cates, T. P. Collings, J. F. Cooling, C. Pearson, &c. The discussion was opened by an interesting paper by the Rev. C. Wolley Dod on the Pseudo-Narcissus section of Narcissus, and was continued by Messrs. Llewelyn, G. Paul, Cousins, Dr. Hogg, and others. The discussion at the next meeting will be opened by Mr. Geo. Paul, on the "Bog Garden."

—— PTERIS SERRULATA VARIETIES.—This small-growing evergreen Fern is perhaps one of the most useful of plants for greenhouse or room culture, and for furnishing small Fern-cases. It is also remarkable for the variety of form which it has developed under cultivation. Mr. HEMSLEY sends us, from Mr. MAY's nursery at Edmonton, a series of fronds which illustrate this variability in a very interesting way. The type, it will be remembered, produces long, narrow, ribbon-like pinnæ and pinnules, which are distinctly serrulate towards the narrowed apices. One of the earlier modifications of this was the narrowing of the pinnules, which gave rise to the variety angustata. Another of the early varieties was that called cristata, of which many modifications have been raised from spores varying in the dwarfness and compactness of the plants, and in the closeness and symmetry of the cresting. A tall and very handsome form is the serrulata major cristata, which appears to have been first heard of at Chiswick when Mr. BAUER had these things in charge. Amongst Mr. MAY's lot the most distinct is one which may be called parviceps; it is a dwarf form, sometimes with ramose stipes, narrow short pinnæ, and pinnules almost uniform in breadth throughout, and terminating in a small bluntish crest, often not so much as twice the breadth of the pinnule itself; it is, perhaps, too stiff-looking to be considered very ornamental, but as a well marked form it is worth growing. The cristata compacta of Mr. MAY's collection is another desirable variety, having broad dense crests, and a compact style of growth which assimilates it with some of the best forms of cristata itself. In some of the forms which have appeared the terminal crest has grown into a loose bunch of long, narrow, ramose segments.

—— TOBACCO CULTURE BY FARMERS.—The *Daily News* of April 19 states:—"Under authority from the Lords of the Treasury the experimental cultivation of Tobacco is to be permitted in the United Kingdom. Any occupier of land intending to plant Tobacco must, on or before May 5, give notice to the Secretary of Inland Revenue, Somerset House, setting forth the extent of the land to be planted, and the place, parish, and county where situate. Bond under approved securities will be required in a penalty of £100 if over an acre of ground be cultivated, and £50 if under an acre, in order to secure that all Tobacco grown and gathered shall be removed to drying rooms and kept there until properly cured, when it shall be packed in bags, bales, or casks of an approved size, and must then be weighed by a revenue officer. After weighing the packages the duty must be paid, or the Tobacco be deposited in an approved customs or excise warehouse. In answer to letters addressed to the Inland Revenue Department by the Ensilage Society, of which Lord WALSINGHAM is President, and Mr. KAINS JACKSON Hon. Secretary, replies have been received that permission will be granted to certain responsible agriculturists named by the Ensilage Society to make experiments in the growth of Tobacco, provided they comply with the memorandum printed above."

—— DR. FARLEY.—This well-known horticulturist, whose name is commemorated in the handsome Adiantum Farleyense, died recently in New York.

—— GARDENING APPOINTMENTS.—Mr. JOHN WALKER, late Gardener at Hognaston, Ashbourne, Derbyshire, has been appointed Gardener to A. SOAMES, Esq, Waltham Old Hall, Grimsby.—Mr. ROWALLAN FRASER, lately Foreman at Salisbury Green, Edinburgh, has been appointed Head Gardener to R. H. MEASURES, Esq, Woodlands, Streatham, London.—Mr. ALEXANDER MCLEAN, lately Foreman at Park Hall, Polmont, N.B., has been appointed Head Gardener to H. ANDREWS, Esq., Swarland, Felton, Northumberland.—Mr. ROBERT HEGGIE, lately Gardener to Lord President INGLIS, Logan Bank, Milton Bridge, has been appointed Head Gardener to THOMAS S. AITCHISON, Esq., Monkwood, Edinburgh.—Mr. BENJAMIN SUTHERLAND, at present with Mr. JOHN DOWNIE, Nurseryman, Edinburgh, has been appointed Head Gardener to MACONOCHIE WELLWOOD, Esq., of Meadowbank, Kirknewton.

VIEW IN THE PALM-HOUSE AT KEW.

THE gigantic structure which at Kew is devoted specially to the cultivation of Palms, Cycads, Bamboos, Pandani, and other noble foliage plants, is the largest tropical plant-house in existence, its entire length being 362 feet, by 100 feet in width, and 66 feet in height. Built in 1846-8, from a design by Decimus Burton, Esq., it has from that time till now been a happy home for hosts of all kinds of large trees from tropical countries; Bananas, Mangos, Malay Apples, Anchovy Pears, and many other tropical fruits have been produced on trees grown in this house. Palms of all kinds have found space in it to develope to something like what they are in their native homes, and the same may be said of the Pandani, a species of which, viz., P. odoratissimus, the Giant Screw Pine, is now a magnificent specimen, reaching from floor to roof, and almost filling the whole of one end of the house. The collection of Cycads at Kew has developed into one of the greatest richness, both in number of species and in the size and health of the plants, this order having been for some years the subject of much care and study on the part of the Director, Mr. Dyer. Previous to the year 1877 the heating arrangements for this house did not permit of the cultivation of many interesting tropical Palms and other plants, but an improved hot-water apparatus being in that year adopted a marked difference has since been observable in the health and beauty of many of the hot-country plants, and it has become possible now to grow in this house such desirable Palms as the Cocoa-nut, Caryota Rumphiana, and other species of this handsome genus. The smaller plants, too, which are grown on the side stages and planted out in the beds, are now much more satisfactory than before a higher and more regular temperature could be commanded. During the last few years the Palm-house has been universally admired because of the richness of the collection it contained and the good health and condition of the plants generally; and although just now many of the tenderer plants show traces of the excessive fire-heat which has been necessary during the past trying winter, with the return of summer weather an improvement may be expected. In the photo-view presented with the present number, we get some idea of the luxuriance and beauty of the plants as seen during the summer, and this is but a small corner of what prevails all through the house. The beds in the central portion of the building are much better suited for the large Palms, Aroids, &c., which they contain than any system of pots or tubs would be. Nothing could be more like a view in a rich forest jungle in the tropics than what may be seen in this house when looking from any point in the neighbourhood of these beds. We have not ourselves

seen a tropical forest jungle, but those who have been more fortunate declare that the Palm-house at Kew is at least as fine as anything the tropics contain. This is what one might expect, seeing that selections from the flora of all parts of the tropical world are brought together and arranged with natural effect in this one large house. The beds we refer to have been added since the first completion of the house, and seeing how great an improvement they are in every respect we would suggest that the whole of the central parts of the house should be composed of beds in which the specimens could be planted, instead of, as now, standing in large pots and tubs, always unsightly, over iron gratings, through which in winter a fierce dry heat is ever passing directly upwards to the under-sides of the leaves. All good cultivators know how bad such an arrangement must be for the management of tropical plants. Returning now to our view* (see supplement) of a group of mixed specimens, taken from plants in their permanent positions, we have in the foreground a grand example of one of the handsomest Australian Cycads, viz., Macrozamia Denisoniana (syns. M. Macleayi and M. Peroskiana) — a free-growing and very desirable stove plant, of which Kew possesses some grand specimens. To the right of this plant is a specimen of Cycas Rumphii, a near ally of C. circinalis, and by the side of this stands one of the enormous plants of Encephalartos that are splendid features of the house. Backing these three Cycads is a tall Dracæna and a very large clump of Rhapis humilis, here grown up to a height of 20 feet, and about half that distance through. To those who know this handsome tufted Palm only by the small plants of it usually met with in gardens this giant specimen is truly astonishing. The broad-leaved Palm is the finest example we know of what has come to be known as the Thief Palm, owing to a plant of it having been stolen from Kew on its first introduction into Europe from its home in the Seychelle Islands. The name Phœnicophorum was given to commemorate this act of pilfering, but it was afterwards replaced by the present name, viz , Stevensonia grandifolia. The large foliage of this Palm is thickly blotched and spotted with yellowish-brown, and it is related that when a specimen was shown for the first time amongst a group of new plants the judges passed over the collection as discredited by the shockingly bad health of the Stevensonia revealed by these brown blotches! The pinnate-leaved Palm in the extreme left-hand corner is Phytelephas macrocarpa, the seeds of which constitute the "vegetable ivory" used in turnery for chessmen, buttons, &c. The trunk seldom rises more than a few feet, trailing frequently 20 feet upon the ground. The seeds are produced seven to nine together, in hard clustered capsules, each head of six or seven of which weighs about 25 lb. when ripe (*vide Kew Guide*). The plant shown in our picture has only a short stem, from which the feather-like leaves rise to a height of about 20 feet. The genus is dicecious, the Kew plant being a male; it flowers annually, and on first opening the flowers emit a most powerful almondy fragrance.

Planted beneath the shade of these Palms are large growing kinds of Calathea (Maranta), Calocasias, dwarf Musas, &c. Since our view was taken the beds near it have been lengthened and some of the plants here shown have been replaced by the Sugar-cane, Cocoa-nut, and Licuala (Pritchardia) grandis, which are planted out and thriving well. *W. W.*

* The height of the view is about 12 feet.

Fruits Under Glass.

THE EARLY VINERY.

Grapes in this house will now be colouring, therefore on all bright mornings allow a high temperature with fire-heat, at the same time admit a good current of air, which will greatly assist them to finish well, and give a good colour and bloom, but before closing time allow the pipes to become cooler, for if shut up early the thermometer will naturally rise with sun-heat to 85° or 90°, and will not be any too high. When the bunches are nearly matured do not close quite so early, and instead of closing all at once I would advise to keep reducing the openings until only 2 or 3 inches remain open, which may be left until dusk. Do not pour any water about, but keep the atmosphere of the house dry in the afternoon. A little moisture may be distributed on very bright mornings when plenty of air is given, as it will help to keep down red-spider, which will otherwise soon appear if the house be very dry, as no doubt it will in any case a little; then the most effectual method would be to have a good heat in the pipes in the evening, shut up close, and paint them with sulphur.

Late Houses.

The later Vines must have attention at regards thinning their bunches as soon as set sufficiently, so that it may be seen which berries will swell off, cut off all the small ones left behind at previous thinnings, retaining those which are taking the lead and are regularly disposed. When this is accomplished, give the borders a good watering with tepid water, and give a little air early on bright morning to prevent any risk of scalding, which is likely to take place if the house is allowed to run up quickly. Disbud, tie, and stop late Vines which will now be coming into growth; do not allow the young tender shoots to touch the glass, but attend to tying down regularly. *J. Vert, Audley End Gardens.*

Forestry.

THE BARKING SEASON.

The unusually long and cold winter through which we have passed has considerably retarded early spring growth, for even to-day, the 19th, along our warm Welsh coast few indeed are the Oaks that show signs of activity—a parallel to which we cannot remember for many years. In consequence of this the barking season will, in most districts at least, be later than usual, and the length of time during which this work may be performed considerably shortened. With, however, the increasing length of day and warmer weather, with alternate showers, this operation may be expected to be general throughout the country by the first week in May, though, no doubt, in more than one favoured locality a much earlier start is anticipated. A close watch must therefore be kept, and the instant the bark on the more forward trees will "run" no time should be lost in commencing work, which must be carried on with all available force, so as to strip and save as much bark as possible during the early part of the season, when it not only weighs better, but is much richer in tannin matter, and consequently more valuable than what is removed later on. Foreign competition, combined with the extended use of mineral substances instead of bark, have considerably lessened the price of the latter, for only about half a century ago the average price of Oak bark in London was £14 per ton, while Larch bark realised about half that amount. Now the forester is thankful to get £5, or, at most, £5 10s. per ton for Oak bark, while that from Larch will hardly pay the cost of removing. With such finely cut prices as are now-a-days realised the forester is compelled, not only in the interests of his employer but for his own credit as well, to prosecute the work of bark-stripping on the most economical principles, and which timely and well-made arrangements will be the mainstay as regards regularity of procedure.

The marking of all Oaks intended for falling, arrangement of squads, overhauling and repairing of barking tools, erecting of drying stands, arrangement of rick covers, and employing of extra hands where necessary, are all minor duties that, if not looked to in time, will considerably retard the operation of bark stripping, and consequently reduce in value that important commodity. With the generality of Oak trees the period when the bud is just bursting into leaf has been found the proper time for falling, to ensure easy stripping, and to procure the best quality of bark. Everything being in readiness, it is next well to bear in mind that the sooner a tree is stripped of its bark after being felled the better, and in no instance should the interval exceed twenty-four hours. Small trees are usually felled with the axe, but when the diameter of butt exceeds 8 or 10 inches, it will be found more convenient, as well as profitable to use the cross-cut saw.

Previous, however, to "setting in" the tree with the axe, 3 feet of the body bark should be removed, which would otherwise be much injured both by the axe and saw in felling. Before removing the bark from the butt the person employed at this work should, with a light axe or handbill completely divide the bark all around the tree at or near the ground level, which will prevent it from being torn off under ground and thus causing injury to the growth of the coppice wood. The trees being felled all branches should be removed and cut in about 6 feet lengths, the larger limbs being left to be peeled as part of the tree.

Occasionally where there is not much sap a little beating with the square end of the mallet may be necessary, but as this has a tendency to blacken the bark and cause rapid decay in a bad season, the practice should be advocated as little as possible. *A. D. Webster.*

The Kitchen Garden.

CAULIFLOWERS.

Continue to make successional plantings of Early London and Walcheren from plants raised in autumn; also of Veitch's Autumn Giant, from sowings made at the same date. The latter variety if planted now will come in at a time when good Cauliflowers are, as a rule, scarce—namely, in July and August, and will insure a continual succession after the earlier kinds.

Planting.—The situation selected for growing Cauliflowers during the summer months should, if possible, be a cool one, and the soil be enriched with plenty of good farmyard manure; if planted in trenches, so much the better. These should be thrown out 1 foot wide and from 6 to 8 inches deep, and afterwards refilled with manure and soil, a sufficient depth of the latter being placed on the surface of the trenches to plant in; those for Early London and Walcheren should be 2 feet apart, and for Autumn Giant 3 feet. In transplanting care should be taken to give as little check as possible, by transferring the plants carefully, and with as much soil attached to the roots as is practicable.

Turnips.

Future sowings should be made in drills on firm ground, in a similar situation to that recommended for Cauliflower; small and frequent sowings during the next two months are advisable, to maintain a regular supply of good Turnips. A liberal dusting of quicklime or soot should be applied at the time of sowing, and repeated when the young plants appear above-ground. Summer Spinach, Radishes, Lettuces, and small salading will also, for the next two or three months, be best grown on cool and shady borders.

Potatos.

All Potato planting should, if possible, be finished this month. Early ones that are showing above ground should have the Dutch hoe passed through the rows and as a precaution against frost a little soil drawn lightly over the tops, deferring the final earthing up until a few days later, when, as an additional protection a light covering of litter or bracken should be placed between the rows in readiness for use.

Seed Sowing.

Sow Salsafy and Scorzonera in drills from 1 foot to 18 inches apart, and also the main sowings of Savoys, a liberal one of Parsley, and small ones of Chervil, Endive, Lettuce, Radishes, Mustard and Cress, &c., Look over frequently all seed-beds and growing crops these will require attention in thinning and in preventing the ravages of slugs, &c., and should be dusted early in the morning with fine quicklime. *J. Austen, Witley Court.*

Pear Madame Millet.—Any one who knows anything about a garden knows that this is a most difficult month to keep up a good supply of fruit for the dessert. The fruit of last year's growth is getting scarce, and the new is certainly not abundant, so that anything which helps to fill up the gap is more than acceptable, and the Pear which heads this note is a most desirable kind for that purpose, as it is just now in season, and is moreover an excellent kind. It requires and deserves a south wall, and does well on the Quince stock, and if not gathered till the very end of October, or beginning of November, and carefully stored away from the influence of frost. Half of our late dessert Pears are only fit for stewing, but this kind is quite an exception, for it is melting and delicious, and should be in every collection. *J. Rust, Eridge Castle.*

Orchid Notes and Gleanings.

DISA ATROPURPUREA, *Sond.**

From Mr. Gumbleton has been received a specimen of this little known and apparently rare species of Disa, which that gentleman says he received from a nurseryman at Haarlem, under the erroneous name of D. cornuta, to which species it bears no specific resemblance whatever. When will nurserymen learn to send out plants correctly named?

Disa atropurpurea is allied to the strange looking D. spathulata, and, like that species, has a stalked lip, but the stalk is much shorter. In habit it also



Fig. 114.—Alpine Auricula,

With vertical rootstock pushing above-ground and devoid of leaf-scales.

resembles the better known D. graminifolia, having 6—9 linear leaves, broadest in the upper part, and about 2—3 inches long. The flower-stem is about 4 inches high, with 2—3 acuminate sheaths, and bears a solitary flower of a rich purple-lake, the blade of the lip being of a darker hue than the rest of the flower. In size the flower measures ⅔ inch one way and 1¼ inch the other direction, and is quite as elegant and attractive as many of the Masdevallias. The lip is peculiar, having a distinct stalk ¼ inch long, and a cordate-acuminate blade having a wavy margin with two or three teeth on each side. It is a native of the south-western region of South Africa. A figure of this pretty species has been prepared for the *Botanical Magazine*. *N. E. Brown.*

CYPRIPEDIUM BARTETI × , AND C. LAFORCADEI × .

These are two hybrids raised from the same seed-pod of C. barbatum, fertilised by pollen of C. Chantini, by M. Bauer of the Muette at Paris. Coloured figures of both are given in the last number of the *Orchidophile*. The two are much alike, but the one called Barteti is the better of the two, having broad dorsal sepal with a green ground flushed with rose and bordered with a broad white margin. The petals are narrow, yellowish, striped with reddish-brown, but without the tufts of hairs of barbatum. The lip is reddish-brown, shining, with conspicuous venation.

* Disa atropurpurea, Sonder, in *Linnæa*, vol. xix., p. 96.

A SYNOPSIS OF THE EUROPEAN SPECIES OF PRIMULA, WITH THEIR DISTRIBUTION.*

Group I. Primulastra.—Young leaves revolute, never mealy beneath. Calyx strongly ribbed. Flowers yellow.

1. *P. vulgaris*, Hudson (Primrose).—Leaves narrowed gradually to the base. Umbel sessile; pedicels long. Calyx-teeth lanceolate. Corolla-limb large, pale yellow.—Distrib.: Throughout Europe, except the Mediterranean region.

2. *P. elatior*, Jacquin (true Oxlip).—Leaves narrowed gradually to the base. Peduncles elongated; pedicels short. Calyx-teeth lanceolate. Corolla-limb large, pale yellow; throat without folds.—Distrib.: Throughout Europe, except the Mediterranean region. Differs from the hybrid Oxlip by its more villose calyx and paler corolla, not plicate at the throat.

3. *P. officinalis*, Scopoli (Cowslip).—Leaves narrowed suddenly at the base to a winged petiole. Peduncles elongated; pedicels short. Calyx-teeth deltoid. Corolla-limb smaller, deeper yellow; throat plicate (with folds).—Distrib.: Throughout Europe; rare and not typical in the Mediterranean region.

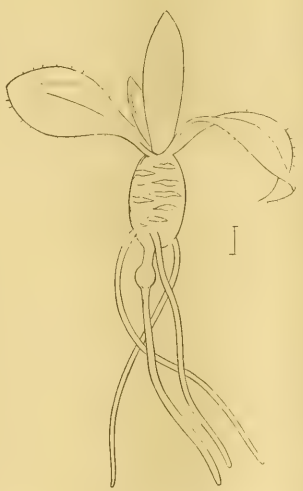


Fig. 115.—Auricula.

Vertical rhizome; the scars indicate the places whence the leaves have fallen.

Group II. Aleuritia.—Leaves often mealy beneath, revolute when young. Calyx not ribbed. Flowers lilac.

4. *P. farinosa*, Linnæus.—Leaves small, crenulate, mealy below. Pedicels and calyx also mealy. Calyx-tube campanulate; teeth as long as the tube. Corolla-tube short.—Distrib.: Northern and Central Europe, mountains of Spain.

5. *P. stricta*, Hornemann.—Differs from farinosa by leaves not mealy beneath, pedicels and calyx not mealy, flowers fewer.—Distrib.: Mountains of Scandinavia and Northern Russia.

6. *P. sibirica*, Jacquin, var. *finmarchica*, Jacquin.—Leaves broader than in farinosa, entire, not mealy beneath. Pedicels longer. Calyx-tube oblong; teeth much shorter than the tube. Corolla-tube short. Flowers few.—Distrib.: Mountains of Scandinavia. The type known in Siberia only.

7. *P. frondosa*, Janka.—Leaves large, thin, not mealy beneath. Calyx-tube campanulate; teeth lanceolate-deltoid, as long as the tube. Corolla-tube short.—Distrib.: Mountains of Thrace. Very rare.

8. *P. longiflora*, Allioni.—Leaf like that of farinosa, usually mealy beneath. Calyx longer, both tube and teeth. Corolla tube 1 inch or more long. Corolla limb ½—¾ inch in diameter.—Distrib.: Mountains of Central Europe.

Group III.—Auriculastra.—Young leaves involute. Calyx short, both tube and teeth.

* *True Auriculastra.*—Leaves, calyx and pedicels not viscose.

9. *P. Auricula*, Linnæus.—Leaves large, entire or minutely toothed. Under side of leaves, pedicels and calyx mealy. Bracts small. Flower pale yellow.—Distrib.: Mountains of Central Europe.

10. *P. Palinuri*, Petagna.—Differs mainly from the large forms of P. Auricula by its constantly inciso-crenate leaves and larger foliaceous bracts. Flower pale yellow.—Distrib.: Promontory of Palinurus, Naples.

11. *P. marginata*, Curtis.—Much dwarfer than Auricula, with strongly inciso-crenate leaves with a white mealy margin. Flowers fewer, lilac.—Distrib.: Alps of Dauphiné and Piedmont.

12. *P. carniolica*, Jacquin.—Leaves oblong, thin, entire, not at all mealy. Flowers lilac.—Distrib.: Alps of Austria and Lombardy.

** *Erythrodosa.*—Leaves, pedicels and calyx viscose.

13. *P. viscosa*, Villars.—Leaves obovate, strongly



Fig. 116.—Winter bud of Primula involucrata, with thick vertically descending root-fibres.

inciso-crenate. Pedicels twice as long as calyx. Calyx-teeth nearly as long as the tube. Flowers few or many, lilac.—Distrib.: Pyrenees and mountains of Central Europe. Many varieties (villosa, Wulfenius, latifolia, Lapeyrouse, &c.).

14. *P. daonensis*, Leybold.—Differs from dwarf few-flowered forms of viscosa in its narrower leaves, shorter pedicels and much smaller calyx, with very small obtuse teeth.—Distrib.: Granitic Alps of Switzerland and Austria.

Group IV.—Arthritica.—Young leaves involute; calyx long; tube cylindrical or infundibuliform. Flowers always lilac.

* Corolla lobes shallowly bifid.

15. *P. calycina*, Duby.—Leaves large, entire, acute, with a distinct white, mealy edge. Bracts large, linear. Calyx ½ inch long; teeth lanceolate, as long as tube.—Distrib.: Alps of Lombardy.

16. *P. spectabilis*, Trattinick.—Leaves large, entire, obtuse or subacute, with an indistinct pale edge. Bracts smaller than in the last. Calyx ½—¾ inch long; teeth much shorter than the tube.—Distrib.: Alps of Central Europe; several varieties; was included by Linnæus under integrifolia.

* Paper read at the Primula Conference by Mr. J. G. Baker, F.R.S.

17. *P. integrifolia*, Linnæus, *ex parte*.—Dwarfer than spectabilis, with smaller leaves and only 1—3 flowers.—Distrib.: Pyrenees and mountains of Switzerland and Lombardy.

18. *P. Allioni*, Loiseleur.—Dwarf, 1—2-flowered, with very short peduncle and pedicels. Leaves obovate, very obtuse, subentire, viscose.—Distrib.: Alps of Piedmont, very rare; and a geographical variety (P. tyrolensis, Schott) in the Tyrol.

** Corolla-lobes deeply bifid.

19. *P. minima*, Linnæus.—Very dwarf; leaves small, obtuse, sharply toothed, not viscose; flowers 1—2; peduncle and pedicels both very short.—Distrib.: Mountains of Switzerland, North Italy, Austria, and Turkey.

20. *P. glutinosa*, Wulfen.—Leaves obtuse, denticulate, viscose. Flowers many, in a dense umbel, with an elongated peduncle, and large oblong obtuse bracts; pedicels absent.—Distrib.: Mountains of the Engadine, Lombardy and Austria. *J. G. Baker.*

Trees and Shrubs.

DAPHNE BLAGAYANA.

This is a charming species, which was exhibited by Messrs. J. Veitch & Sons, at South Kensington, at the last Floral Committee. I saw it in fine flower in Messrs. Backhouse's nursery, York, on April 6—the flowers produced in great profusion, pure white, with a sweet perfume. As an early-flowering trailing shrub for the rock garden it holds a foremost place. *J. Douglas.*

RHODODENDRON LAPPONICUM,

also in flower, is a very pleasing dwarf plant, 3 or 4 inches high, producing freely its small trusses of rosy-purple flowers, which also make a nice ornament for the rock garden. A fitting companion to it is R. setosum, which seems to grow a trifle taller, but still a neat, dwarf species, producing freely trusses of its deep rose-coloured flowers. *J. D.*

The Age of European Forest Trees.

We glean from the *Indian Agriculturist* that the story of German forest trees reaching 1000 years of age is a fable. Even the age of the so-called "historical" trees—700 to 800 years—is not established, while no German tree has reached such an age in a sound condition. The writer says that the greatest age is reached by coniferous trees, and not by foliage trees. The oldest found—tested by the annual rings—had reached an age of from 500 to 570 years, these trees being the Red Pines of the Bohemian forest and the Pines of Finland and Sweden. The Silver Firs in the Bohemian forest showed an age of 429 years. The Larch, as found in Bavaria, has given an age of 274 years. The Oak appears to be the oldest of leafing trees, the oldest example being found at Aschaffenburg, viz., 410 years. The oldest Red Beeches are 245 years (Aschaffenburg), and 226 years (Weisswasser). The maximum ages of other trees are as follows:—Ash, 170 years; Elm, 130; Birch, 160—200; Aspen, 219; Red Alder, 145; Maple, 224.

GAULTHERIA FRAGRANTISSIMA.

The species of this genus are very variable in habit and size, and the dwarfer kinds form ornamental evergreen shrubs of considerable beauty. The hardy American species will hold their own anywhere, especially if the soil is of a peaty nature, but half-hardy and equally beautiful ones are liable to be ousted from houses to make room for plants that bring a quicker return of flowers. The species under notice is sufficiently hardy to stand out-of-doors in Ireland, and probably in the more favourable southern parts of England, and had it not been for this defect there would have been good prospect of it becoming a popular border plant, or even an excellent and fitting subject for rockwork. The leathery evergreen leaves are more or less oval or elliptic, but variable in this respect, and borne in great profusion on stout drooping branches. The short stout racemes of white flowers are freely produced in the axils of the leaves, and, nestling half-hidden amongst the foliage, add considerably to the gracefulness of the plant. The flowers are fragrant, as one would infer from the specific appellation, but only after they have been expanded some time. This Himalayan species is figured in the *Botanical Magazine*, t. 5984, and is more robust in every way than its slender but exceedingly beautiful and interesting congener from the same part of the world, namely, G. nummularioides. The latter has an excellent but somewhat tender rock plant. A good-sized specimen of G. fragrantissima is flowering in a basket suspended from the roof of the Cape-house at Kew. *J. F.*

Home Correspondence.

Maréchal Niel Rose.—I have read "T. W.'s" communication, p. 499, and cannot think the Rose itself is at fault. I do not find the flower any smaller than when I first saw it, and certainly by no means



Fig. 117.—Primula scotica.

"puny and effete." Perhaps the dry summer last year had an adverse effect on the growth of the plant; I am inclined to think that is the cause, if the blooms in the florists' shops are really smaller than usual (unfortunately distance prevents me seeing these so often as I should do); or was it in May and June when "T. W." saw the large flowers he speaks of? I find they are like Cabbages, the largest come at the



Fig. 118.—Primula poculiformis; flowers pale lilac.

end of the season. I enclose two for your opinion as to the deterioration. We expect to have some larger ones by-and-bye. *W. H. Divers, Ketton Hall.* [The blooms sent were large and good, certainly showing no signs of deterioration in any way. Ed.]

The Edinburgh Horticultural Society.—I observed in your issue of the 10th inst. that large prizes, probably the largest in their list, were given by the Edinburgh Horticultural Society for tables of certain dimensions of best plants. Now, if the persons who award the prizes will consider for a moment they will see that those tables of plants can be placed in the exhibition only by a very limited number of their members—that is, by those who reside near the exhibition, thus doing an injustice to their far-off members, who cannot send such large collections of plants except at much trouble and expense. Also at those seasons of the year when rare plants are difficult to get forward it frequently happens that small prizes are offered for these plants, but when the plants are plentiful and easily got into condition the value of the prizes is increased. My opinion is, that this should just be reversed. I may further remark, that I think mistakes are sometimes made in giving prizes as large, if not larger, for common or easily raised plants than for rare and difficult plants to grow. *Gardener.*

Dielytra spectabilis.—This, as Mr. Earley well says, is not half so much grown as it deserves to be; but where I think it is seen at its best is when forced, as then the delicacy of colour of its lovely flowers is remarkable; and the gracefully arching stems and pale green foliage are a treat to behold. Outdoor growth is generally made too soon, and being so succulent and somewhat tender, is generally cut by the frost. The finest specimen I ever saw standing in the open was in a churchyard close in front of a headstone, and a more appropriate plant for the situation and purpose could not be found, as it stood as it were weeping with bleeding hearts, emblematic of those left behind. *J. Sheppard.*

American Blackberries.—As I see my name mentioned in connection with American Blackberries, it may be as well that I should send you the little information which I possess on the subject. Some six or seven years ago Lady Yarborough gave me some cuttings from plants which had been at Brocklesby for several years. I had them planted in my kitchen garden here, they soon took root and grew rapidly, and are now 6 or 7 feet high (perhaps more). In some years they have borne very large crops of fruit somewhat larger than that of the common English Blackberry. The fruit is rather more acid than that of the English Blackberry, and by many is thought to want the peculiar and agreeable flavour of our common Blackberry. The leaf is very deeply indented, and is very useful as a garnish for dishes of fruit. The plant seems to be a robust one, as I see it in the woods at a good distance from the garden, the seed no doubt having been carried by birds. I am surprised that no one has tried the experiment of careful culture on some of our native species of rubus, such, *e.g.*, as Rubus cæsius, which has a peculiar and very delicate flavour. *A. Nesbitt.*

—— I can hardly understand your correspondent's motive (p. 499) for saying I did not take the best means to obtain satisfaction. I am satisfied that my plants came through the parcel post with very little life left in them. I did not receive a notice that living plants would be sent to replace the dead ones. My opinion is they should have been properly examined before they were sent; this could have been done by the sender, and obviated the necessity of the second sending. My object in saying I thought they would prove useless in North Yorkshire (I said nothing about Reigate) was because American Blackberries have been tried here many years since, and were proved to be useless, as I said before—that they grew and flowered, but the winter came too soon on them, and the fruit never showed any signs of swelling. I hope this new importation, which are said to be earlier, will turn out to be more useful, and that we shall see the fruit exhibited at South Kensington in the coming autumn. I may say, in answer to your correspondent's question, "Why did I order them?" it was because I wished to ascertain if the new importations were as good as described. Probably they may do better in the southern counties. *William Culverwell.*

Eucharis amazonica Planted Out.—Before the above subject closes I should like to say a few words respecting the planting-out system which I saw at Wooley Park a few days since. The plants were growing in a bed on the north side of a span-roofed house, Melons and Cucumbers being grown on the south side. The bed is 30 feet long, 3 feet wide, and 18 inches deep. About three years ago, when looking through this garden, I saw the bulbs lying on the path to dry like Onions, having previously had a thoroughly good washing. Mr. Harvey, the gardener, informed me that that was the treatment he gave them every three or four years; he sorted the bulbs into three sizes, prepared the bed with good loam, using a little peat and sand, then laid the bulbs all over the bed, covering them with 3 inches of soil, and entirely withholding water until the first leaves began to show through the soil, then water was very sparingly supplied; but when four leaves had pushed through, he gave them a thorough soaking, using nothing but soft water, and employing the syringe

but little. At the present time a healthier lot of stuff would be hard to find in any garden. Mr. Harvey informed me that he cut 500 blooms in four days last Eastertide, and the bulbs continued to bloom more or less throughout the year. During the months of November, December, and January the temperature at night is oftener below 50° than above it. *J. H. Rose.*

Saxifraga oppositifolia, of which a variety with large purplish-rose flowers, and another producing them pure white, are also very prominent objects in the York Nurseries. The dense masses of rich colour have a fine effect, and the plants burst into beauty as soon as the snow had melted. No rock garden should be without this handsome species. *J. D.*

Tritonia aurea.—Mr. Earley has done well to call attention to this good old plant, which is one of the most useful and distinct of all greenhouse subjects, and especially valuable for cutting from, but when wanted for this purpose it is better to grow it planted out than in pots, as when it has more root freedom and is exposed to night dews and the fresh air it seldom, if ever, suffers from the attacks of red-spider —an insect it is very subject to when the plants are confined to a house. The best situation for the Tritoma aurea when grown outdoors is a warm sunny border at the foot of a wall or building, where the soil should be made light and rich by having sand and leaf-mould worked in, together with a little rotten cow manure, when the bulbs may be planted. The present is a good time to do this, and if they are left to themselves they will spread and increase at a great rate, and throw up masses of bloom. To protect them in the winter all that is necessary is to top-dress heavily with half-decayed leaves, which are capital non-conductors, and will keep out much frost. Managed in the way referred to we have had a very fine bed for years, and the spikes the plants afford are far superior to any that can be produced from those in pots, which are starvelings compared to those in the border. *J. Sheppard.*

Solanum and Schizanthus.—In the interesting note on Potato grafting on p. 498 you say that Professor Strasburger has succeeded in grafting Schizanthus with the Potato, and that Schizanthus, although sometimes placed with the Scrophulariaceæ, has the internal anatomical structure of other Solanaceæ. Another proof of the affinity of Schizanthus with Solanum is found in the fact that the Potato fungus, Peronospora infestans grows parasitically on members of both genera. *W. G. S.*

Strawberry Forcing at Gunnersbury Park.—A large quantity of Strawberries, as might be expected, are annually forced into bearing at a fruit-producing place like Gunnersbury Park. The sorts grown are Vicomtesse Hericart de Thury, Keens' Seedling, and British Queen, in large quantites; and a few each of President and La Grosse Sucrée. The first-named of these is a little the earliest in bearing, but Keens' Seedling makes the best foliage and the finer fruit. At Gunnersbury Mr. Roberts suffers a good deal from the effects of the London fogs in autumn and winter, which are driven down upon him when the wind is in the north-east to south-east, and the Vicomtesse does not stand them so well as the more robust-growing Keens' Seedling. But the favourite forcing Strawberry at Gunnersbury is British Queen, though it is not so great a cropper as the other two, yet 3000 pots of it are grown to 2000 each of the other two. In the matter of layering Mr. Roberts always takes from maiden plants, from which the flower-stems are cut away so as to throw as much strength as possible into the plants. A good bed of each of three leading sorts is planted out for supplying runners at the end of August or beginning of September, and the layers are made to root into small pots as early as possible in the summer. If the weather be dry these beds are well watered so as to encourage a continuous, vigorous growth. The earliest of the layers are potted into their fruiting pots by the second week in July, and pottiag goes on until the third week in August; then the plants are stood out-of-doors in the usual fashion, and well looked after in the matter of watering. Long ago Mr. Roberts abandoned the old established style of piling up his Strawberry pots on their sides in ridges, for the purpose of drying off the plants, and so ripening the roots as it was thought. Now they are wintered in what he terms skeleton frames, that is to say, there are sunken beds boarded round to the depth of 8 inches, and in these the pots are plunged in cocoa fibre, and a good inch of this covers the soil also. Here, while exposed to the rains of autumn, the roots make great progress, and circle themselves about the soil right up to the surface, and the plants are undoubtedly much better furnished at forcing time with vigorous roots, than under the old drying-off system. Forcing commences about the beginning of December—a row of each of the three main sorts, the first placed in a Peach house, or any such place as may be available, where the night temperature is from 40° to 50°, which in a week or two can be increased somewhat, but just warm enough to encourage the plants to break into growth. From 500 to 600 plants of each sort are thus set to work at a time. The plants are kept nicely moist, but a little drier at the time of flowering, when the pollen is maturing. Hard forcing at this stage Mr. Roberts considers as fatal to the well-being of the crop; the flowering stalks become drawn and attenuated, and the fruit is affected in a like degree. A number of plants of Keens' Seedling are planted out in the open ground after they have done fruiting, and they give a crop in the autumn. The Vicomtesse and La Grosse Sucrée are treated differently. As soon as possible in May the plants that have been forced are turned out of the pots and a great deal of the soil and roots chopped away; they are then repotted into other pots, using a good soil. They flower at the beginning of August and onwards, and, indeed, keep on doing so, and they will mature their fruit if kept in any place where it is dry and there is the aid of a little fire-heat. But fog is the great enemy to an autumn crop so obtained; the thick raw fogs find their way inwards through every crevice, and cause the fruit to become mouldy. Still, most serviceable crops of fruit are secured in this way. *R. D.*

Aralia Sieboldi.—We have several fine plants of this, and also of the variegated form, growing in the conservatory here. The former flowers freely, and last autumn and winter perfected a quantity of seed, from which we have raised some scores of young plants. I am not aware if this is an uncommon occurrence, but as it is the first that has come under my own notice, it would be interesting to hear if any of your readers have a similar experience. There can be no question as to the perfect hardiness of this plant, as we have several here, and in exposed positions, that are not in any way injured by the late severe winter; in fact, those most exposed look best, which can probably be accounted for by their growths having been better ripened and matured. *J. A., Witley Court.*

Birds and Fruit Buds.—I do not remember any year since I have been here when fruit buds have escaped with so little injury as in the present one. Being near the downs it is not at all an unfrequent occurrence to see clouds of bullfinches, which settle on the small fruit bushes so that it is usually an impossibility to get a crop, unless the bushes are protected by netting put on about Christmas. They not only destroy the fruit but disfigure the trees as well. The centre bud is invariably taken, so that the back buds have to break to produce the growth for another year. I think the birds found more food on the Heather and Furze or Gorse, for the last being such a hot summer most of the seed ripened, and the bushes gave shelter as well as food during the severe winter. Thorns, which here grow to fine size, seem to have escaped the depredators as well. The prospect of Plum bloom is most cheering, and I find Pears and Apples look like producing a good show of bloom both in orchards and in gardens; and by what I hear, my neighbours around in widely different localities have shared the same immunity from damage as yet. *A. Evans, Lythe Hill.*

Oranges not Fruiting.—This is attributable to various causes in cultivation under glass. It is frequently argued, doubtless with much truth, that we raise plants from seed, and then wonder why they do not even show flower, forgetting that plants so obtained must attain a considerable size and age before they can become productive. Furthermore, fruiting plants in a small state may easily be obtained by grafting stocks with scions taken from fruit trees or bushes. Another cause of fruitless trees results from imperfect fertilisation, or no fertilisation at all, where the trees, or rather flowers, are left to their own care, and the temperature is too low to assist in the distribution of the pollen, or when they flower at a season when insects are absent. The stamens are almost colourless, and very imperfect in a small variety of the Lime, cohering in a mass in the centre of the flower, and functionless, in a great many cases at least, as they do not contain pollen. In the same flowers the pistil is rudimentary, thus precluding any chance of producing fruit, and this is precisely what occurs in another sort, a small-fruited form of Citrus medica, where the stamens are normal and bear an abundance of deep yellow granular pollen. A small percentage only of the blooms are hermaphrodite and have a well-developed pistil, with a long style and capitate stigma protruded beyond the stamens. These latter only may be expected to bear fruit if their flowers happen to set. A small plant of Citrus Limonum flowers profusely every year at Kew, but bears no fruit. The ovary remains small and the style is very short and rudimentary, with little trace of a stigma. The pollen appears perfect, but does not effect fertilisation even if applied to the rudimentary pistil. The defect in all probability pertains to the latter, and appears to be more universal than in the case of C. medica mentioned above. All of the above cases may be seen in the economic house at Kew, where the plants are practically polygamo-monœcious, bearing male and occasionally a few hermaphrodite flowers. Of course this may apply to young or small plants only, or to conditions of culture and surroundings. The *Genera Plantarum* does not mention this fact, and in Le Maout and Decaisne's work the flowers of the Aurantiacæ are said to be generally hermaphrodite. In an allied group of the same order the flowers are polygamo-dicœcious, of which Skimmia japonica is a well-known instance. The species and varieties of Citrus above-mentioned show a nearly similar tendency. *J. F.*

A Hardy Strain of Brussels Sprouts.—I have been over forty years in the gardening profession, but never before saw the various sorts of hardy vegetables so completely cut up as during the last winter, even my hardy Kales have been rendered all but useless. Fortunately I had a fine plantation of Sutton's Exhibition Brussels Sprouts, that stood the severe trial well and carried me through the winter, and I may add they are without exception the finest strain of Sprouts I have ever seen. Hardy, very prolific, and delicious when cooked, I have grown them for several years and found them always the same; during all the late frosts and snows the little Sprouts remained plump and perfect, and I continued to pick a good dish daily all through the season up to the present time (April 17). To persons who are called upon to provide Sprouts in quantities they are invaluable. No crop is more essential in a garden than one of good Brussels Sprouts, although not always to be met with. The affinity of Brussels Sprouts to other Brassicas in general cultivation necessitates great caution and judgment in procuring the seed pure, so that great credit is due to Messrs. Sutton & Sons for attaining such perfection in this favourite esculent. *J. E.*

PRIMULA FERTILITY.

The great family of Primulaceæ has many fertile members, but only a moderate number of these seem amenable to the manipulation of the florist. Of these the most facile subjects for cross or artificial fertilisation seem to be the Japanese Sieboldi, and the once popular P. japonica, the sinensis section, so well known in our greenhouses, and the Auricula Polyanthus, and Primrose sections, better known to botanists as Primula Auricula, P. veris or elatior, and P. vulgaris. These have given, and continue to give us varied and beautiful progeny, more or less—the first-named kinds perhaps less, and the others more. There are, after all, but few out of a big family, and it is passing strange that the remarkable success which has attended efforts to promote varied fertility in these has not stimulated exertion to procure similar results from some other beautiful species. Primula japonica has given to us some variations in the colour of its flowers, but not in other respects. Its habit of blooming, so much exaggerated at its first introduction, presently provoked disappointment, and as cross-fertilisation so far failed to improve upon that habit, or to vary the general character of the flowers, Primula japonica seems fading into oblivion. Still, it is a wondrously free seeder; hence it seems all the more remarkable that it should remain, except in colour of flowers, just as it was when first introduced. The more elegant and perhaps more fragile Primula Sieboldi, whilst very chary in producing seed that is fertile, has yet proved much more amenable to the florist's art, and we find it in numerous and beautiful forms, although in no respect is leafage or habit of growth changed. This member of the family may, perhaps, be, with the popular but tender Chinese Primrose, esteemed feminine, as both in their flowers develope an undoubted fondness for fringe. It is curious, but true, that both these kinds seem the more appreciated when their flowers are deeply fringed or laciniated, whilst in other sections the smoother or rounder the edge of the flowers, the more do they meet with approval. Primula Sieboldi, in spite of the ease with which it can be grown in pots, somehow fails to attract popular favour. Perhaps this is due to the fact that it finds under glass powerful competitors in the free-blooming sinensis forms, and outdoors in the rich-hued Polyanthuses. How fertile the Chinese Primrose has been in the past we all know full well It is possible even now, in spite of all that has been done with it, to realise something of its comparative imperfections, when now and then, even from high class strains, will come a reversion of the most crude form. We now believe that the proper forms of

this Primula created by the magic wand of the florist are perfection—can indeed hardly be excelled, and as is the case with show Auriculas and gold-lace Polyanthuses, that may be so; but it is certain that even now imperceptible progress is being made and that progress may continue with the lives of even the youngest. But whilst this member of the great family of Primulaceæ has produced such varied single flowers, so finely and superbly coloured, and in diverse habits and foliage, it has also given to us many grand double forms that command our admiration, and prove of immense value in various ways. Here, curiously enough, we find developed another feature of the Primula family, and that is in its capacity to produce double flowers of very fine form and substance, but which power seems limited to some three kinds only, viz., sinensis, Auricula, and vulgaris, if that be the proper designation of the true double Primrose section. The veris type has given a few doubles, but so few and so inferior in form as to be unworthy of mention. Then we find that in all three of the sections named above, doubling of the flowers seems provocative or productive of weakness of constitution; or it may be that such weakness is more apparent than real, as these kinds are thus deprived of their natural methods of propagation found in floral fertility.

It is worthy of notice, however, as concerning the single forms of all the florist-bred Primulas of whatever breed, that the more enlarged and beautiful the blooms the farther do they seem removed from average fertility. Invariably the most imperfect forms are the best seeders, and equally the most perfect flowers show barrenness, needing specially artificial fertilisation to promote seed productiveness. It must be borne in mind, however, that the sinensis section labour under the disadvantage of blooming at a season of the year when the atmospere is almost invariably moist, and artificial warmth is needed to keep the pollen dry and fertile. Seed of these best forms if not abundant is yet not scarce, and ample seems to be obtained with ordinary means to satisfy the requirements of the trade and gardeners generally. From time to time we have heard of some remarkable hybrids obtained from cross-fertilisation of diverse kinds of Primulas, and the sinensis section has often been credited with the production of such abnormal wonders. It seems, however, an undoubted fact that no two truly diverse species, or even their garden progeny, will cross with each other; hence amongst Primulas, so far, the wonderful hybrids have had only a paper existence. It does seem as if our native Primulas veris and vulgaris crossed with entire freedom; hence it may be not unfairly assumed that these differ more in name and feature than in reality. Certainly we find in the garden progeny of each ample evidence that there is fertile association, for so connecting are the links it is now not possible to define where Polyanthus begins and Primrose ends. Yet it is remarkable that if there be such sexual association between these indigenous kinds that in their native habitats they have not been found assuming hybrid forms. In a wild state the Cowslip remains such, and the Primrose remains such, even though necessarily brought under the erratic influence of insects. Perhaps the two kinds or species are not naturally found in immediate juxtaposition, perhaps if there are insects which frequent the one they fail to visit the other. In any case the matter seems to solicit some explanation. Of the garden progeny of these native forms too much in praise cannot be said. Had we never been blessed with a single foreign species it is certain that, assuming that all our garden Polyanthuses and Primroses have originated from native parents, still should we have been rich in garden Primulaceæ. Happily, kinds native to us (or resembling our Primroses, such as altaica and MacNabiana) have proved native in other climes; and thus we have had in these humbler forms the advantage of foreign colours and blood. So that our present race of Primula veris and of Primula vulgaris are both as beautiful as can be found in the world.

It is peculiarly noticeable that whilst the P. veris or Polyanthus section produces few double flowers, as we recognise doubleness in other kinds, yet it is specially prolific in duplex or hose-in-hose forms—a feature not to be found in any other species or progeny of species. Literally the green calyx of the flowers has gone through a process of evolution in this case, and has become converted into a flower which still produces a second flower projecting from the same tube. Thus, whilst we find in these twin flowers yet we have but one fertile organism or seed-bearing combination. As a result of these peculiar duplex characters the tube containing the organs of fertility is greatly lengthened beyond what is usually seen in Polyanthus flowers. In some respects also with this feature have been associated weaker flower stems, and florally a comparative looseness of habit, which has detracted materially from their decorative usefulness. That weakness is by selection, however, being gradually overcome; and it is an undoubted fact that when found on stiff erect stalks heads of duplex flowers are far more effective and striking in gardens than are similar clumps of only single flowered forms. We have long been familiar with these interesting kinds, also of the Polyanthus habit, which have a monstrous green or leafy calyx to the flower, and are popularly known as Jacks-in-the-Green, Jackanapes, &c.; without doubt these are interesting because they are curious, but except when associated with some rich coloured flower they are not specially effective. The change or evolution which takes place in these abnormal Polyanthuses indicates a period in the history of the flowers when they were little other than floral embryos, the process of development probably extending over ages of time. The most refined and perfectly developed of all the progeny of P. veris is found in the beautiful gold-laced forms, the pets of the florists; the patricians of the Polyanthus section. That this aristocratic race have pretty well reached the end of their supremacy is



Fig. 119. Primula turkestanica.

evidenced by the fact that their progeny is invariably indifferent and very often utterly valueless, whilst again it is certain that the plebeian but more robust and striking border kinds are elbowing their patrician brothers out of existence. That these tender gold-laced kinds may create more sentiment in the hearts of their growers is possible, because love often follows after tender care. As Pope has said—

> "A larger care their helpless kind demands,
> That larger care contracts more lasting bands;"

hence the too many often unaccountable fondnesses of florists for plants, which, after all, give so little that is effective or decorative. Formidable rivals, even in florists' eyes, have grown up in the fine, well-formed, and often rich-coloured fancy or border forms, and equally in the Primrose section, equalling almost in size, and more than equalling in variety and beauty, all that Primula sinensis has produced in flowers. It is well worthy of record in these strains also, that their progeny invariably exhibits development of quality, deepening of colours, enlargement of flowers, and no falling off in robustness.

It is difficult to leave reference to Primula fertility without also making reference to the much debated point as to the relative values and merits of thrum over pin-eyes. Florists understand fully that thrum flowers possess points of beauty which are lacking in pin-eyed flowers, two of which points are—first, that the thrum is in itself an element of beauty in a flower; and second, that only in perfect thrum flowers is the mouth of the tube cupped or slightly enlarged; and that again constitutes another element of merit. What a fine double Dahlia with a bad eye is so is a pin-eyed flower, let all its other parts be ever so beautiful. In the pin-eyed flower not only is the pistil either projecting or sunken in the throat more or less, but the throat is strictly tubular, and lacking the cup.

So far has the relative difference of the thrum, as compared with the pin-eyed flower, impressed me, that in saving seed both of Polyanthuses and Primroses for own sowing, I never save seed from a pin-eyed flower, and the result may be seen in the beautiful strains thus created. In referring to the relative value of thrums and pins for fertilising purposes, we get upon debateable ground, and such as is likely to promote much discussion. That eminent observer Darwin, avers that pin-eyed and thrum-eyed flowers are indispensable to each other, more or less. [No.] That may be so, but it is noteworthy that, at least in wild Primroses, for instance, the pin-eyed form is always greatly in excess; hence it would seem that the greater proportion of thrums found in cultivated species is due largely to the labours of the florist and to his preferences, either in the wild state or in gardens. In this matter of fertilisation very much more credit than is probably deserving has been given to insects, indeed the little busy bee seems credited with having improved each shining hour rather to help Nature in the performance of her procreative functions, than in gathering honey from the flowers. And yet I have been surprised to note that even on warm spring days and with big clumps of rich-coloured Primroses and Polyanthuses in abundance, how rare is the presence of the domestic bee, and how the few wild ones soon rushed here and there making a great noise, scarcely settling at all, realising the old saying of "Much cry and little wool."

Perhaps some further enquiry may elicit the fact, that the wind plays some part in the work of Primrose fertilisation. As a rule, all garden kinds seed freely though necessarily much dependent upon seasons, as fierce rain-storms, while frosts or annual drought may be productive of non-fertility. With the single exception of crossing flowers of Primula altaica so-called with P. auriculæflora, I have never artificially fertilised other kinds, or flowers of any sort. Simple selection has sufficed to give a most beautiful strain, and, I think it can hardly be excelled. *A. Dean.*

Scotch Notes.

BANGHOLM NURSERIES, EDINBURGH.

These historic nurseries are still interesting, and well worth a visit from horticulturists passing through Edinburgh. They are greatly circumscribed in extent now as compared with what they were in their palmy days; they contain, however, one of the most complete, varied, and interesting collections of hardy plants, trees, and shrubs of all kinds, to be found north or south of the Tweed. Here one meets with many shrubs and trees tested as to their hardiness with the fidelity that characterised the old firm in the best days of the late Charles Lawson. There is no coddling and sheltering. Such things as Rhododendron Thomsoni, R. argenteum, R. barbatum, R. Falconeri, Pinus insignis, and other tender Coniferæ planted in open borders, are allowed to take their chance in the battle with a northern winter. The past winter in its prolonged severity has been severe on some things, but the Rhododendrons above named have all come through it scathless. Several Pinus were badly touched by the frost; P. insignis was killed; P. excelsa var. gracilis was in the same condition; the nana variety of the Scotch Pine was severely injured, if not killed; and Pinus Pinea was badly scorched.

Some novelties not yet in commerce, but of which stock is being rapidly worked up, deserve some notice. Perhaps the most meritorious is a golden variety of the true Hodgin's Holly, which rivals in beauty Golden Queen, and possesses the vigorous hardy constitution of the former. Another variety of the same Holly with silver variegation when it is sent out will be appreciated as a novel and pretty addition to the list of Silver Hollies. Neither of these are yet named, nor will they be put on the market for some little time. A remarkably distinct seedling of Picea grandis deserves special mention. It is a compact

growing form, with intense dark green shining leaves, which are less than half the length of those of the type, and very much closer set in the branches—indeed, almost adpressed. It will form a pleasing contrast to the type, and be an acquisition to the really hardy forms of Coniferæ.

The management of this fine old nursery has recently passed into the hands of Mr. R. B. Ferguson, late of Chester, who many years ago was a subordinate in the old establishment, and whose well-known ability and large experience are the best guarantees for the maintenance of the old prestige of the Bangholm nurseries. *X.*

Royal Botanic Gardens, Edinburgh.

I had my attention drawn to a remarkably fine variety of Primula obconica the other day by Mr. Lindsay, the Curator of these gardens. It is an immense improvement both in the size and form of the flowers on the typical form. The large dense truss and the great size and improved symmetry of the individual flowers are very remarkable, and suggestive of great capabilities for future improvement. It should be quite possible in course of time by hybridising to introduce brighter colours into this species by a judicious intermixture of other blood. But whatever may be attempted in this way the desirability of preserving its free or rather its perennial flowering quality unimpared, should be kept in view. The variety in question was raised by Mr. Hill-Norman, of Whitehill, Aberdour. A very pretty unidentified species of Primula from Saharanpore, at an elevation of from 14,000 to 15,000 feet on the Himalayas, was blooming freely in the same house in which the above form of P. obconica was placed. It appeared to be intermediate between P. denticulata and P. capitata, is very variable in shade of colour, ranging from pale lilac to rose-purple.

The finest species of the Megasea or crassifolia section of Saxifraga that I have yet seen is S. Strachyi, a Himalayan form of great beauty and interest, which was here flowering in a cold frame. The foliage is not so gross and coarse as in crassifolia. The flowers are considerably larger than those of that species, and are borne on flexible deep crimson stems 9 to 12 inches long in open panicles, the calyx and outer surface of the petals partake of the colour of the stems somewhat diminished in tone, while the inner surface of the petals is white, suffused with red, and suggestive of rich fresh Apple blossoms. The plant is believed to be perfectly hardy, but is worthy of protection, being one of the most distinct and beautiful of spring flowers. Flowering as it does in March and April it would be necessary to protect the flowers if planted out-of-doors in order to fully enjoy their beauty.

In the rock garden the species and varieties of Primulas in flower were more numerous on the occasion of my last visit (15th inst.) than on my previous visit. The following were all doing well:—P. marginata, in two forms, one more robust than the other, and rather more free-blooming; P. Wulfeniana, P. villosa and its variety alba, P. integrifolia, P. denticulata, in great variety, but none more beautiful than P. d. pulcherrima and P. d. purpurea, which latter is perhaps the most striking and effective, in a decorative sense, of all the many forms of this beautiful Primula; P. auriculata, P. Steinii, a hybrid of P. minima, of stronger growth than the parent; and several forms of P. ciliata, including Balfouri, which is one of the best.

The following miscellaneous subjects were also in flower at the same date. Iberis petræa, Gagea lutea, Muscari botryoides, Anemone Robinsoniana, and A. R. var. alba, Orobus vernus, Scilla liliohyacinthus, Triteleia uniflora, Narcissus rupicola, N. Sir Watkin, N. Emperor and N. Empress; Corbularia, Bulbobocodium minor, C. rupicola, both perfect gems of their kind; Erythronium giganteum, and E. Nuttallianum. *X.*

Daffodil Sir Watkin.—Throughout the whole of the genus Narcissus it would be difficult to discover a variety of greater beauty than this one. N. Empress may be more pleasing to some in the combination of white and pure lemon-yellow, but in Sir Watkin the yellow of the corona is very rich, and the flower is of the largest size. We have received some fine examples from Messrs. J. Dickson & Sons, of Chester.

NARCISSUS GROWING IN GUERNSEY.

Messrs. Charles Smith & Son, of the Caledonia Nursery, have secured for themselves great renown for their extensive and very valuable collection of Ixias, and well they deserve it, but they are none the less deserving for their magnificent collection of Narcissus, which is now rather past their best. One must see this noble race of hardy spring flowers in order to appreciate their proper value as grown by Messrs. Smith & Son. They are grown in large oblong beds, each bed, or most of them, containing one variety, and growing side by side; by this arrangement they can be seen to the best advantage, and what a beautiful subject for planting in lines or groups in long shrubbery borders! Again, as cut flowers, what flowers would look more charming in the drawing-room or boudoir, arranged that each flower can have its full effect, and mingled with its own leaves? I do not think the Narcissus is grown in quantities half large enough in private establishments where cut flowers are in great demand. It is indeed a grand spectacle to see so many different varieties in goodly quantities in full flower at the Caledonia Nursery. I will just enumerate a few varieties which gave the most striking appearance:—

Bicolor.

Horsfieldi must be assigned the first place as seen growing *en masse*, the perianth being almost a pure white, and the beautiful bright yellow of the trumpet, together with its free blooming habit, presented a truly magnificent bed.

Empress is very similar to Horsfieldi, and thought by a great many to be superior, but it is not such a free bloomer, and seeing them both growing side by side, I should most certainly decide in favour of Horsfieldi, although the latter will not last so long as a cut flower.

Princeps is here growing to perfection; the pale straw of the perianth, and rich yellow of the trumpet, makes it quite a favourite, and very effective when growing in groups or large masses.

But the largest and most noble of the whole collection, individually, was Lorifolius Emperor, the bold broad leaves being quite a feature, contrasting so well with the broad segments of the perianth, of a light yellow; and the enormous size of the trumpet of a much deeper shade, places it most properly at the head of the race of Narcissus.

Rugilobus, although the flowers are much smaller, bears a close resemblance to L. Emperor, and is one of the early-flowering varieties.

Bicolor maximus shows itself very distinctly, the perianth a good white, and the trumpet of a beautiful bright yellow; a most desirable variety in any collection.

Spurius, a very good early kind, with a very large trumpet of a bright yellow colour.

Pallidus præcox is one of the earliest, and is now nearly past blooming, the pale lemon of the perianth makes it very pleasing. A large bed planted with an unnamed variety was exceedingly attractive, resembling very much in colour the whiteness of Guernsey cernuus and moschatus, but is a much superior flower, insomuch that it does not droop, but grows as erect as any of the Narcissus, and when distributed I believe it will soon become a favourite, and a valuable acquisition.

Tenby was also making a good display, the very bright yellow making a large bed of them very conspicuous. Lobularis, maximus, Spurius coronatus, and Lorifolius, were also making a good show.

Incomparabilis Section.

Sir Watkin was in good quantity, and a variety that is well worthy of the praise so recently bestowed upon it; the sulphur colour of the perianth segments, and bright yellow of the trumpet, made it specially noticeable among a large collection.

Stella, one of the best of this class, the perianth a pure white, and the trumpet of a very bright yellow, is to be seen here to perfection.

Conspicua is a very showy variety, from its having an orange-red rim to the trumpet; a very useful variety.

Hume's Sulphur, albidus Leedsi, poeticus ornatus, and the very good variety (of the large trumpet division) for pot work, Bulbocodium citrina (Sulphur Hoop-petticoat), was also a beautiful bed, and numerous other varieties. A very interesting portion of the collection were the doubles, the best being Orange Phœnix, Yellow Phœnix, and Sulphur Crown.

The soil must be what they delight in, being a good mellow loam with plenty of sand added. It is not often we come across a grand collection of Narcissus in such luxuriant health as those at the Caledonia Nursery, and Mr. Smith and his very energetic son (who principally carries on the business now) are to be congratulated on possessing such a fine collection. *H. Britten, Guernsey.*

Reports of Societies.

PRIMULA CONFERENCE AND NATIONAL AURICULA SOCIETY'S SHOW (Southern Section): April 20–21.

The cold which has been so prevalent in this country and on the Continent exerted an unmistakable effect on the plants which were shown on this occasion, which were in too many cases small of foliage and quite flowerless. So much so was this the case with some of the rarer kinds, that the habits of the plants even were matters of conjecture. Plants from the Continent, for which much interest was evinced, and many hopes were indulged by the lovers of the Primula, were very scantily represented.

The best show was made by the veteran alpine growers, Messrs. Backhouse, of York, whose collection as a whole was ahead of others, and was enriched by many rare species. Next to this, so far as size of plants was concerned, may be placed that from the Edinburgh Botanic Garden, and then came the collection from the Royal Gardens, Kew—the nursery trade in Messrs. Paul & Son, The Old Nursery, Cheshunt; Mr. T. Ware, Hale Farm, Tottenham; Messrs. J. Veitch & Sons, Chelsea; and Mr. Dean, Ealing.

The exhibits of private growers were not numerous, but consisting of the more popular kinds in good flowering condition, they made a braver show than some of the larger collections.

The other plants shown, such as Roses in pots, Narcissi, zonal Pelargoniums, mixed hothouse plants, and a good collection of Apples from Sussex, added variety to the exhibition.

Botanic Gardens: Royal Gardens, Kew.

This was a most interesting collection, but the plants were later than most others, possibly the consequence of the low-lying position of the gardens. The rich collection of Primulas shown numbered in all, including species, varieties, and hybrids, no less than 118, a very large percentage of which were nicely in flower. Of the more imposing species, such as Boveana, obconica, japonica, involucrata, &c., large groups were staged, which much enhanced the collection as a whole, as well as a few fine healthy pans of cortusoides, amœna, &c. Noting them with the assistance of the list, the first to attract attention was the handsome P. admontensis, a cross between P. Clusiana and P. Auricula; it appears to be an easily grown plant, and from its free-flowering propensity likely to take the place of the first parent, which is very uncertain in its flowering. P. algida was represented by a fine specimen; P. Allioni by a remarkably fine deep rose-flowered form, the typical plant having pale washy flowers; P. alpina, super-Auricula, and viscosa were also fine, as were P. Auricula, Balbisi. A form of P. auriculata, with deep rosy flowers attracted considerable attention; the specimen had a dozen flower-heads of fine form; calycina is a fine healthy plant not yet in flower; carniolica, an excellent plant for show, with three fine flower-heads; adonensis, in bud; and a few fine denticulatas, with the varieties cashmiriana Henryi and pulcherrima, and erosoides, which received a First-class Certificate; Dinyana, a cross near to integrifolia, with lovely dark flowers, in excellent condition; a few forms of the Oxlip, some of which were very curious; a fine piece of Facchini minima × spectabilis, large rosy flowers, with a white ring round the eye; two forms of P. scotica were also in good condition; floribunda, together with a large-flowered seedling form, and a few fine specimens of Göbeli, a hybrid near to the garden Auricula, of a beautiful and striking colour; integrifolia, typical, from the Pyrenees; two healthy specimens of P. longiflora, one with an unusually long tube; and a fine pan of P. longiscapa luteola, just opening its buds, the plants very robust, and promising well for a fortnight hence; four very distinct forms of marginata—media, a hybrid between officinalis and elatior; minima, a fine strong patch, just showing flower; mistassinica, a small North American species in the way of farinosa; mollis, a charming Himalayan species; Obristi, a hybrid allied to Auricula, with long flowerstalks, and charming clear yellow flowers. Algæ, a new Turkestanian species of special merit; Peyritselii, known in gardens as viscosa major, is an excellent garden plant of free growth. Portæ, which is allied to daonensis, is also an acquisition: it is to all appearance a handsome pubescens, the latter also were represented. P. rosea, and the variety grandiflora, large pans of which were shown, were both in excellent condition, as was also Rusbzi, a new species from North Mexico. P. sik.

kimensis spectabilis, with the forms Clusiana, Kitaibeliana, and Wulfeniana, Stuartii and purpurea, suffrutescens, a shrubby species from californica ; tyrolensis, venusta, a most charming hybrid ; with viscosa, a typical plant collected by Mrs. Dyer in the Pyrenees ; and the former ciliata, commutata, confinis, decora, hirsuta, latifolia, pedemontana, and an excellent pan of nivalis. A large pan of the common Primrose was not the least beautiful feature of the group, as well as a very interesting cross between the Oxlip and the Primrose. A set of beautiful drawings of alpine Primulas were shown in frames at the back of the above collection—shown, we believe, by Mr. Sentner of Munich.

Glasnevin.

Preparations had been made to send a good set from the Glasnevin collection, but the late season, ably seconded by a severe hailstorm last week, rendered it impossible to send a representative collection. Amongst those sent, nnmbering eighteen, were several species of interest, such as Primula erosa, of which only one other plant was exhibited ; P. integrifolia, P. Dinyana, P. calycina, P. spectabilis, P. Wulfeniana, P. Göbelii, P. pubescens, a nice variety of P. emarginata, a fine dark form of P. cashmiriana, and a nice pan of P. ciliata purpurea. There was also a good plant of the somewhat scarce blue Polyanthus.

Edinburgh.

This collection, brought by Mr. Lindsay, the Curator of the gardens, must rank 2d in point of merit, comprising, as it did, a greater variety of rare forms, and of older ones that were well flowered. There were P. prolifera syn. imperialis, P. Kitaibeliana, a Carinthian species, rare, a star-like lilac-coloured bloom ; a fine seedling form of P. obconica, P. ciliata Balfouriana, with crimson-purple flowers—a gem ; a species of Primula from the Himalayas, which received a First-class Certificate ; P. rotundifolia, P. mollis.

The following is a list of the species and varieties shown in this fine collection :—

Primula acaulis, R. B. G. var.	Primula nivalis, seedling
,, Allioni	,, Polyanthus (good seedling)
,, auriculata (4)	,, Parryi
,, ciliata purpurea	,, Peyritschii
,, ,, seedling (2)	,, prolifera
,, ,, Balfouri (2)	,, rosea
,, Clusiana	,, purpurea Roy'e
,, decora	,, Himalaya (2)
,, denticulata purpurea(6)	,, denticulata erosiana
,, ,, rosea	,, scotica
,, elliptica	,, similis
,, floribunda	,, Stuartii
,, grandiflora rosea	,, Steini
,, graveolens	,, viscosa
,, helvetica	,, ,, nivea
,, inflata	,, Warei
,, integrifolia (2)	,, Wulfeniana
,, intricata	No. 177. Himalaya
,, Kitaibeliana	Mr. Calder's (Canonmills, Edinburgh) seedlings from P. viscosa
,, minima	
,, mollis	Androsace (2) carnea
,, marginata	,, eximea
,, ,, var.	,, foliosa
,, minutissima	,, Laggeri
,, obconica var. Normandi (raised by G. H. Normand, Esq., Whitehill, Aberdour, Fife)	,, rotundifolia macrocalyx
	Soldanella montana

Nurserymen.

The collection of Messrs. Jas. Backhouse & Son, York, consisted of the following :—Primula marginata in various forms, viz., P. m. cœrulea, the nearest approach to a blue colour in Primulas ; a rose coloured, and the type of the species, a plant with loose showy heads of pale lilac flowers. All of these were full of flower, and being early were in good condition. Of rare kinds we noted P. Allioni, with sturdy rosettes of roundish spatulate leaves, and flowers bright purple, borne on short stems. P. Balbisi, a species with yellow flowers and sweet-scented ; P. Facchini, very dwarf, with rosy flowers ; P. minima, to which the previously named species is allied ; P. glaucescens, with rose-coloured flowers and glossy leaves ; P. spectabilis, a fine rock plant, with rosy flowers and glabrous entire leaves ; P. coronata ; the rare P. Floerkeana, with blush flowers ; the Himalayan P. floribunda ; P. farinosa, and P. f. acaulis, the stemless variety, both being pretty on the rockwork, as they produce masses of bright pink flowers ; P. japonica, now well known as a border plant of a showy kind ; several varieties of P. denticulata, P. Dinyana, P. Göbeli, a variety of P. Auricula to which great interest attaches as a possible source of the florists' Auricula, leaves powdered white, and flowers purple ; the fine North American P. Parryi, with magenta flowers on tall stalks ; P. pubescens, similar to ciliata but with larger heads of pink flowers ; P. marginata, an interesting variety with white-powdered leaves having a white margin, flowers bright yellow, in clusters. We also noticed P. admontensis, P. Weldenia, P. Kitaibeliana. Many other species and varieties of alpine plants were shown by Messrs. Backhouse & Sons, notably Polygala chamæbuxus purpurea, several Soldanellas and Androsaces, Corydalis cava albiflora, Arabis blepharophylla superba, a large pan of Darlingtonia californica well furnished with pitchers. The collection was an admirable one, and wanted only the specimens to have been of a larger size so as to have shown their true characteristics more fully.

Messrs. Paul & Son, The Old Nursery, Cheshunt, showed mainly species and hybrids of European origin, P. viscosa in several forms, as found on the Swiss, Italian, and Pyrenean mountains ; P. acaulis, the wild Primrose, a purplish coloured variety ; P. integripetala, a pretty purplish rose ; P. Facchini, P. villosa, with large rose coloured blooms ; P. Clusiana, with carmine flowers on stalks 5 inches high ; P. Churchilli, P. intermedia, P. Obristi, yellow, with mealy foliage ; P. elatior, P. Auricula purpurea, with glaucous foliage, flowers brownish-red ; P. latifolia, with rosettes of serrate pubescent leaves bearing rosy-purple flowers ; Androsace villosa, white ; A. Laggeri, pink ; A. ciliaris, pink ; and A. Chamæpeuce, white ; several varieties of Primula denticulata, and an Indian species of Primula unnamed well furnished with stout peduncles, carrying heads of purplish flowers.

Mr. R. Dean, Ranelagh Road, Ealing, showed a small group of Primulas, consisting of a partially double flower of an alpine Auricula named Evolution, the anthers having become converted into abortive petals ; the colour is of two shades of purple, dark in the centre portion, running off into a paler colour as the margin is approached. There were various forms of P. viscosa, P. marginata cœrulea, P. ciliata, P. polyanthus, Crimson Beauty, Jackanapes, and Cloth of Gold.

Messrs. J. Veitch & Son, Chelsea, had a nice collection, consisting of P. obconica, so useful for blooming almost all the year : the flowers are white, shaded with lilac ; P. pulcherrima, fine round heads of shaded lilac flowers, a variety of P. denticulata ; P. involucrata, a slender grower, with umbels of white flowers, and glaucous foliage ; P. rosea, fine clumps of bright rose-coloured flowers ; P. vulgaris, double, in yellow and pink ; P. Polyanthus, Colnbrook Park Beauty, a fine showy regular flower with yellow eye and primrose petals ; several other good forms of P. Polyanthus were included in the exhibit.

Mr. Thomas Walkden, florist, Marsland Road, Sale, Manchester, showed a hybrid Primula of a pale flesh-colour and sulphur eye.

Mr. T. Ware, Tottenham, staged a good collection, consisting of P. rosea, P. farinosa, P. floribunda, P. mollis, P. grandis, like the previous one, a strong grower with noble foliage, with yellow flowers on a drooping panicle ; P. Sibthorpi, a variety of P. vulgaris, several forms of P. acaulis, as rubra plena, alba plena, lilacina flore-pleno, and platypetala ; P. suaveolens, a variety of P. officinalis ; P. brevistyla, a hybrid between elatior and vulgaris, or acaulis and officinalis ; P. elatior cœrulea, P. denticulata, P. media, a hybrid of allied parentage to P. brevistyla ; P. cashmiriana, flowers of violet-purple ; P. auriculata, with long strap-shaped leaves, and bright purple flowers ; P. Fortunei, P. Peyritschii, the intermedia of gardens, not unlike P. ciliata, except that the flowers are less bright ; and P. arctotis or P. Kerneri, a hybrid between Auricula and villosa. Several species of Orchis ornamented the collection ; we noticed O. myoides, O. scabiosa, O. provincialis, and O. Robertiana. There were likewise two pretty Ornithogalums in excarpum and montana, but in neither were the flowers more than half opened. Megasea speciosa was a mass of scented flowers ; and varieties of Anemones, Trilliums, Thalictrums, and Soldanellas, together with a background of Narcissus, completed the group.

Amateurs.

J. T. D. Llewellyn, Esq., Penllergar, Swansea, who was awarded the 1st prize, showed some well grown clumps in pots of P. japonica, P. Sieboldi, P. obconica, P. verticillata syn. involucrata, P. cashmiriana, P. Auricula from the Swiss Alps, P. cortusoides, P. denticulata, P. erosa, pale mauve, P. rosea, P. viscosa, P. intermedia, P. acaulis rubra plena.

Some nice out Polyanthuses came from Mr. John Poe, Nenagh, Ireland ; and G. F. Wilson, Esq., Weybridge, showed again Primula polyanthus hybrids, Scott Wilson and Alice Wilson, together with specimens of P. denticulata.

Dr. R. Hogg showed the Bradfield Oxlip and the common English Oxlip, and the intermediate forms of the first and second generations of seedlings, resulting in the Bradfield variety.

Dr. August Kanitz, of the Royal Botanic Gardens, Kolosvar, Hungary, showed a pan of Primula carpatica, a slender scape of yellow flowers, but robust foliage.

Mr. P. J. Worsley, Rodney Lodge, Clifton, showed P. denticulata, P. hirsuta, syn, hirsuta, from the Upper Engadine ; P. carniolica, dwarf and compact, with rosy-purple flowers ; P. pubescens, P. nivea, a variety of P. viscosa (with white flowers), P. integrifolia, P. viscosa from the Upper Engadine), and P. Facchini.

The Hon. and Rev. J. T. Boscawen, Lamorran, Probus, Cornwall, had a most charming collection of wild Primroses taken from the open air, presumably the woodlands around the house. The tints were chiefly pink and yellow, two colours that blend most harmoniously, but which are rarely seen together, except in Nature's handiwork. The plants were robust, as one might expect from the genial climate of the place, and full of bloom.

Miss G. Jekyll, Munstead, Godalming, exhibited a hill of moss dotted over with border Primroses in white, crimson, yellow, and red that had a pretty effect in their uncommon setting.

Mr. Loder, Floore, Weedon, showed species and varieties of Primula.

Miscellaneous.

Mr. B. S. Williams, Upper Holloway, exhibited a table full of mixed stove plants and Orchids, amongst which were some uncommon plants, as Dracæna vivicans, a narrow-leaved variety, with the colouring of D. terminalis, D. Lindeni, Rudgea macrophylla, several fine Cliveas, and a very fine specimen of Tillandsia tessellata.

From Mr. Llewellyn's garden at Penllergar there were some species of Himalayan Rhododendrons, as Thompsoni, Hookeri, ochraceum, arboreum album. Wallichi, campanulatum, and ciliatum. The flower masses of these were small, owing to their having grown in the open, but they were compact and uninjured, which speaks well for the capabilities of the climate about Swansea. There were also Narcissi from the same garden.

A capital group of bush and trained standard Roses of well known kinds were exhibited by Messrs. Paul & Son, Old Nurseries, Cheshunt. A good collection of Narcissi were shown by Messrs. P. Barr & Sons, and Messrs. Pearson & Sons, Chilwell Nursery, Beeston, Nottingham, contributed a stand of zonal Pelargoniums of enormous proportions.

Messrs. Cheal & Sons, Crawley, Sussex, showed sixty-five dishes of very well preserved Apples, many of them being quite early kinds.

National Auricula Society.

This exhibition was not so extensive as last year ; the untoward character of the spring told heavily against the development of the flowers ; besides those from the Rev. F. D. Horner were wanting on this occasion : and it is to be regretted that a domestic calamity compelled the absence of this enthusiastic Northern florist. With the exception of Mr. W. Bolton, of Warrington, no other cultivator of Auriculas in the North was able to exhibit ; the flowers there are late, as might be expected after such a long winter and retarding spring. There was a noticeable roughness about the flowers ; the superb quality seen on former occasions was wanting at this show, and indications were not lacking that the flowers in some instances had been subjected to pressure to have them in bloom on the occasion.

Show Auriculas.

Two collections only of twelve varieties were staged, the 1st prize being taken by Mr. J. Douglas, gr. to F. Whitbourn, Esq., Great Gearies, Ilford, with some of the best flowers in the show, but wanting, for reasons already stated, in that fine quality usually shown in the productions of this noted grower. Mr. Douglas had of green edges : Verdure (Douglas), like most greens, weak in the tube, but with good paste, clear broad green edge, large pip and good truss—a possible seedling from Colonel Taylor ; Prince of Greens, Colonel Taylor, and Mr. B. Simonite's new green, the Rev. F. D. Horner, but rough and in indifferent character. Grey edges : George Lightbody, very fine, with nine grand pips—this was selected as the premier Auricula in the exhibition ; Mabel (Douglas), and Dr. Horner (Read). White edges : Trail's Beauty and Conservative, very good. Selfs : Duke of Albany (Douglas), a fine dark variety ; C. J. Perry, and Pizarro. 2d, Mr. C. Turner, Royal Nursery, Slough, with greens : Prince Henry (Turner), good paste, black body colour, and narrow edge of green. Grey edges : George Lightbody, Robert Trail, Alderman, C. E. Brown, and John Waterson. White edges : Dr. Kidd, Lady Sophia Dumaresque, and Beauty. Selfs : Meteor Flag, Lord of Lorne, Lord Clyde, and C. J. Perry.

There were four collections of six varieties staged, and Mr. J. Douglas was again 1st, with Prince of Greens and Abbé Liszt, a green edge with a Lightbody pip, tube rather large, good paste, black body colour, and broad green edge. Greys : George Lightbody and Mabel ; white edge : Smiling Beauty, and selt, Duke of Albany. 2d, Mr. Charles Turner, with grey edges : George Lightbody and Alderman C. E. Brown. White edges : Dr. Kidd and Beauty. Selfs : Lord of Lorne and Lord Clyde. 3d, J. T. D. Llewellyn, Esq., Penllegare, Swansea. 4th, Mr. Hardwidge, 1, Martineau Road, Highbury Hill.

There were nine collections of four varieties, and as this and the succeeding class for two varieties are for those who do not exhibit in the two preceding classes, and ten pairs were staged. These entering facts may be taken as indicating that the smaller growers are increasing in number. With four varieties, Mr. T. E. Henwood, Early, Reading, was 1st with Lancashire Hero in its green form ; Geoge Lightbody, grey ; Conservative, white ; and Sapphire (Horner), self ; 2d, Mr. C. Phillips, Early, Reading, with Lancashire Hero, green ; George Lightbody, Conservative, and Helen Lancaster ; 3d, A. Potts, Esq., Hoole Hall, Chester ; 4th, Mr. W. L. Walker, Reading ; 5th, Mr. A. J. Sanders, gr. to Viscountess Chewton, Brockhouse Lodge, Cobham. In the class for two varieties, Mr. A. Potts was 1st, with New Green and Acme ; 2d, Mr. C. Phillips, with Acme and C. J. Perry ; 3d, Mr. W. A. Rolt, 170, Hartfield Road, New Wimbledon, with Lancashire Hero and George Lightbody ; 4th, Mr. C. Orchard, gr. to J. Galsworthy, Esq., Coombe Warren, New Kingston, with George Lightbody, and Sykes' Complete, white edge ; 5th, Mr. W. L. Walker, Reading.

Single Specimens.

In this class a good many flowers were staged, as usual, and the awards were as follows :—Green edge : 1st, Mr. C. Turner, with George Lightbody in a green form ; 2d, Mr. Turner, with Lancashire Hero, also in its green dress ; 3d and 4th, Mr. J. Douglas, with Prince of Greens ; 5th, Mr. T. E. Henwood, with Colonel Taylor. Grey edges : 1st, Mr. C. Turner, with George Lightbody ; 2d and 3d, Mr. J. Douglas, with the same ; 4th, Mr. C. Turner, with Richard Headley ; 5th, Mr. W. L. Walker, with the same ; 6th, Mr. Llewellyn, with Grey Friar ; 7th, Mr. C. Phillips, with George Lightbody. White edges : 1st, Mr. A. Potts, with John Simonite ; 2d, Mr. J. Douglas, with Acme ; and 3d, with Conservative ; 4th, Mr. C. Turner, with Acme ; 5th, Mr. A. Potts, with Beauty ; 6th, Mr. C. Turner, with True Briton ; 7th, Mr. T. E. Henwood, with

Acme. Selfs: Mr. W. Bolton, with Black Bess; 2d, Mr. T. E. Henwood, with Pizarro; 3d, Mr. C. Turner, with Pizarro; 4th (no name), with Topsy; 5th, Mr. W. Bolton, with a seedling; 6th, Mr. C. Turner, with Lord of Lorne; and 7th, Mr. A. Potts, with the same.

LARGE COLLECTIONS.

Two collections only of fifty Auriculas were staged, Mr. J. Douglas being 1st, his leading varieties including Campbell's Green Edge, Prince of Greens, Admiral Napier, and Lancashire Hero, green edges. Grey edges: George Lightbody, Mrs. Moore, Richard Headley, Ajax (Horner), Colonel Champneys, and Marmion (Douglas). White edges: Dr. Kidd, Beauty, Silvia, Mabel, Reliance (Mellor), True Briton, and Conservative. Selfs: Sapphire (Horner), Garibaldi, Duke of Albany, C. J. Perry, Lord of Lorne, and Sims' Eliza, 2d, Mr. C. Turner, with Campbell's Green Edge, Lycurgus, greens. Greys: George Lightbody, Confidence, Squire Chilman, Alderman C. E. Brown, and Dr. Kidd. White edges: Beauty, Acme, Seedling, True Britain, and John Waterson. Selfs: C. J. Perry, Mrs. Smith, Petronella, Miss Rainey, Vulcan, Topsy, Bessy Bell, Sultan (Turner), in the way of Pizarro, but with a browner edge; Bacchus, and Clipper.

ALPINE AURICULAS.

These, as usual, made a charming display, but they also were not up to their usual standard of refinement. Mr. C. Turner was 1st, with twelve varieties, staging the following gold centred flowers:—Charles Turner, a superb variety that worthily commemorates this distinguished florist, golden centre, with a zone of dark colour, and a broad edge of cerise—large well formed stout pip; Sceptre, very fine; Mr. Thomson, Sensation, Athlete, Unique, very fine; Sir H. Darvill, Hotspur, J. T. Poe and J. J. Colman, bright gold, dark ground, edged with mauve. White centres: Edith and Princess of Wales. 2d, Mr. J. Douglas, with Rosamond Fellowes, Lone Bird, Sensation, Mr. Llewellyn, J. H. Laing, Diadem, and seedlings. Golden centres and white edges: Lady Howard de Walden and seedlings. Two collections only were staged.

In the class for six varieties there were five stands, Mr. C. Turner being again 1st, with Mrs. Ball, Progress, Mrs. Thomson, a fine and showy alpine, and Mrs. Pope, golden centres; white centres, Paragon and Edith. 2d, Mr. J. Douglas, with Miss Mollie, Rosamond Fellowes, Princess of Waldeck, Diadem, Lady Howard de Walden, and one unnamed; 3d, Mr. R. Dean, Ranelagh Road, Ealing, with golden centres, Prima Donna, Vesuvius, Unique, and seedlings; 4th, Mr. C. Orchard; 5th, Mr. A. Spurling, The Nest, Blackheath.

The best specimen golden centred alpine came from Mr. C. Turner, who had Pantaloon, dark ground, edged with rosy-salmon; 2d and 3d, Mr. J. Douglas, with Rosamond Fellowes; 4th, Mr. R. Dean, with Mrs. Thomson; 4th, Mr. C. Turner, with John Ball, a very fine dark variety; 5th, no name; 6th, Mr. J. Douglas, with Princess of Waldeck.

Mr. C. Turner had the best white centred alpine in Columbine, dark ground, edged with bright pale purple, fine pip; 2d, Mr. R. Dean, with Tenniel; 3d, Mr. C. Turner, with Miss Taplin, maroon, slightly shaded with purple; 4th and 5th, Mr. J. Douglas, with Snowdon Knight a Catharina type of flower; the tube rather large, fan paste, black body colour and densely mealed edge pip of good form. A 2d prize was awarded to J. T. D. Llewellyn, Esq., for Grey Edge, Charles Warmington, golden tube, dense white paste, black ground, broad grey edge, a flower that cups while expanding, and when open is deficient in outline; the pip is massive and of great substance. A 1st prize was awarded to Mr. W. Bolton for Mrs. W. H. Rawson, a velvety-black, deep good tube, very circular paste, broad edge and a finely formed pip. A 2d prize was awarded to the same for self, Mrs. Wilson Woodhead, in the way of Mr. Douglas but deeper in colour, the tube weak, circular paste and broad margin of sweet purple, pip stout and of fine shape.

Of seedling alpine Auriculas a few highly promising varieties were staged by Mr. C. Turner, who received a 1st prize. Golden centre: Sunrise, deep gold, dark body colour, edged with dark and fiery crimson, fine smooth pip; and a 2d prize for Athlete, bright gold, dark ground edged with salmon and mauve. A 1st prize was awarded to the same for cream centre, Marguerite, deep ground, edged with bright pale purple, good shaped pip.

The premier Auricula was George Lightbody, grey edge, shown by Mr. J. Douglas. Lady Howard de Walden showed a mixed collection of Primrose Polyanthuses and Auriculas of an interesting character.

POLYANTHUS.

There were but two collections of six gold-laced Polyanthus, Mr. J. Douglas being 1st, with good plants of William IV., Prince Regent, George IV., John Bright, Sanderson's Henry L., and Lancashire Hero. Messrs. Paul & Son, Old Nurseries, Cheshunt, had a half-dozen seedlings, but were disqualified through having pin-eyed flowers. The best three plants came from Mr. T. Walkden, Marsland Road, Sale, who had capital specimens of Exile, Cheshire Favourite, and a seedling black ground; 2d, Mr. J. Douglas, with George IV., Prince Regent, and John Bright; 3d, Mr. R. Dean, with Prince Regent, Exile, and a seedling; 4th, Mr. J. T. D. Llewellyn.

In the class for the best single specimen Mr. T. Walkden was 1st and 2d, with Cheshire Favourite, ; Mr. R. Dean being 3d, with George IV., Prince Regent, Lancer, and Formosa, following in the order of merit.

The best twelve fancy Polyanthuses came from Mr. R. Dean, who had large and showy plants of Sulphur Gem, Conqueror, The Bride, Yellow Bedder, Chancellor, Cloth of Gold, and seedlings; 2d, Messrs. Paul & Son, with varieties unnamed.

Two collections of twelve Primroses (double and single), were staged, and here Mr. R. Dean was again 1st, with a superb lot, consisting of Royal Purple, Clarissa, Ellen Terry, very pretty, lilac-pink; Fire Queen, Salvator, Ethel, Double White, and seedlings. 2d, Messrs. Paul & Son, with good pots of platypetala plena, Croussii, Sulphur, and the purple double varieties, and some seedling singles unnamed.

FANCY AURICULAS.

Two excellent collections of these were staged, Mr. J. Douglas being 1st, and Mr. Bolton, 2d. They represent eccentric seedling forms with curious combinations of colours, and they command a good deal of admiration.

A few seedling Auriculas were shown, and a first prize was awarded to Mr. J. Douglas for white edge.

The Conference.

THE meeting was held in one of the crush-rooms of the Albert Hall, and was well attended by amateurs and professional growers and lovers of the genus Primrose and its allies. Mr. J. T. D. Llewellyn took the chair at noon, supported by such well-known Primulophiles as Sir Joseph Hooker, Mr. G. F. Wilson, Rev. C. Wolley Dod, Mr. J. G. Baker, Professor Foster, Mr. F. Moore, Glasnevin; Mr. Lynch, Cambridge; Mr. Burbidge, Dublin; Mr. Douglas, Mr. Jenkins, Mr. Bolton, Mr. Rashleigh, Mr. Churchill, Dr. Hogg, Lady Hooker, Miss Owen, Mr. Poe, Mr. Lindsay (Edinburgh), Mr. Potter, Mr. G. Paul, Mr. Harry Veitch, and many others. Mr. Llewellyn introduced the business of the meeting with some appropriate remarks.

Dr. Masters, who acted as Secretary, briefly alluded to the communications, and specimens, living and dried, sent by Mr. Boscawen, Mr. Dewar, Mr. Stein of Breslau, Dr. King of Calcutta, Dr. Duthie of Saharunpur, the fine series of drawings sent by Mr. Sentner of Munich, M. Franchet of Paris, Mr. Westland of Hong Kong, Professor Macoun of Ottawa, Dr. von Regel of St. Petersburg, Professor Willkomm of Prague, Dr. Asa Gray of Cambridge, Massachusetts, and Professor Kanitz of Kolosvar.

A special vote of thanks to these gentlemen was proposed from the Chair, and carried by acclamation. Mr. Hibberd gave orally the substance of his communication, printed in full in another column. Sir Joseph Hooker, in proposing a vote of thanks to Mr. Hibberd, alluded to the great value of these Conferences, as showing the reciprocal aid which botanists might give and take from each other, and was followed by Mr. Baker in the same strain, Mr. Baker criticising with animation some of the propositions of Mr. Hibberd, whose paper was avowedly heterodox, and intended to provoke discussion; Mr. Lynch, Mr. Bolton, Mr. Fraser and Mr. Potter followed, and Mr. Hibberd replied in a genial vein.

The substance of Mr. Horner's paper was read by Mr. Bolton, and elicited some remarks from Mr. Llewellyn, Mr. Burbidge, Mr. Bolton, and Mr. R. Dean. Mr. Baker then gave the gist of his paper, published in full in another column, and then, as time pressed, Dr. Masters' paper (printed in full in this issue, with illustrations) was taken as read, and elicited an excellent and practical discussion on the culture of Primroses by such competent authorities as Mr. Jenkins, Mr. Wilson, Mr. F. Moore, Mr. George Paul, Mr. Wolley Dod, and Mr. Fraser.

The Chairman proposed a vote of thanks to the authors of the several papers, which was carried *nem. con.*, Rev. W. Dod seconding the motion.

Mr. R. Dean proposed, and Mr. J. G. Baker seconded a vote of thanks to the Chairman. Mr. Wilson speaking to the motion, asked permission to testify to the great value of the illustrations, and thus brought to an end one of the most instructive and interesting meetings yet held under the auspices of the Society. We append as many details as the limited time at our disposal and the exigencies of space permit.

THE DISCUSSION.

The CHAIRMAN, in opening the proceedings, congratulated the Society on the collection of Primulas that had been brought together, and expressed his pleasure at seeing such an exhibition of combined beauty and science. There was yet plenty of room for all comers. Many had indeed been induced, by seeing the specimens, to go into the art of the florist—to go to the wild originals whence these treasures were obtained, and on the other hand, botanists who had seen the wild originals growing in their native soil, obtained crossed forms which were intensified in their beauty. There was ample room both for the florist and the botanist. He was one of those who thought there was a great future before them, and that they would raise and develope forms which would be the flowers of the future. He did not think they had yet arrived at the standard of beauty which it was possible for them to attain, by the observation and care of the hybridisers. Some papers were to be read which would point to the hybridising of flowers. Mr. Horner was not present to read his paper—a fact which he (the Chairman) greatly regretted, as it was the first time that gentleman had missed an Auricula show. He was sure, however, Mr. Horner was with them in spirit, and would greatly have enjoyed being present. There were other papers to be read, but the writers of them were present. It had been a great pleasure to him to attend the Conference, and he was sure great good resulted from such undertakings. He was sure everybody enjoyed the Narcissus Conference, and if those who attended learned nothing, at any rate the public had a very pleasant exhibition. He hoped the knowledge they derived from such meetings would be imparted to those who were not fortunate to be able to come. There had been a great development of the Narcissus since the Conference, and he thought he might claim that that development was an outcome of the Conference. They might look forward to similar results from the Primula Conference, and he should at any time be glad to give his vote in favour of the continuation of the Conferences.

Dr. MASTERS (the Secretary) then read several communications he had received from various centres of cultivation, including Calcutta, China, St. Petersburg, Hong-Kong, Canada, Prague, Abyssinia, &c. He said he felt it his duty to communicate with the Foreign botanical gardens for the purpose of obtaining specimens of the Primula. Unfortunately, partly owing to the unseasonable weather and other causes, very few foreign exhibits had been sent; yet the few that had been sent were not unimportant. There was a very valuable collection of seeds from the Calcutta Gardens. These came some time ago, and had been distributed, as far as their numbers would permit, among the Primula growers. They included seeds unknown in English gardens, and he could not but look upon them as very valuable. Some very splendid water-colour tracings had been sent by Mr. Sentner, of Munich, a very appropriate name, and he thought if they would take the trouble to look at them they would be rewarded by seeing a beautiful series of European Primroses. Until lately they had some doubt as to the existence of the wild flower in China until some had been sent. This was a botanical fact of very considerable interest, and one for which they were indebted to this Conference. From Canada and St. Petersburg they had received a series of dried specimens.

The CHAIRMAN then proposed a vote of thanks to the foreign botanists who had contributed specimens, and whose co-operation had greatly assisted the Conference.

Professor M. FOSTER seconded the motion, which was carried with acclamation.

Mr. HIBBERD then read his paper. See p. 319.

In the discussion which followed,

Sir JOSEPH HOOKER said he was glad to see the Auricula brought into prominence that day, and he regarded the Conference as of the highest importance from a botanical point of view. He saw no happier augury for the Horticultural Society than the results which would be produced at the Conference, and he should be glad to see a Conference held fortnightly instead of yearly,

Mr. J. G. BAKER endorsed everything that Mr. Hibberd had said about the great interest taken in the subject, and they were very much indebted to the writer of the paper for giving them a history of the flower. There were so many garden plants about the history of which so little was known, and it was desirable that the Society should lend its influence to working out such questions. It was one of the most interesting problems they could have to deal with, and he looked to the Conference for a solution of many matters. Mr. Hibberd had treated the question most fully from the florists' point of view, and he had no intention to undervalue the paper. As he had come up in the train he had jotted down a few points about which he did not agree with Mr. Hibberd. That gentleman complained that there were botanists who could not recognise any merit in what the florist said. The only hope of the solution of any difficulty on questions like this was for botanists and florists to meet together. Such a Society as this furnished a common ground for them to meet together, and to put before the meeting contributions on the subject. When he wrote to the *Gardeners' Chronicle*, a year ago, on this very question, he expressly stated the reasons why florists should not come to any conclusion upon the matter, because they wanted to have the experience of botanists. With regard to the historical review of the matter, in the first place there was an excellent figure of the Auricula of an earlier date than that to which Mr. Hibberd referred, given in the work of 1563. It was the earliest figure he knew, and there could not be any doubt that it represented this wild Primula Auricula of which they had been speaking. There was another authority bearing upon the history of the matter, it was that of Pena and Lobel, *Nov. Stirp Adversaria*, published in the year 1580. That gave a figure of the Auricula. Mr. Hibberd said nothing at all about the flowers being yellow, but these flowers were of various shades. Long before the 16th century the colouring of the flowers was one of the most important points in dealing with what they had to consider to-day. Another statement was made by Mr. Hibberd in which he says that in the 16th century botanists were a little better informed on the subject than the writers of the later Roman period. Mr. Hibberd had dealt with these early books in the style of the Irishman who said that one man was as good as another and much better. He held in his hands the book, *Clusius Rariorum Plantarum Historia* which went into the whole question. The Primula was described in the fullest detail in that work. Mr. Hibberd had quoted Gerard, but that writer's figures with one slight exception were taken bodily from Clusius. He supposed the history of the Auricula was something like this. There was no

mention of it in Turner's book in 1549, but in 1563 it was widely spread in cultivation and twenty years later it had put on a large amount of variety in its flowers, and the alpine species were known long before the end of the 16th century. He thought from that if they took Mr. Hibberd as representing the florists, they would see that florists were not always to be entirely trusted. He thought the present was a good opportunity for settling the matter. Mr. Hibberd put a question but did give any definite answer to it. His theory was that the Auricula had originated from the wild species of the Primula Auricula. There could not be any doubt that this was a full settlement of the question. The Primula pubescens was the parent of the alpine Auricula. Whether they were true species or not did not concern the matter very much. There were plenty of them in Styria and Switzerland. He was anxious that this Conference should throw some light on the matter. He thought such a meeting as that was unparalleled in the world, and he should not like it to terminate without his being put right on the question.

Professor FOSTER said there could be no doubt that the P. pubescens was a hybrid between the Auricula and P. hirsuta. That was a fact they might take as settled. It was also a fact that Clusius sent from the Alps to Belgium numerous alpine Primulas, but he complained that most of them died, the two that lived being the Auricula and the pubescens. He would like to know whether there was any evidence that Primula Auricula by itself, without any foreign pollen sported. On the other hand, the P. pubescens showed its hybrid origin by sporting. He thought he was right in saying that in some places as many as nine different colours of the pubescens could be found, and he had seen it stated somewhere that the Alpine Primula sported very largely.

Mr. LYNCH suggested that experiments should be made to obtain Auriculas by hybridising those forms which they had obtained. He thought very highly of Mr. Hibberd's view that a great deal of what we saw now had been evolved artificially. He thought the difficulty now was to know what had not been evolved.

Mr. DOUGLAS said he had raised many purple species.

Mr. BOLTON said he had raised many species partly from his own crossing.

Mr. FRASER said the varieties they saw around them had arisen from a long process of variation and natural selection. He maintained that the colour arose by gradation, for if a plant could once be got to vary it could be made to continue to vary by selection. The fact of so much yellow being found was that that colour was most prominent to the insects by whom fertilisation was carried on.

Mr. HIBBERD briefly replied. He said the views expressed coincided with his own. They had before them a practical suggestion from Mr. Lynch that the subject should be treated synthetically. Mr. Douglas was the best man to undertake that.

Mr. Horner's paper was then read. See p. 524. In the discussion which followed,

The CHAIRMAN said the question of proportion was a most important one, because unless proper proportion existed the beauty of the flower would be gone. It was the most necessary characteristic of the flower.

Mr. BURBIDGE said he did not think they got new colours as often as they imagined by hybridising.

Mr. BOLTON said two seedlings of the same colour were very rarely obtained. In Lancashire they did away with all watery colours. They wanted deep colours, and when they desired a black, it had to be a jet black, and so on. In reference to the Polyanthus, they wanted something quite distinct from what they had seen before.

Mr. DEAN said some of those present would like to see the particular flower mentioned in the last paper—the green-edged seedling which had a red body colour instead of black. He had endeavoured to get a black body colour, but in this particular flower it would be observed that the body colour had become red instead of black, and in the course of time they might have a race of green-edged Auriculas.

Mr. Baker's paper was then read. See p. 532. No discussion followed.

Dr. Masters' paper was taken as read. See p. 522. In the discussion.

The CHAIRMAN said there was very much to be said on the question of the culture of their favourite plants, and the question had been very ably treated by Dr. Masters. He thought Primroses should have as much water as they liked, and whenever they liked, and not to have to wait to be supplied. They wanted to see the new Indian Primulas grown in perfection.

Dr. MASTERS said, with reference to the Primroses grown on boggy places, he had found that the roots were almost invariably extremely divided. Some however, had very fibrous roots, and others had very long thick succulent roots.

Mr. JENKINS, speaking of the Himalayan Primrose, said he had been a somewhat successful cultivator for some time. With regard to the P. sikkimensis, they required a deep body of soil, and abundance of water. Coal-ash, or cocoa-nut fibre was an excellent covering. As to the Fairy (?) Primroses, these died off without any warning, which was a great difficulty they had to overcome. Their deep covering had far more to do with their successful culture than all the soil. Mr. Jenkins said it was not so much a question of food from below as altitude.

Mr. PAUL said he did not think it was entirely a matter of shade so long as there was a continuous supply of water.

Mr. JENKINS said P. sikkimensis should be grown as a biennial to bring about the best results. In its own home it covered some acres of bog, but they never got it to flower after the second year.

The Rev. C. WOLLEY DOD said he had been very successful with the sikkimensis in deep moist soil, and it could not stand the poor sunlight of Cheshire. He thought the north aspect was the most desirable. He had found the variety rosea prolific to any degree. He had never succeeded in dividing P. sikkimensis, or P. capitata with any results. He advised the seed should be sown in all positions and the results should be reported to the next Conference. It was impossible for them to imitate the atmosphere, and there might be conditions of soil which even the analyst had failed to discover.

Mr. FRASER said his opinion was that atmospheric conditions were more important in the cultivation of Primulas than the nature of the soil. If the atmospheric conditions were suitable the soil was of secondary importance. Moisture should also be continuous, because, after the blooming season was over the growth did not stop. He thought the shade was of secondary importance.

CYCLAMENS.

THOSE who remember what Cyclamen persicum was in times past—say thirty years back—as compared with the produce of any good strain of seed, such as in the possession of any of the leading growers, can scarcely avoid noticing what careful selection and an improved course of cultivation has done for the once insignificant plant, but which in the form it now exists is one of the most attractive and useful winter-blooming occupants of the greenhouse. Few plants possess so many properties that commend them to the general cultivator; the appearance which a well-managed Cyclamen presents, with its even head of bloom standing well above a setting of handsome foliage, renders it one of the best of small-growing plants for decorative use. The enduring character of the flowers, produced as they are in succession over a lengthened period, with their adaptability for use in the many ways in which cut flowers are now employed, combine to make the plant one of the most desirable in cultivation. The absence of anything approaching formality in the shape of the flowers fits them for use in bouquets and like arrangements, where others of a less elegant character necessarily form a considerable portion of the whole. Employed as they now are by the leading bouquet makers, so as to stand well out in relief above the flowers that form the body of the arrangement, Cyclamens have done much to take off the objectionable formality which used to be the worst feature in a fashionable bouquet. In the miniature vases and little shallow bowls that have now all but displaced the large stands in table arrangements these flowers can be used with the best effect. White Cyclamens and half open red Roses, with red Cyclamens and white Roses, in a like half-open state, put together loosely with plenty of Rose leaves in shallow bowls, make as pretty a table arrangement as any I have seen. One of the first considerations with most gardeners used to be the dessert; the best grown fruits in the greatest variety was looked upon as the chief point which had to be considered. Now their attention has to be divided between flowers and fruit, and it may be safely said that the former take the lead in not a few places, for although it is not likely that fruit will ever be discarded, still on a fashionable dinner-table it holds a much less prominent position, and appears in much less quantity than it used to. With this change gardeners have now to consider well what plants will yield the best succession of flowers suitable for cutting, as with the altered state of matters, however beautiful a flower may be individually, its value is so far reduced, as it is found unsuitable for use when cut. Yet, although Cyclamens are so well adapted for the purpose, they are not so generally grown by gardeners as might have been expected, or, if grown, their condition often admits of a good deal of improvement, being often much inferior to what is seen in the plants grown for market. At first sight this would appear strange, but an acquaintance with the details of cultivation which the growers for sale follow at once explains the difference in the results. Much the greater portion of the subjects now in cultivation that come under the denomination of greenhouse plants will so far conform to the treatment required by others associated with them that they can be had in faultless condition under what may be termed mixed cultivation. That this is just what the Cyclamens will not do, is shown by the indifferent state in which they are generally seen when an attempt is made to grow them with other greenhouse plants which gardeners in private places have oftener than otherwise no other alternative but to do.

Under the ordinary cool greenhouse treatment which used to be supposed all that was required by these plants, they never can be produced in the fine condition that the leading growers now bring them out in. Taking all properties into account except size they are generally the best the first time they flower, for though some wonderfully large examples are often seen, still their second blooming after a rest is usually not commensurate with what might be looked for, taking the increased size of the plants into account. The size of the bulbs, with the quantities of flowers produced by plants originating from seed not more than fourteen or fifteen months after sowing, shows the rate at which they have been kept going. The seeds are sown from July up to the end of August; kept warm they soon germinate. They are sown in ordinary seed-pans, and when large enough are pricked off into pots, several together, in which they are kept until ready to move singly into little pots, in which they remain until the roots are numerous enough to require more room. When the seedlings, appear care is taken not to subject them to too much direct sun, but to let them have sufficient light and air to prevent the leaves being drawn, for, if this occurs, not only is their appearance spoilt, but the plants are so far weakened that no subsequent treatment will bring them up to the mark within the limited time that elapses between the seed being sown and the time at which the plants are required to bloom.

In fact, the cultivation of Cyclamens, as now carried out by the leading growers, may be set down as whip and spur sort of work, in which there is no time to lose. The plants are kept wholly by themselves, nothing else being grown with them, so that there is no give-and-take treatment such as is unavoidable where things that require to be differently treated are grown together. Through the autumn and winter an intermediate temperature is maintained, so as to keep the plants growing; during the dull season they are stood well up to the glass in light houses or pits.

When the weather is warm enough to bring red-spider or thrips into active life the pots are stood on a moist bottom, which is the best preventative against the attacks of these pests, through the moisture that is constantly arising, and in the night condenses on the leaves.

There are few, if any, plants that are such general favourites, in which the cultivation for sale is confined to such a limited number of growers, and of those who attempt their cultivation all do not succeed, showing that they are not so easily managed as most market plants. With Cyclamens, as with other things that need something out of the ordinary course of treatment, the most successful are those who study attentively what the plants require, and carry out to the letter the treatment which they find to answer best. There are few things more deserving of all the attention that can be given them. *T. B.*

GARDEN LAKES.

IN making or remodelling lakes the primary object in view is to make the sheet of water appear as large as possible. This can easily be accomplished by making the sides of curves and bends, and by a judicious planting of trees and shrubs. Nothing is more beautiful than to see masses of Rhododendron, Azalea, Gueldres Rose, Laburnum, the different varieties of Thorn, wild Roses, &c., mirrored on the placid surface of a sheet of water. The sides should slope a considerable distance under the water, to relieve the banks of pressure, where embankment is necessary. If the soil be porous, the bottom will require from 6 to 8 inches of clay puddle. If the ground falls away rapidly from the outlet, a good background of deciduous trees should be planted, interspersed with Pines and other striking specimens in the front, while the foreground can be filled in with shrubs and patches of Foxgloves. Rheum palmatum has a fine effect, so has the Hemlock and Burdock. Avoid steep, muddy banks, as they constantly get washed by the rippling. The puddled bottom should fall gently away from a green grassy slope, and the sides will be greatly improved if they be laid with some shingly gravel. For from 3 to 4 feet all round they will also be much enhanced by clumps of water Iris, Flags, and other aquatic plants. Let clumps of Rhododendrons, wild Roses, and other flowering plants dip their branches in places on the surface.

Islands should also be formed; the number will depend upon the size of the sheet of water. If the lake be under an acre none will be necessary; if over an acre, a small island some distance from the outlet and near the centre of the lake. This should have a few patches of Reeds and grassy slopes, with a few specimen trees, such as the deciduous Cypress, Hemlock Spruce, and a few shrubs. Of course when the sheet of water covers six or seven acres, three or four such islands may be made, but larger in proportion. Patches of aquatics should also be interspersed over the surface. The beautiful Aponogeton distachyon is a most charming water plant. It is a native of the Cape of Good Hope, is quite hardy in many parts of our country, and it blooms early in the spring; in fact, it has been in blossom as early as January in some parts of Devonshire. It has also a delicious fragrance. Another noble plant scarcely receives the justice it deserves at our hands. No lake or pond should be without Nymphæas or Water Lilies. They appear to most advantage when kept in single specimens or small groups. If allowed to run into dense masses the flowers and foliage are never so finely developed. In planting these the best way is to fasten a few turfs together, plant the Nymphæa in the centre and drop the whole mass in the desired spot: it will soon take care of itself.

WALKS

should pass near to the margin, and partial glimpses of the surface should be seen, while a vista of the whole length of the surface should be secured if possible. Have no artificial objects near, let the whole thing be a picture of Nature clothed in her own vestments. *W. M. Baillie, Luton Hoo Gardens.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON

FOR THE WEEK ENDING WEDNESDAY, APRIL 21, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to Sea Level.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 1000.	WIND. Average Direction.	RAINFALL.
April	In.	In.	°	°	°	°	°	°			In.
15	30.06	+0.31	49.8	39.8	10.0	44.5	— 2.0	39.2	82	N. N.E.	0.04
16	29.97	+0.22	48.5	38.0	10.5	42.5	— 4.1	36.0	78	E. N.E.	0.06
17	29.86	+0.11	47.5	37.2	10.3	41.6	— 5.2	38.7	93	E.N.E. to N. N.E.	0.01
18	29.66	—0.09	49.2	40.0	9.2	44.0	— 3.0	42.7	95	N. N.E.	0.09
19	29.66	—0.09	61.8	39.0	22.8	50.1	+ 2.0	46.2	85	N.E. to E. N.E.	0.02
20	29.70	—0.05	50.6	44.5	6.1	46.6	— 0.8	41.8	85	E. N.E.	0.00
21	29.81	+0.05	47.5	40.2	7.3	43.7	— 3.0	37.9	82	E..N.E.	0.00
Mean	29.82	+0.07	50.7	39.8	10.9	44.7	— 2.3	42.4	86	E. N.E.	0.20

April 15.—Fine and bright in early morning, dull and overcast mostly, and frequent showers of rain during the day.
,, 16. Alternately clear and cloudy.
,, 17.—Dull.
,, 18.—Overcast throughout, rain in afternoon.
,, 19. Very fine bright day.
,, 20.—Dull, overcast morning. Fine bright afternoon.
,, 21.—Fine, dull.

LONDON: *Atmospheric Pressure.*—During the week ending April 17, the reading of the barometer at the level of the sea increased from 29.62 inches at the beginning of the week to 30.28 inches by 5 P.M. on the 13th, decreased to 30.21 inches by 5 P.M. on the 14th, increased to 30.26 inches by 9 A.M. on the 15th, and was 29.98 inches by the end of the week.

The mean reading of the barometer for the week was 30.09 inches, being 0.40 inch higher than last week, and 0.17 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 53°.2, on the 13th; on the 17th the highest was 47°.5 The mean of the seven high day temperatures was 50°.

The lowest temperature was 32°, on the 11th; on the 14th the lowest temperature was 43°.5. The mean of the seven low night temperatures was 36°.9.

The greatest range of temperature in one day was 19°.8, on the 12th; the smallest, on the 14th, was 6°.4. The mean of the seven daily ranges was 3°.1.

The mean temperatures were, on the 11th, 40°; on the 12th, 43°.4; on the 13th, 45°.4; on the 14th, 45°.4; on the 15th, 44°.5; on the 16th, 42°.5; and on the 17th, 41°.6; and these were all below their averages by 5°.8, 2°.5, 0°.7, 0°.9, 2°, 4°.1, and 5°.2 respectively.

The mean temperature of the week was 43°.3, being 0°.9 lower than last week, and 3° below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 105°.5 on the 16th. The mean of the seven readings was 85°.7.

Rain fell on five days, to the amount of 0.20 inch.

ENGLAND: *Temperature.*—During the week ending April 17, the highest temperatures were 60°.1 at Cambridge; 58° at Truro; 57°.9 at Plymouth; the highest at Preston was 52°, at Liverpool 52°.1, at Bradford 30°.1. The general mean was 54°.8.

The lowest temperatures were 27° at Wolverhampton, 28°.8 at Nottingham, 29°.8 at Liverpool; the lowest at Newcastle was 38°, at Plymouth 35°.4, at Sunderland 34°. The general mean was 31°.9.

The greatest ranges were 30°.1 at Cambridge, 28° at Truro, 26°.4 at Wolverhampton; the least ranges were 16° at Newcastle, 19° at Preston, 19°.9 at Bradford. The general mean was 22°.9.

The mean of the seven high day temperatures was highest at Cambridge, 54°, at Truro 53°.8, at Plymouth 52°.9; and was lowest at Bradford, 49°.2, at Leeds and Sunderland 49°.4. The general mean was 50°.8.

The mean of the seven low night temperatures was highest at Plymouth, 40°.2, at Newcastle 39°.8, at Liverpool 39°.4; and was lowest at Wolverhampton, 33°.9, at Cambridge 35°.3, at Hull 35°.7. The general mean was 37°.5.

The mean daily range was greatest at Cambridge, 18°.7, at Wolverhampton 16°.2, at Truro 15°.1; and was least at Newcastle 10°, at Bradford 10°.5, and at Leeds and Preston 11°. The general mean was 13°.3.

The mean temperature was highest at Plymouth, 45°.1, at Truro 44°.7, at Liverpool 43°.; and was lowest at Wolverhampton, 40°.5, at Hull 41°.4, at Sunderland 41°.5. The general mean was 42°.7.

Rain.—The largest falls were 0.40 inch at Nottingham and Hull, and 0.35 inch at Sheffield; the smallest falls were 0.03 inch at Truro, 0.09 inch at Brighton and Cambridge. The general mean fall was 0.21 inch.

SCOTLAND: *Temperature.*—During the week ending April 17, the highest temperature was 58°.7, at Paisley; at Aberdeen the highest was 51°.7. The general mean was 56°.3.

The lowest temperature in the week was 29°.6, at Glasgow; at Leith the lowest temperature was 35°.6. The general mean was 33°.2.

The mean temperature was highest at Paisley, 47°, and lowest at Aberdeen, 43°.5. The general mean was 44°.7.

Rain.—The largest fall was 0.25 inch at Edinburgh and Dundee; and the smallest fall was 0.02 inch at Paisley. The general mean was 0.13 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

ORANGE WINE MAKING.—I should be obliged if any one would tell me where to get some notes on the making of Orange wine in America. It is probable that some *brochure* has been published dealing with the subject. *Ch. N.*

Answers to Correspondents.

CORRECTION.—In our last issue, report of the Royal Botanic Society's show, col. *a*, p. 503, for Mr. W. Webster, gr. to A. Heaver, Esq., read Mr. G. Wheeler, gr. to Lady Louise Goldsmith.

CUCUMBER DISEASE: *J. J. B.* The too common Cucumber disease, caused by small worms.

FERN FRONDS: *X.* The fronds have been eaten by the larva of a saw-fly similar to that which attacks Pear leaves.

GLASTONBURY THORN: *J. G.* In the *Gardeners' Chronicle*, p. 480, 1874, vol. i., n.s., Mr. Shirley Hibberd states that he obtained trees from Mr. Sampson, of Yeovil. In that year it flowered in February, but its usual time to do so is in April. In *Gardeners' Chronicle*, p. 51, 1877, vol. vii., Mr. Hibberd states that his trees flowered on January 6 (Old Christmas Day). The flowers are white.

MANUALS ON THE VINE AND TOMATO: *J. Crombie. Vines and Vine Culture*, by A. F. Barron; Royal Horticultural Gardens, Chiswick; *The Culture of Vegetables and Flowers from Seeds and Roots*, by Sutton & Sons, Reading. Published by Hamilton, Adams & Co., 32, Paternoster Row, E.C.

NAMES OF FRUIT: *Apples sent without letter.* 1, Dutch Codlin; 2, Hanwell Souring; 3, not recognised.—*W. Kisher.* Royal Somerset Apple.

NAMES OF PLANTS: *J. Urquhart.* Clianthus magnificus, a variety of *C. puniceus*; a very fine branch, loaded with blooms, and free from all trace of red-spider. Please inform us where it grew, and other particulars.—*An Old Subscriber.* Mackaya bella.—*C. H. P.* 1, 3, and 5, Narcissus Telemonius plenus, a very sportive plant; 2, Cernuus plenus; 4, Butter-and-Eggs.—*W. S. C.* Saxifraga hypnoides; Scilla sibirica; Doronicum austriacum.—*J. B.* We cannot possibly name your Cactus, or, indeed, any Cactus, from a flower alone.—*W. L.* Dendrobium primulinum.—*J. Wise.* Dendrobium Pierardi.—*C. E. F.* The scrap of Fern was far too small for determining the species; Abies Pinsapo.—*J. R.* Flowers withered upon arrival, and without leaves; 1 is a variety of Narcissus Tazetta; 2, Trumpet Narcissus var.—*John Tull.* 1, Trachelospermum jasminoides; 2, Selaginella (not recognised); 3, Iberis sempervirens; 4, Saxifraga hypnoides; 5, Daphne mezereon; 6, Vinca minor, white variety.—*J. Phillpot.* Vanda gigantea; Pittosporum undulatum.

NEMATOIDS IN ORCHIS LEAVES: *Dr. Ritzema Bos.* The leaves were full of the creatures when we sent them; they must have made their escape.

PALMS: *Reader.* Seaforthia elegans has the young unfolded leaves covered with a brownish fur, and the under-side of the mature leaves a dull green colour. Ptychosperma Alexandræ has the unfolded leaves a bright green, and the under-side of the mature foliage covered with a silvery fur. These characters run through the plants from their infancy to maturity. Botanists now place these two Palms in the genus Archontophœnix, calling them A. Cunninghamii and A. Alexandræ.

CATALOGUES RECEIVED.

VILMORIN-ANDRIEUX & Co., Paris—Seeds of Trees and Shrubs, Hardy and Tender.

W. PAUL & SON, Waltham Cross, Herts—Roses, Geraniums, &c.

R. W. PROCTOR, Ashgate Road, Chesterfield—Florists' Flowers, &c.

COMMUNICATIONS RECEIVED:—St. Brigid.—W. S.—T. S. A. D. W.—H. B. & Co.—W. H. Fitch.—Rev. J. Stevenson.—J. Starkie Gardiner.—A. D. Webster.—H. Briko.—T. Smith (next week).—R. & A. Morrison (next week).—Mount.—F. S. & Co.—Baron Schroder.—W. S.—T. W.—W. H. O.—T. F.—R. W. Adlam.—T. Smith.—H. W. W.—J. D.—F. G.—C. W. D.—H. Sells.—Norfolk.—E. L. Beard.

Markets.

COVENT GARDEN, April 21.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

A VERY dull week, and trade will be quiet till after the holidays. Hothouse goods lower. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 0– 4 0	Pears, per dozen	..12 0 15 0
— Canadian, barrl.	8 0–21 0	Pine-apples, Eng., lb.	1 0– ..
Grapes, new, per lb.	5 0– 7 0	— St. Michael, each	2 6– 8 0
Kent Cobs, 100 lb.	40 0– ..	Strawberries, per lb.	2 0– 6 0
Lemons, per case	.. 8 0–10 0		

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz.	.. 0– ..	Mint, green, bunch	1 0– ..
Asparagus, Eng., 100 to	0 ..	Mushrooms, punnet	1 0– 1 6
— French natural, per bundle	.. 3 0– 8 0	Mustard and Cress, do.	0 4– ..
— Spanish natural, per bundle	.. 4 0– ..	Onions, per bushel	.. 5 0– ..
Beans, Kidney, lb.	.. 3 0– ..	Parsley, dozen bunch	2 0– 3 0
Beet, red, per dozen	1 0– 2 0	Parsnips, per dozen	1 0– ..
Broccoli Sprts., bush.	5 0– ..	Potatos, per cwt.	.. 4 0– 5 0
Carrots, per bunch	0 6– ..	,, kidney, per cwt	4 0– 5 0
Cauliflowers, per doz.	3 0– 4 0	Salsafy, per bundle	0 9– ..
Celeriac, per root	0 4– ..	Savoys, per dozen	.. 3 0– 5 0
Celery, per bundle	1 6– 2 0	Scorzonera, p. bundle	1 0– ..
Coleworts, doz. bunch	8 0– ..	Seakale, punnet	.. 2 6– ..
Cucumbers, each	.. 0 9– 1 0	Shallots, per pound	.. 0 3– 0 9
Endive, per dozen	1 0– 2 0	Spinach, per bushel	4 0–6 0
Herbs, per bunch	.. 0 4– ..	Sprouts, per pound	0 9– ..
Leeks, per bunch	0 6– ..	Sprue Asparagus, per bundle	.. 1 0– ..
Lettuce, per dozen	1 0– 1 6	Tomatos, per lb.	1 6– 2 6
		Turnips, bunch	.. 0 6– ..

POTATOS.—Market all lower than last week by 5s. to 10s. per ton.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Aralia Sieboldi, doz.	9 0–18 0	Ficus elastica, each..	1 6– 7 0
Arum Lilies, dozen..	9 0–12 0	Ferns, in variety, per dozen	4 0–18 0
Azaleas, per doz.	..24 0–42 0	Foliage Plants, various, each	2 0–10 0
Begonias, per dozen	6 0–12 0	Genistas, per dozen	8 0–12 0
Bouvardias, doz	..12 0–18 0	Hyacinths, per doz.	6 0– 9 0
Cinerarias, per doz.	6 0–10 0	Lilies, per dozen ..	12 0–24 0
Cyclamens, 12 pots	12 0–24 0	Marguerite Daisy, per dozen	8 0–12 0
Cyperus, per dozen..	4 0–12 0	Myrtles, per dozen..	6 0–12 0
Dracæna terminalis, per dozen ..	..30 0–60 0	Palms in var., each	2 6–21 0
— viridis, per doz..	12 0–24 0	Pelargoniums, doz..	12 0–21 0
Ericas, various, per dozen ..	..12 0–24 0	— scarlet, per doz.	4 0– 8 0
Euonymus, in var., per dozen ..	.. 6 0–18 0	Spiræa, per dozen ..	9 0–15 0
Evergreens, in var., per dozen ..	.. 6 0–24 0	Tulips, 12 pots ..	6 0– 9 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Anemone, French, 12 bunches ..	.. 3 0– 6 0	Narcissus, various, 12 bunches	2 0– 6 0
Arum Lilies, 12 blms.	4 0– 8 0	Pelargoniums, per 12 trusses ..	.. 1 0– 1 3
Azaleas, 12 sprays..	0 6– 1 0	— scarlet, 12 trusses	0 6– 1 0
Bouvardias, per bun.	0 6– 1 0	Primroses, 12 bun ..	0 6– 1 0
Camellias, 12 blms..	1 0– 4 0	— double white 12 bunches	0 9– 1 6
Carnations, 12 blms.	1 0– 3 0	Primulas, double, per bunch	0 6– 1 0
Cyclamens, doz. blms.	0 4– 0 6	Roses, Tea, per doz.	0 9– 3 0
Daffodils, per bunch	1 6 ..	— red, per dozen ..	2 0– 6 0
Eucharis, per dozen	9 0–12 0	Spiræas, 12 bunches	6 0– 9 0
Gardenias, 12 blooms	2 0– 6 0	Tropæolums, 12 bun.	2 0– 3 0
Hyacinths, per box..	2 0– 6 0	Tuberoses, 12 blms..	2 0– 3 0
Lapageria, red, 12 blooms ..	.. 1 0– 2 0	Tulips, doz. blooms	0 9– 1 0
Lilac, French, bunch	2 0– 7 0	Violets, 12 bunches	0 0– 0 9
Lily-of-the-Valley, 12 sprays	0 6– 1 6	— Parme, French, per bunch.. ..	4 0– 6 0
Marguerites, 12 bun.	4 0– 8 0		
Mignonette, 12 bun.	3 0– 9 0		

SEEDS.

LONDON: *April* 21.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report a moderate sowing demand for seeds. Samples of English Clover seed are pressed for sale, and lower prices are accepted. Alsike has now fallen to quite a speculative level of value. Extremely low rates also prevail for white and Trefoil. Indeed, buyers of seeds this season find cheapness characteristic of every article. Perennial and Italian Rye grasses continue fairly firm. Of Sanfoin the supply is in narrow compass. There is no change in spring Tares. Rather more money is asked for Rape and Mustard seeds. Hemp seed is drooping. Canary keeps steady. Blue Peas and Haricot Beans are firm. Feeding Linseed dull.

CORN.

MARK LANE: *April* 19.—English red Wheats were in limited supply and firm, white descriptions dull. For foreign Wheats the trade was dull and disappointing. Flour followed the same slow course as Wheat, but showed steady prices on the limited business done. Barley, Beans, and Peas remained at last Monday's rates, with small transactions. With full arrivals common qualities of Oats were 3*d.* lower on the week.

April 21.—Wheat has been steady, both as regards home and foreign produce, but business was quiet. Flour marked firmer prices, with a moderate demand. Barley was quiet and unaltered. Oats moved off slowly, at about late rates.

Average prices of corn for the week ending April 17: —Wheat, 30*s.* 10*d.*; Barley, 27*s.* 7*d.*; Oats, 19*s.* 3*d.* For the corresponding week last year:—Wheat, 34*s.* 1*d.*; Barley, 31*s.* 3*d.*; Oats, 20*s.* 11*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *April* 19.—Average supplies of all kinds of vegetables, with a good demand at fair prices:—Quotations:—Sprouting Broccoli, 2*s.* 6*d.* to 3*s.* per sieve; Spinach, 2*s.* to 3*s.* do.; Turnip-tops, 1*s.* to 1*s.* 6*d.* do.; do., in sacks, 2*s.* to 2*s.* 6*d.* per sack; Beetroots, 6*d.* to 10*d.* per dozen; Parsnips, 1*s.* to 1*s.* 6*d.* per score; Celery, 1*s.* to 1*s.* 6*d.* per bundle; bunch Rhubarb, 1*s.* 6*d.* to 2*s.* 6*d.* per dozen bunches; do. Turnips, 1*s.* 6*d.* to 2*s.* 6*d.* do.; do. Carrots, 1*s.* 6*d.* to 2*s.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* 6*d.* do.; Onions, 4*s.* 6*d.* to 6*s.* 6*d.* per cwt.; Carrots, 24*s.* to 40*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 17*s.* 6*d.* to 26*s.* do.; Mangels, 17*s.* to 22*s.* do.; Apples, 3*s.* to 6*s.* per sieve.

POTATOS.

BOROUGH AND SPITALFIELDS: *April* 20.—Good supplies and moderate demand. Prices about steady. Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 50*s.*; Victorias, 70*s.* to 90*s.*; and Champions, 60*s.* to 70*s.* per ton.

Imports.—The imports into London last week consisted of 6833 bags from Hamburg, 1838 from Harlingen, 41 from Rotterdam, 102 cases 74 boxes from Malta, and 193 sacks from Stettin.

HAY.

WHITECHAPEL: *April* 20.—Trade brisk, especially for hay, at an advance of 2*s.* on the top price. Supplies fair. Quotations:—Clover, prime, 90*s.* to 108*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 76*s.* to 94*s.*; inferior, 60*s.* to 70*s.*; and straw, 25*s.* to 36*s.* per load.

CUMBERLAND (Regent's Park): *April* 20.—A fair supply of meadow hay and Clover, with prices unaltered. Quotations:—Clover, best, 90*s.* to 105*s.*; seconds, 75*s.* to 86*s.*; hay, best, 84*s.* to 92*s.*; inferior, 70*s.* to 80*s.*; and straw, 30*s.* to 36*s.* per load.

Imperishable and Cheap—The New
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MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
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A Liberal Discount to the Trade.

HORTICULTURAL SHEET GLASS

14×12	20×15
16×12	20×16
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20×12	24×16
16×14	20×18
18×14	22×18
20×14	24×18

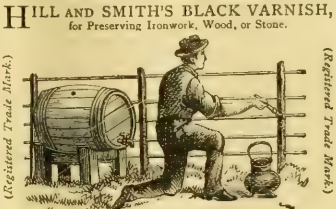
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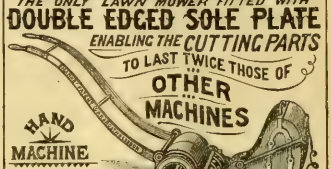
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HILL AND SMITH'S BLACK VARNISH,
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THE ONLY LAWN MOWER FITTED WITH
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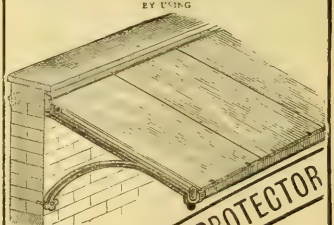
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To cut 14 inches wide,	5 10 0		
To cut 16 inches wide,	6 10 0	To cut 24 inches wide.	9 0 0

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2 feet wide, 1*s.* 10*d.* per foot run.
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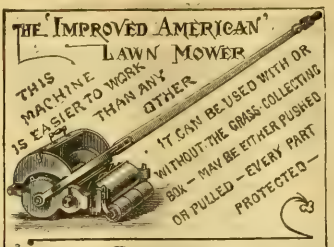
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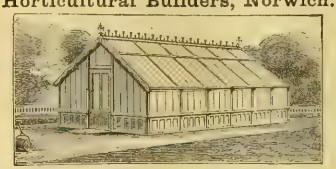
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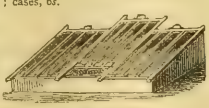
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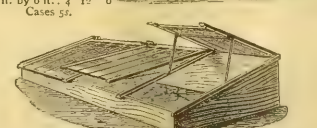
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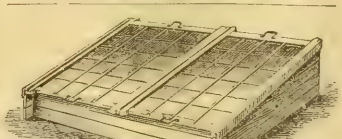
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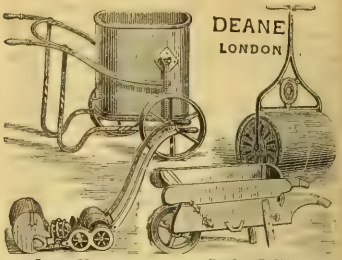
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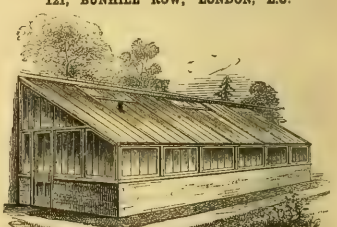
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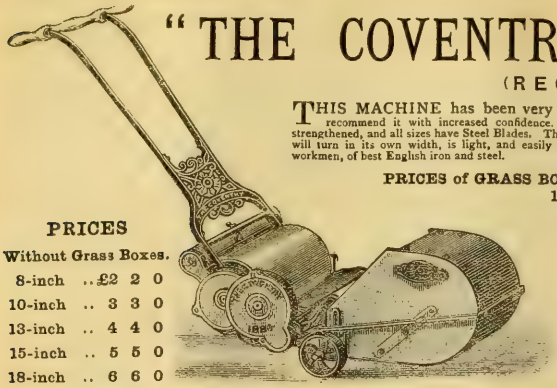
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A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of
PHILIP MAC MAHON, Curator.
Hull Botanic Gardens.
The following, amongst other valuable Prizes, will be awarded :—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal ; 2d Prize, £10 ; 3d Prize, £5.

BEDS AGRICULTURAL SHOW, At Luton, Beds, on WEDNESDAY, July 21.
A GRAND HORTICULTURAL SHOW, Open to all England, will be held in connection with the above, at which PRIZES to the amount of ONE HUNDRED and FIFTY POUNDS, in Twelve Classes, will be offered. Schedules and full particulars can be obtained of
Mr. S. C. OLIVER, Park Square, Luton.

TOBACCO CULTURE IN ENGLAND.—In view of the interest occasioned by recent enquiries in the House of Lords, Messrs. CARTER have imported a Collection of seventeen of the most important varieties of TOBACCO, as cultivated for commercial purposes in the United States, and other producing centres. Experimental packets, price 1*s.* and 2*s.* 6*d.* (each variety), or all varieties mixed, price 2*s.* 6*d.* per packet, post-free. The collection of seventeen varieties, 15*s.* and 40*s.* post-free, with printed direction for cultivation, from CARTERS', Seedsmen by Royal Warrants to H.M. the Queen, and H.R.H. the Prince of Wales, 237 and 238, High Holborn, London, W.C.

CHRYSANTHEMUM CULLINGFORDI (Scarlet-Crimson), 1*s.* 6*d.* each, or 7*s.* 6*d.* per half dozen. C. SMITH, Goldsmid Road Nursery, Brighton.

PALMS.—A few hundreds of splendidly grown Seaforthia elegans, Latania borbonica, Corypha australis, Phœnix reclinata, and Areca lutescens, 12 inches high, 4*s.* per dozen, 25*s.* per 100. Latania borbonica, Seaforthia elegans, and Euterpe edulis, 20 inches high, 12*s.* per dozen ; less quantity, 1*s.* 3*d.* each. Larger Palms equally cheap. Packages and Parcels post-free.
GARDENER, Holly Lodge, Stamford Hill, London, N.

100 Herbaceous and Alpine Plants for 25*s.*
RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

CLEMATIS JACKMANNI ALBA (Noble).
The White Jackmanni.
The Raiser now distributes the above at the Reduced Price of 5*s.* each. The value of strong 2-yr. old Plants will be well understood by all.
CHARLES NOBLE, Bagshot.
A few thousand MANETTIS at a Clearance Price. Other Nursery Stock. Send for prices.

Vines—Vines—Vines.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting in Vineries. CATALOGUES with full particulars on application.
The Vineyard and Nurseries, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

Seed Potatos.
H. AND F. SHARPE having a surplus stock of the following varieties of SEED POTATOS, are prepared to make very low offers to clear out :—Rivers' Royal Ashleaf, Sutton's Early Regent, Myatt's Prolific Ashleaf, Reading Russet. All selected stocks, and fine quality.
Seed Growing Establishment, Wisbech.

Profitable Sale of Cut Flowers.
CONSIGNMENTS carefully Disposed of.
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HOOPER AND CO., Covent Garden, London, W.C.
Good Flowers are always Wanted. Inferior qualities are useless.

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A. HILL AND CO., 52, Hart Street, Covent Garden, W.C., are open to RECEIVE CONSIGNMENTS of Choice CUT FLOWERS in any quantity. A. H. & Co., giving personal attention to all consignments, are thus enabled to obtain the highest market prices. All Cheques forwarded weekly. Bankers and good Trade references. Boxes and Labels supplied.

SQUELCH AND BARNHAM, North Row, Covent Garden, London, W.C., REQUIRE any quantity of fine Muscats, for which they can offer good prices, also fine Black Grapes, Tomatos, Cucumbers, choice Flowers, &c.

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ACCOUNT SALES sent daily, and CHEQUES forwarded weekly.
BANKERS and TRADE REFERENCES.
BASKETS and LABELS supplied.

MESSRS. GREGORY AND EVANS, Longlands Nursery, Sidcup, and 285, 286, 287, 288, Flower Market, Covent Garden, W.C., REQUIRE CONSIGNMENTS of CHOICE CUT FLOWERS. Messrs. G. & E., having a ready Sale for same, can ensure good Market Prices. Account sent daily.
REGISTERED TELEGRAPH ADDRESS—"COMMISSION, SIDCUP."

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WANTED, 2000 MISS JOLLIFFE, well-rooted, in stores or thumbs. State price and quantity to offer to
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WANTED, WELLINGTONIA GIGANTEA, in Pots, from 12 to 18 inches high, in quantity. Address
Mr. Y. ARCHURST, Burgess Hill, Sussex.

WANTED, JERUSALEM ARTICHOKES. Send Sample and Price to
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SUTTON'S PRIZE LAWN GRASS SEEDS.
Diplôme d'Honneur, Amsterdam, 1883.

SUTTON'S PRIZE LAWN GRASS SEEDS.
Special Gold Medal, Melbourne, 1880.

SUTTON'S GRASS SEEDS for GARDEN LAWNS. Per bushel, 25*s.* ; per gallon, 3*s.* 3*d.*
"Your new plot of Grass is perfection itself. I don't think I have ever seen better."—J. C. FOX, Esq., Royal Horticultural Society, South Kensington.

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"Our Tennis Ground, from a mixture of your Grasses, is greatly admired : it is so very clean."—Mr. Jos. KETTLE, Gardener to J. R. White, Esq., Leighton.

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"The Committee desire me to say that they have every reason to be satisfied with the Grass Seeds you have supplied for this ground during the last few years."—C. W. ALCOCK, Esq., Secretary to the Surrey County Cricket Club.

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HOLLY for HEDGES (now is the time to transplant), 12 to 15 inches, 25*s.* ; 15 to 18 inches, 35*s.* ; 18 to 24 inches, 50*s.* per 100 Forest LIST, containing heights and prices of well-grown Quick, Ash, Larch, Spruce, Pines, Oaks, Underwood, &c., free.
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PANSIES.—Now is the best time to Plant. 100 best Show and Fancy Pansies in Cultivation, in 50 finest named varieties (600 sorts to choose from), my extra choice selection, for 25*s.*, package free for cash with order. All other Florist's Flowers at equally low prices. CATALOGUES on application.
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HOLLIES of all sizes up to 8 feet, or 8 feet. —These plants have been removed yearly, consequently are safe for transplanting. An inspection of the stock is the only test of their quality to be relied on.
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SEN. A. F. SARAFANA, of São Paulo, Brazil, has on hand a splendid assortment of these beautiful Plants, in good and strong specimens. Also Plants of BROMELIAS, MELASTOMADS, PEPEROMIAS, PALMS, FERNS, CYCAS, &c., all of which he offers at very moderate prices.
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CREEPERS for WALLS, &c.—By planting what is suitable an ugly object may easily be made beautiful. Descriptive LIST and advice free.
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SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.
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YELLOW PETITE MARIE. —A clear Golden Yellow Sport of the old-fashioned free flowering Petite Marie. Plants, per dozen, 18*s.*, post-free.
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ADIANTUM CUNEATUM (MAIDEN-HAIR FERN), fine strong Plants, 6-inch pots, 9*s.* per dozen ; 5-inch pots, 5*s.* per dozen ; 3-inch pots, 3*s.* per dozen, 20*s.* per 100. LOMARIA GIBBA, or PTERIS TREMULA, 4-inch pots, strong, 3*s.* 6*d.* per dozen, 25*s.* per 100.
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To Florists, Seedsmen, Horticultural Builders, &c.
PLANTS, FLOWERS, FRUITS and VEGETABLES a Specialty.
WM. J. WELCH begs to call particular attention to his productions for ILLUSTRATING BOOKS, MAGAZINES, CATALOGUES, and for ADVERTISING PURPOSES.
For Specimens see *Gardeners' Chronicle*, 1883 to 1886.
ADDRESS, 25, Wellington Street, Strand, London, W.C.

SEAKALE SETS.—For Sale, 50 Bushels T. B., 41, Wellington Street, Strand, W.C.

ASPARAGUS, good Plants, 2*s.* 6*d.* per 100, 20*s.* per 1000, and upwards.
JAS. DICKSON AND SONS, "Newton" Nurseries, Chester.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots, 2*s.* 6*d.* per 100 ; extra strong do., two years old, 3*s.* 6*d.* per 100.
RICHARD SMITH AND CO., Worcester.

SALES BY AUCTION.

Wednesday next—(Sale No. 7153).
ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, MAY 5, at half past 12 o'Clock precisely, the Collection of ESTABLISHED ORCHIDS formed by the late J. J. Barran, Jun., Esq., of Burley, Leeds, including fine plants of C. gigas, C. Mossiæ, C. Mendelii, C. Percivaliana, Lælia anceps, L. alba, Oncidium Rogersi, O. Lanceanum, O. tigrinum, Dendrobes, Masdevallias, and Cypripediums of sorts; a quantity of Odontoglossum Alexandræ, O. Pescatorei, O. Rossi majus &c.

On view morning of Sale, and Catalogues had.

Wednesday next.—(Sale No. 7153.)
THIRTY CASES of ORCHIDS, received direct.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 5, a splendid importation of LÆLIA PURPURATA, L. ELEGANS, L. PERRINII, CATTLEYA BICOLOR, C. LEOPOLDII, C. GUTTATA, new ODONTOGLOSSUM, ST. NAHOPEA, &c., received direct from Brazil; a fine lot of CATTLEYA TRIANÆ, received direct, LILIUM AURATUM from Japan, CAPE BULBS, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7154).
VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 6, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, importations of the following valuable ORCHIDS, in fine condition:—Odontoglossum Alexandræ (best type), O. Pescatorei (very fine), a new Epidendrum (rare), Odontoglossum triumphans in fine masses, Cattleya aurea, Cypripedium Schlimii, Cattleya Mendelii (fine), Odontoglossum blandum (fine lots of this beautiful variety), and many other fine things.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in FLOWER and BUD will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12; and he will be glad if gentlemen desirous of entering plants for this Sale will please send particulars of same not later than THURSDAY NEXT.

Tuesday Next.
CYPRIPEDIUM CONCOLOR var. REGNIERII.

MESSRS. PROTHEROE AND MORRIS, are instructed to include in their SALE by AUCTION on TUESDAY NEXT May 4, 50 good Established Plants of the beautiful CYPRIPEDIUM CONCOLOR, var. REGNIERII, respecting which Prof. Reichenbach writes to the *Gardeners' Chronicle*, March 20 last:—"It surpasses everything I ever saw of Cypripedium concolor, said to be now-a-days a very rare plant. The very fine, well marbled, very blunt leaves of the fresh plant attain to 40cm in length, and exceed 2 inches in breadth. The large flowers are of distinct yellow colour, those on the plant are rather vivid, and have on the outside of the sepals a blotch of mauve purple." Also a fine lot of ESTABLISHED ORCHIDS, including Oncidium sceptrum, rare in flower; Lælia Perrini, strong specimens; Cypripedium villosum aureum, Epidendrum arachnoglossum candidum (described by Prof. Reichenbach in *Gardeners' Chronicle*, March 20 last), &c.

On view morning of Sale, and Catalogues had.

Tuesday Next.
2000 ODONTOGLOSSUM VEXILLARIUM.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander, to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, May 4, at half-past 12 o'Clock precisely, a fine Importation of ODONTOGLOSSUM VEXILLARIUM, also of CATTLEYA GIGAS, the free flowering form of Gigas; the beautiful ODONTOGLOSSUM SCEPTRUM, ODONTOGLOSSUM WALLISII, O. PHALÆNOPSIS, CATTLEYA SCHILLERIANA, CHYSIS BRACTESCENS, ONCIDIUM FORBESII, and many other rare and beautiful ORCHIDS.

On view morning of Sale, and Catalogues had.

Wednesday Next.
600 choice named CARNATIONS and PICOTEES, from a well-known collection; PANSIES, PYRETHRUMS, VIOLAS, PHLOXES, and many other HERBACEOUS PLANTS, TUBEROSES, HARDY BULBS, MAIDEN-HAIR FERNS, PELARGONIUMS, and other PLANTS in variety.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, May 5, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.
ODONTOGLOSSUM ALEXANDRÆ specially fine.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Shuttleworth, Carder & Co. to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, May 7, at half-past 12 o'Clock precisely, a grand Importation of CATTLEYA MENDELII, C. AUREA, C. GIGAS, and C. MOSSIÆ in splendid condition, many being in full leaf and perfect eyes; the rare ODONTOGLOSSUM RAMOSISSIMUM, O. VEXILLARIUM, very fine; ONCIDIUM WENTWORTHII (true), O. FUSCATUM, O. PAPILIO, O. KRAMERIANUM, ODONTOGLOSSUM GRANDE, and a magnificent lot of ODONTOGLOSSUM CRISPUM (ALEXANDRÆ) of the very best type, in fine masses and first-class condition. Also about 1100 lots of ESTABLISHED ORCHIDS from a well-known collection, amongst which will be found several very fine plants and species, and a very fine variety of ODONTOGLOSSUM ANDERSONIANUM in bloom, with extraordinarily large flowers.

On view morning of Sale, and Catalogues had.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the brand of "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

Duke Street and Tooley Street, London Bridge, S.E.
By order of the Executors of the late Mr. Alexander Tod, in consequence of the sudden death of the late Mr. William Adams Tod.

MESSRS. A. SAVILL AND SON have received instructions to SELL by AUCTION, at the Auction Mart, Tokenhouse Yard, Lothbury, E.C., near the Bank of England, on MONDAY, May 3, at 20 Clock, precisely, the valuable LEASEHOLD PREMISES, known as 16 and 17, Duke Street, and 241, Tooley Street, Southwark, S.E.; also the valuable Goodwill and Interest of the old-established Business of a Potato Salesman, carried on at the above premises for over fifty years so successfully by the Messrs. Tod.

Particulars and Conditions of Sale may be obtained of Messrs. DRUCES AND ATTLEE, Solicitors, 10, Billiter Square, E.C.; at the Auction Mart, Tokenhouse Yard, E.C.; at 17, Duke Street, S.E.; and at the Auctioneers' Office, 39, New Broad Street, E.C.

Ashford, Middlesex.
TO MARKET GARDENERS, BUILDERS, AND OTHERS.

MR. H. J. E. BRAKE will SELL by AUCTION, at the "Angel and Crown" Hotel, High Street, Staines, on THURSDAY, May 6, at 6 o'Clock in the evening to the minute, a valuable FREEHOLD MARKET GARDEN, containing 8a. 1r. 9p., situate at Ashford, Middlesex, well stocked with thriving Fruit Trees.

A valuable corner Plot, with frontages to the Kingston and Feltham Roads at Ashford, containing 0a. 3r. 3p., with the well built Eight-roomed House, Out-buildings, Conservatory, Stable, &c., and good Garden.

Also 28 Plots of valuable FREEHOLD BUILDING LAND, each having a frontage of 30 feet to the Richmond and Feltham Road, and a depth of 200 feet.

Particulars and Conditions of Sale may be had of W. E. FOSTER, Esq., Solicitor, Aldershot; and the Auctioneer, Farnborough, Hants.

FOR SALE, the LEASE and GOODWILL of the Old-established NURSERY, known as Waverley Nursery, Waverley Place, St. John's Wood, N.W., together with the Retail Shop, in good position close by, and Greenhouses in the rear, with a first-class Jobbing connection.

For further particulars apply, W. A. CLINGO, 18, Fitchley Road, St. John's Wood, N.W.

Important Market Town, 12 Miles from London.
FOR SALE, owing to ill-health of the Proprietor, a GENERAL NURSERY and JOBBING BUSINESS. Established over forty years. Four Acres of Land, Dwelling-house with Seed-shop attached, with good Frontage, and several Glass Erections. Incoming about £1000. Open to offer.

Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68 Cheapside, E.C.

To Nurserymen, Seedsmen, and Florists.
TO BE SOLD, a desirable BUSINESS, in the Main Street of an important Market Town, 20 miles from London, comprising a good Dwelling-house, a small Nursery, two handsome Seed Shops, Conservatory, nine Plant-houses, Potting and Store Sheds, &c. Lease, Stock, Fixtures, &c., about £500, a portion of which may remain if desired.

Address C. E. R., 41, Wellington Street, Strand, W.C.

TO BE DISPOSED OF, a well-established and genuine FLORIST BUSINESS. Large and convenient House, well let, which clears rent. First-class opportunity for adding Fruit and Vegetables for a good family trade. Apply on the Premises, 2, Swiss Terrace, next Swiss Cottage Station, Metropolitan Railway.

FREEHOLD LAND, £10. 20 by 100 feet. 32 miles out. Near stations. Good roads. Free conveyance. Instalments. Healthy and beautiful neighbourhood. BRAKE, Farnborough, Hants.

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Within easy distance of Covent Garden.

AN EXCELLENT MARKET and FORCING NURSERY, suitable for two persons. There are numerous Greenhouses, all well heated. Low Ground Rent. Terms moderate, to be arranged.

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TO BE LET, Surrey, 13 miles out, 6 Acres, all under cultivation, with large Glass-houses, Peach-houses, Heating Apparatus, &c. Cordon Rose Trees, Peaches, Vines, a large quantity of Vegetables, &c.

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To Landed Proprietors, &c.
A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 15, Listria Park, Stamford Hill, N.

PLANTS IN FLOWER.
Fine quality.
CARNATIONS, Tree, 18s. dozen.
GENISTAS, 12s., 18s. dozen.
HYDRANGE. HORTENSIS, OTAKSA, CYANOCLADA, 15s., 24s. dozen.
GARDENIA INTERMEDIA, just bursting, 24s., 30s. dozen.
GERANIUM, Ivyleaf, Madame Crousse, finely in bloom, 18s. dozen.
HUGH LOW AND CO., Clapton Nursery, London, E.

LILIUM AURATUM.—Ten Thousand of the First Bulbs ever imported into this country of this charming hardy Lily. In splendid condition for immediate planting. Monmoth Bulbs, 8 to 12 inches in circumference, 9d., 12., 12. 6d., and 24. each; 5s., 8s., 10s., 15s., 20s., and 25s. per dozen; sent packing and carriage free on receipt of remittance. Cases as imported, containing 50 fine Bulbs, 25s.; 100 fine bulbs 40s.; packing and carriage free.

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Cheap Bedding Plants.

WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off:—

TRICOLORS: Mrs. Pollock, 2s per doz., 15s. per 100; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s. 6d. doz. 18s. 100; 12 sorts, 6s.

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SILVERS: May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.

GOLD-LEAF: Crystal Palace Gem, 2s. 6d. doz., 20s. 100; Happy Thought, 2s. doz., 15s. 100.

SILVER TRICOLORS in variety: best sorts, 2s. doz., 12s. 100.

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BEST WHITE ZONAL: Queen of the Belgians, 4s. doz., 25s. 100; Niphetos, 2s. doz., 15s. 100.

LOBELIAS: Blue Stone, Pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. 100, 20s. 1000.

CALCEOLARIAS: Golden Gem, 5s. 100, 40s. 1000; Camden Hero, 6s. 100.

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AGERATUM: Imperial Dwarf (blue), the best bedder, 5s 100, 40s. 1000.

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IRESINE LINDENI, 5s. 100, 40s. 1000.

VERBENAS: see separate Advertisement.

Packing included. Terms, cash with order.

Cemetery Nursery, Gravesend.

Verbenas—Verbenas

WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 8s. per 100, 70s. per 1000. Post-free 3d. per 100 extra. Terms cash, packing included

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OLD-FASHIONED HEDGES.—English YEWS, bushy, and with a profusion of fibrous roots, 1½ to 2 feet, 6s. per dozen, 35s. per 100; 2 to 2½ feet, 8s. per dozen, 50s. per 100; 2½ to 3 feet, 9s. per dozen, 60s. per 100; 3 to 3½ feet, 12s. per dozen, 84s. per 100. Prices of larger sizes and other evergreens, suitable for hedges (*e.g.*, TREE BOX, HOLLY, LAUREL, PRIVET, CYPRESS, JUNIPER, THUIA, &c., on application.

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CHEAP BEDDING PLANTS.

GERANIUMS, strong autumn-struck plants.
,, Vesuvius (scarlet), Jean Sisley, Dazzler (crimson), Master Christine, Madame Vaucher, Happy Thought, 2s. per dozen, 12s. per 100, from single pots.
LOBELIA (true), from cuttings, Emperor William, 2s. 6d. per 100, 20s. per 1000.
DAHLIAS, Single, named sorts, of all shades of brilliant colours, including White Queen and Paragon, 2s. 6d. per dozen, 18s. per 100, from single pots.
,, Double, best named show varieties, 2s. 6d. per dozen, 18s. per 100, from pots.
CHRYSANTHEMUMS, selection of finest named Show varieties, strong, and well-grown, 2s. 6d. per dozen, 18s. per 100, from single pots.
Package free. Plants carried for carriage. Terms cash.
CATALOGUE gratis.
H. I. HARDY, Stour Valley Florist Grounds, Bures, Suffolk.

RHODODENDRONS.
WHOLESALE SPECIAL OFFER.
50,000 RHODODENDRON PONTICUM, 1, 2, to 3 feet.
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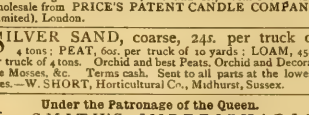
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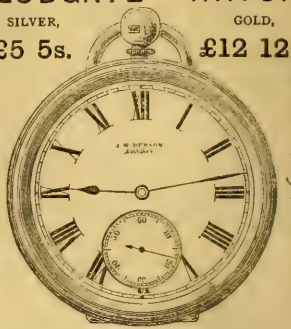
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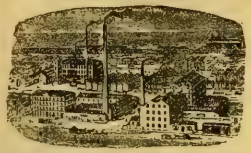
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THE

Gardeners' Chronicle.

SATURDAY, MAY 1, 1886.

TOBACCO CULTIVATION IN THE BRITISH ISLANDS.

THE Tobacco plant (Nicotiana Tabacum) must be considered as a tender annual, completing its growth, flowering, and ripening its seed within the compass of one season, and finally destroyed by our early frosts. If sown simply in the open ground it will not germinate soon enough for our purpose; therefore the young plants should be raised under glass, and pricked out into large pans, boxes, or contrivances of a similar nature. The planting out may be done at the same time with the ordinary ornamental bedding-out stuff early in May or as soon as two or three strong leaves have been made; and as a rough and ready rule the crop may be cut when the gardener is making his first Pelargonium cuttings for next year.

PREPARATION OF THE GROUND.

This is perhaps the most important part of the whole business. If the crop is grown upon the flat the lower tier or two of leaves, which are the most valuable part of the plant, as being the first to ripen, will inevitably be injured by slugs, caterpillars, and heavy rains. Therefore, the ground must be laid in high and wide ridges, as for Swede Turnips, but on a larger scale, and flattened or platformed at the top, so as to allow of a zig-zag arrangement in planting. This is the American plan, I believe, and was adopted by me from an account given in the *Gardeners' Chronicle* some years since.

The advantages are manifest. The plants grow, as it were, high and dry, with the lower leaves hanging over and supported by the sides of the ridges, which latter should be sufficiently wide apart to admit of the tread or free passage of the cultivator.

SUMMER CULTIVATION.

As the plant progresses laterals are formed at the base of every leaf. These must be removed as soon as they can be handled, and care taken that none steal a march from being hidden by the lower leaves. Fresh ones will spring from the base of those first pinched out, and, as they are rapidly produced, this will be daily but absolutely necessary work. The flower-spike should be removed as soon as a few blossoms have expanded, and all subsequent attempts to flower must be checked. This part of the matter requires skill and judgment, for some of the plants will run into flower when too little developed to be profitable, in which case a lateral may be encouraged to grow till it becomes the leading shoot, and in turn ready to undergo the same treatment.

THE HARVESTING PERIOD.

To produce anything like good quality it is essential that the crop should be cut before the sun has lost too much power. In our English autumn, when cool damp nights are the rule, a rank luxuriance is induced in many plants, and eminently so in the case of Tobacco, when the bulk of the plant increases enormously at the expense of quality. Consequently a crop left to the last moment before frost appears will be a

long time in drying, requiring artificial heat from lack of that of the sun. It follows that it is better to cut too soon than too late, and this may be done as soon as the leaves at the base begin to turn yellow, when the whole plant will undergo the proper change in curing.

It is recommended that the plants when cut should be allowed to lie an hour or two on the ground, when the leaves will become wilted and drooping, as this will be found convenient when the next process, that of hanging them up, is performed. For this purpose a wall nail is driven into the stem, near and at right angles to the base of it, thus forming a kind of hook, whereby each plant may be hung to a number of stretched wires, cords or other supports, in such a place as a large vinery. Here the leaves will soon begin gradually to assume the rich brown colour proper to the commercial article. The lamina or blade will change first, and subsequently, the midrib and larger veins ; but until these last become perfectly dry this part of the process cannot be considered finished, for if in the stripping and packing an imperfectly dried stalk is included, mouldiness will assuredly set in and injure the sample. The footstalk, if properly dry, should be sufficiently brittle to be snapped in two on a hot day. The eye, however, and touch will soon become sufficiently practised to judge when the leaf has attained this state.

The Fermentation.

The leaves must now be stripped from the stalks, damped, and tied into bundles of a dozen or more of leaves, by string towards the base of the footstalk. These bundles, when flattened out, will take a fan-shaped form, and are then technically called "hands." The damping process may be done in various ways and should precede bundle making, to avoid loss and disfigurement owing to brittleness. Sprinkling with water is dangerous, for if a leaf be packed actually wet, mouldiness is likely to be the result. Some hours in a damp cellar, or even out-of-doors when there is no fear of rain, may suffice, as the leaf is exceedingly hygrometric and sensitive to a moist atmosphere. The bundles are now packed symmetrically in boxes or between boards, and heavily weighted.

The packed material should remain for some months under shelter and in a moderately warm temperature, such as may be afforded by a room in the dwelling-house, or in the same glass structure in which the drying process was effected, but a really damp atmosphere will now be detrimental.

A species of slow fermentation succeeds, analogous to that of hay in the rick, and until this has worked itself out, the Tobacco is not fit for use, in fact it is not proper Tobacco at all.

Manure.

I do not recommend the application of much manure, as this would tend to induce the over-luxuriance which I have indicated as undesirable. Potash has been suggested, or rather in ferred from the existence of it rather largely in the plant itself. I might myself suggest a top-dressing of superphosphate of lime as inducing early maturity, but I have no experience on this point. The lime, too, might have a good effect in inducing the smoker's desideratum of a "white ash."

Sorts for Cultivation.

The Tobaccos may be conveniently divided into broad and narrow leaved sorts. To the former belong the Maryland and Lebanon kinds, which are nearly identical, while the narrow-leaved Havana and Latakia are equally near each other in character. The Virginian (broad) is considered to produce a stronger Tobacco. The Schiraz, or Persian, is a distinct-looking form, and, with me produced a paler and milder smoking Tobacco. N. rustica, a distinct species with green flowers, is hardier, but somewhat unmanageable in cultivation, and I do not recommend it. A curious hybrid was raised by me between this and the true Havana, which made a fine coloured leaf of good quality, but all the sorts I have grown seemed to turn out of much the same quality in our climate.

Recapitulation.

Under this head I bring into notice the absolute essentials only, namely :—

1. The cultivation on ridges.
2. The removal of all laterals.
3. The earliest harvesting of the crop consistent with a proper ripening of the leaf.
4. The absolutely dry state of the leaf before packing for fermentation.

Note also, a much larger crop may be gained by leaving the cutting to the last moment in late autumn, but the quality will be inevitably bad—woody and watery, so to speak, and of inferior colour.

In a good season, and under the treatment recommended, a perfectly coloured leaf may be produced, and the resulting Tobacco will be of fair smoking quality—always, however, more or less pungent, and with a peculiar *gout*, which may be described as earthy. *R. Trevor Clarke, Axminster, April* 26. [An abstract of this paper was read before the Scientific Committee on Tuesday last. Ed.]

HELLEBORUS VIRIDIS.

This is one of our most striking wild plants, and one which from its habit, at once stately and elegant, should find a place in wild gardens, wilderness walks, &c. In this country it is always, we believe, found growing wild in shady woods, and on chalky or limestone soil ; but like many other plants it does well in an open garden border. We do not recommend it, however, for such situations, for it bears the character of being a poisoner, and should, therefore, be treated as a suspicious character. This suspicion it shares with its brother, the Christmas Rose, and happily we do not think it necessary to banish that lovely plant because of its Borgia-like tendencies. It would be interesting to know what are the insects which visit this green-flowered plant. The illustration (see fig. 120) shows the flowers not fully expanded ; usually the perianth segments spread rapidly.

THE ORIGIN OF THE POTATO.

(*Continued from p.* 488)

There are three statements respecting the introduction of the Potato into England so frequently quoted that it is worth referring to them in passing.* They are — "it was brought to Ireland by Sir John Hawkins in 1565, to England by Sir Francis Drake in 1585, and in the following year by Sir Walter Raleigh." These statements must have been made purely on tradition, and without any reference to the dates of voyages.

It is true that in John Spark's account of Sir John Hawkins' voyage in the *Jesus of Lubeck* through the southern West Indian Islands to the north coast of South America, there is mention of putting in at Santa Fé for provisions, and among other things brought by the natives Potatos are mentioned, but in those days Potato meant the Batatas. The date of this voyage (1565) is rightly given ; but why it is said he took them to Ireland is not clear —why it is said he brought any home at all is not clear. That it was only the well known Batatas he took on board is a fair inference strengthened by the facts that they are not spoken of as anything new, and also that though Stow in his *Chronicles* mentions his bringing Tobacco, he says nothing of any new root.

* See *Foods*, by Prof. A. H. Church.

As regards Drake he was at sea in 1585, but in 1586, as mentioned in the quotation above, he brought home Raleigh's colonists from Virginia. Raleigh certainly had personally nothing to do with introducing the Potato as he never was in Virginia. He tried to visit it on his return from his expedition to Guiana, 1595, but was unable to do so. Some writers have fixed this as the date of Raleigh bringing the Potato. If there is anything in it, then it would be from the Orinoco (and not from Virginia) he brought it. But if it is assumed that it was brought by the returning colonists in 1586, then two traditions are explained. It would be brought in ships under Drake's command and by Raleigh's people ; not, however, by Raleigh himself.

If we are to accept Gerard's statement, that before 1597 he had Potatos growing in his garden, brought from Virginia, we must admit that some returning expedition brought them before that date, and when we take into consideration that it was the "roots" (tubers) that were brought, and that they must have been unplanted tubers, the dates of the voyages are not unimportant. They have for this purpose been given above. We do not know what was the time of year for planting or digging up Potatos in Virginia three hundred years ago. Though July seems late for Potatos to arrive, it is not too late for them to have been set, even had they commenced sprouting. Of all the return voyages of which we have any record that of 1586 is the most probable to fix upon for the arrival of the Gerard's roots. Heriot includes it among the roots they fed on during the year they were in Virginia, the natives "husbanded" it, a ship from England was expected in the spring, and nothing is more natural than to suppose that they had a supply ready to send home among samples of what the country produced. Although the colonists themselves left at the last in great haste, Drake's ships had been about the harbour for so long his men were clamorous to be off, and there had been ample time for taking in provisions or anything that had to be sent home.

Possibly, though hardly probably, there were other return voyages of which we have no record. If we are to attempt to select a possible one at all, this of 1586 is the most likely. It may be a matter of no moment to decide what particular expedition brought the Potato, but so many histories state Raleigh brought it from Virginia, it is perhaps well to make clear that this is inaccurate. All the various statements are made with an air of accuracy which is without foundation, and of authority to which they are not entitled. In the absence of proof we can but surmise.

To turn next to the figure in the *Herbal*—and first as to facts, for the inferences that may be drawn are many and are widely different.

The cut is in two portions. That which contains the foliage and the flower is life-size. But is it to be taken as a fact that the other portion is also life-size? The stem is probably full-size, and so are what he calls in his text the "threddie strings." If the space they occupy does appear small, there must be remembered the conditions imposed on the artist by the dimensions of the block. But what of his "knobbie roots," the tubers? The largest is but the one-eighth of an inch in diameter, and the majority are far smaller. Gerard speaks of them as "a foode, as also a meate for pleasure, equall in goodness and wholesomeness to the same (the Batatas), being either roasted in the embers or boiled and eaten with oile, vinegar, and pepper, or dressed any other way by the hand of some cunning in cookerie." Supposing them cooked in their skins, as probably they would be, they would not be larger than fair-sized Peas. It is difficult to believe that they were so extensively

eaten that their effect on the constitution was known; it is more than probable that Gerard made a guess when he wrote that "the temperature and vertues are referred unto the common Potatos" (the Batatas). The question of size has this importance. Heriot speaks of the Openauk "roots" as being "some of the bignesse of Walnuts, some farre bigger." It may be right to assume that, owing to change of climate and soil, the tubers grown at Holborn were in a very different condition from those grown in Virginia. But this fact cannot be overlooked, that Johnson, in his edition of the *Herbal*, 1633, in place of this cut gives one so exactly similar to that in Clusius (*Rar. Plant. Hist.*, 1601, Antwp.), that it is copied from it, if it be not indeed the identical block. How is this to be accounted for? That Johnson thought the cut Gerard had used not so accurate as that in Clusius, or that it had been destroyed, or lost, or was for some other reason not available.



FIG. 120.—FLOWERS OF HELLEBORUS VIRIDIS. (SEE P. 552.)

THE ILLUSTRATIONS.

Johnson in his introductory section, headed "To the reader," mentions how John Morton, the publisher and proprietor of the *Herbal*, obtained the cuts which illustrated it. They were for the most part those which had been used in Antwerp for the books brought out in the name of Tabernæmontanus. The British Museum has a copy with MS. notes in the handwriting of Petiver, in which the pages in Tabernæmontanus on which the cuts are there used are given. There are some twenty-five cuts which are not found elsewhere, and it has been assumed that these were specially made for the *Herbal*. There does not appear to be anything known about them, not so much even as to whether they were of English or Dutch production. The cut of the Potato is one found nowhere but in this first edition of the *Herbal*. Whether or not it is intended to represent a plant growing in Gerard's garden we are left to conjecture. We are by no means tied down to the supposition that it must have been. If the cut were prepared in Holland, the probability is that it was from a Continental specimen. Possibly some expert in the styles of wood and copper engraving, as practised at that date in the two countries, could decide whether the work was done here or abroad.

Even if it were done here it might have been from a Continental drawing. The Potato had been known, at least to botanists, for some time. Clusius, nine years previously (1588), had received two tubers at Vienna, and these had been sent to him from Belgium. This was clearly the plant we now call the Potato, and not the Batatas Earlier still by at least one year it had been received at Breslau, and was growing in the garden of Dr. Scholtz. Bauhin in 1596 alludes to plants growing. One of the earliest figures mentioned is an "*iconem suis coloribus delineatam*" of the date 1590. Not improbably a special search among records of the period might make known other references. All these are six or more years earlier than Gerard's figure, so that there is no difficulty whatever in the supposition that Gerard might have had a drawing, or a woodcut, or even a specimen, from the Continent. The important point is this, that we cannot trace the source of that figure; we cannot say where the plant grew which is there represented; least of all are we in a position to say it is a figure of Heriot's Openauk. It is the earliest extant figure of a Potato known—some few months earlier than that in Bauhin's *Matthiolus*, but beyond recognising the interest attaching to it on this account, and the skill evinced, it cannot be regarded as of any importance. It cannot be used as any evidence for proving anything.

THE NAME.

Next, as to the name Gerard uses. And here the names given in the catalogue of plants growing in the garden, 1596, and in the second catalogue of 1599 must be taken into consideration. They are as follows:—

Catalogue of 1596.—Papus orbiculatus.
Herbal, p. 781, 1597.—Battata virginiana sive virginianorum et Pappus, Potatoes of Virginia.
Catalogue of 1599.—Papus orbiculatus.

Now, how did he get this name *papas*? or, as he spelled it, papus?

Some botanists have found a difficulty in comprehending how the *papas* should have such a wide geographical range as from two-thirds of the way down South America right up to Virginia. The mere name probably has something to do with the difficulty. The inquiry how Gerard came to use the word is not one of simply antiquarian interest.

As already mentioned, the only account of the vegetable products of Virginia is that given by Heriot, and it is important to notice he does not use the word *papas* at all. We have no proof that the word was in use in Virginia, nor have we any proof that it was known further west. Don Fernandez de Soto made an extensive tour through the region then called Florida (not to be confounded as regards area with the present State of Florida), and published his *Travels* in Portuguese, in 1557. He says that the bread of the country is made of roots which are like the Batatas, but the word *papas* does not occur. As Batata is now the Portuguese name for the ordinary Potato, though sixteenth century writers used it for the Sweet Potato, it is doubtful which plant he meant. But the point here to notice is that he does not use the word *papas*.

There is no proof that the word was known in North America at all. How, then, did Gerard come by it? The clue seems here. "It groweth naturally in America, where it was .first discovered, as reporteth C. Clusius." This Gerard says in the section headed "The Place." How Clusius came by his information we are able to trace with considerable certainty.

If we have no record of its actual first discovery we at least have records goingas far back as sixty years earlier than the date of Gerard's writing, and these records take our attention to South America. Five years after the conquest of Peru under Pizzaro, Pedro Ciaza de Leon, a young observant and painstaking soldier, arrived in the country, and for eighteen years he was in active service. In his valuable work, which, after his return, was published at Seville in 1553, he mentions that his custom was to keep a journal, writing often when his comrades were asleep. We find three references describing *papas*.

In chapter 40 he says one of the principal foods next to Maize is one called *papas*, and is a kind of earth-nut, which, after it has been boiled, is as tender as a cooked Chestnut. The plant, he says, is exactly like a Poppy (but what Poppy?).

In chapter 66, referring to the Sierra, he mentions "Batatas dulces," which shows he distinguished between the Sweet Potato and the *papas*.

In chapter 99, speaking of the fields and crops of the villages of the Collao district, he says:—"Their principal food is *papas*, which are like earth-nuts, as I have before declared in this history. They dry these *papas* in the sun, and keep them from one harvest to another. After they are dried they call these *papas chuñas*." These quotations must be compared with statements made by the Jesuit father Joseph d'Acosta, whose travels commenced just twenty years after Cieza de Leon had finished. He was in the country from 1570 to 1587, and his work was published at Seville in 1590. In making the comparison it should be remarked that there is the possibility that *chuña* may have been obtained from more than one kind of root, and that *papas* may have been a common name for a root good to eat, derived from that universal sound infants make when wanting food, in which mothers recognise the properly articulated word pap. *W. S. M.*

(*To be continued.*)

New Garden Plants.

CYPRIPEDIUM SANDERIANUM, *n. p.**

This is an extraordinary surprise as well as a beauty from the Malayan Archipelago. It is a near ally of Cypripedium lævigatum (whose elder name is, however, philippinense) and Rœbeleni, standing nearer the last in the narrower sepals, which are deltoid in C. lævigatum. The strong blackish-purple velvetty peduncle has a purple and green sheath at the base. I am not sure whether this is constant. The two peduncles at hand bear two flowers each. I am, however, persuaded they ultimately bear more, as in C. lævigatum, where four flowers are quite u ual. The green bracts have a purple hue outside, are ciliate at the borders, striped with darker purple outside. They exceed, equal, or are shorter than the green ovaries, which are covered with stiff purple hairs. Sepals very concave, triangulo-lanceolate, with dark purple nerves, short hairs outside scattered everywhere, and stiff, longer dark hairs on the mid-line. They are light whitish inside, where the dark nerves have a fine hue; the nerves are generally seven in number. Both sepals, the simple one and the other, which is the result of the union of two organs, are nearly equal. Petals linear, blunt, nearly three times as long as the sepals; broader at the base. In that situation they have short purple retrorse bristles standing quite near one another. In front there is a light yellow, then a light purple area, and all those are adorned with small dark purple spots, while the remaining one is dark blackish-purple. The dark brownish lip is nearly shaped as in Cypripedium Stonei; hence a slipper for a lady, and not a *sabot* for the woods. The side borders are narrow, the anterior small shoe is blunt, conical, retuse at the top. Whether it is always emarginate at the top, as I saw it in four flowers, I cannot say. There are fugacious most inconspicuous dark bristles at the front of the lip. They appear to perish very soon, and to bear very obscure asperities. The staminode affords quite a new aspect, though it is nearly comparable to those of the species named before. It may be divided in two parts. The superior one is cucullate, and overlapping a little the anterior ligulate retuse part, which has an apiculus in front and some teeth (of course very small ones) on the sides. The cucullus has hairs at the base on both sides. The leaves are as brilliant as those of Cypripedium lævigatum, broad, stiff, shining as if varnished. I had a wild specimen, a living plant, and two peduncles. Those peduncles originated from imported plants, and there can be no doubt that when the plants are established we may have a far superior thing to the actual beauty. It is a great pleasure to dedicate this fine novelty to Mr. F. Sander himself. *H. G. Rchb. f.*

CATTLEYA LABIATA LUDDEMANNIANA SCHRŒDERIANA, *n. var.*

This is the Cattleya speciosissima Schrœderiana which made a great *furore* in London, and was kindly sent me by Baron von Schrœder. It is much in the way of Cattleya Reineckiana bella, and some undescribed types of the glorious collection of Mr. Lee, but it has the narrow lip of Cattleya Luddemanniana. The flower is large, snow-white, *exceptis excipiendis*, grand. There is an orange median line running in the mid-line of the basilar superior part, and there is an orange dash on each side, near the lateral angle. A series of oblique mauve-purple streaks stand one by one at the sides of the median line, and the whole anterior part of the blade of lip is covered with numerous broken lines of mauve-purple. All that speaks of relation to Cattleya Mossiæ. The base of the column is green.

What I have seen of C. speciosissima Lowii from Mr. Low (and I have a type before me, dried) and the C. speciosissima regina of Sir Trevor Lawrence, Bart., M.P., F.R.H.S., which has a much rounder lip, which is well depicted in Williams' *Orchid Manual*. But there is scarcely a doubt left to me that the English call also the Luddemanniana speciosissima Lowii, since my late friend Luddemann obtained his Cattleya under that name.

I may add that I had a very similar thing, rosy, but not nearly so grand in colours, from Mr. Kramer, Klein Flottbek, some years ago, as C. speciosissima Lowii. *H. G. Rchb. f.*

* *Cypripedium Sanderianum*, n. sp.—Aff. C. Rœbelenii. Sepalis lanceis acutis sepali impari linea mediana barbata; petalis in basi latiori marginibus setaceo-hispidis, labelli ungue angusto, calceo brevi subconico; staminodio dorso cucullato marginibus piloso antice laminæformi ligulato retuso cum apiculo, lateribus minute denticulato. Ex ins. Sondaicis. *H. G. Rchb. f.*

ORCHIDS FOR AMATEURS.

(*Continued from p.* 302.)

Pleione.—The section of the genus Cœlogyne known as Pleione consists of some half-dozen dwarf alpine forms, all from the lofty mountains of tropical Asia. They possess a very distinct and peculiar habit, which at once distinguishes them from the rest of the genus; they are sub-terrestrial plants, with large plaited deciduous leaves which spring from the top of the pseudobulb. The bulbs are annual, and produce one or two flowers either after the fall of the leaves from the centre of the young shoots, or from the axils of the young leaves. When grown well, and surrounded by Selaginellas or bright green growing sphagnum, they are amongst the most beautiful of winter flowering Orchids.

Culture.—The great secret of the culture of Pleiones consists in keeping them dry and cool, with abundant air, from the time when the leaves just begin to fade and turn yellow until the flower-buds make their appearance; they will then need water, or the flowers will be poor, and at the same time some Selaginellas may be planted around the bulbs, or a fresh supply of sphagnum should be laid over the pots. This will serve a double purpose—it will prevent the evils of neglect with regard to a due supply of water and will give a pleasing appearance to the plant when the flowers expand. No water should be allowed to fall on the open blossoms or they fade very quickly, but there is a distinct advantage in watering them overhead before the buds open.

After the plants have flowered if the bulbs are crowded they should be taken up and repotted, remembering that each flowering shoot will become a bulb and that the old bulbs will shrivel away and die; this will enable you to plant the pan so that none of the young bulbs will suffer from overcrowding, and no large unoccupied space need be left. As the leaves are 6 inches long and 2 or 3 inches broad when fully grown, sufficient room must be left for their development.

The most suitable compost for the terrestrial species is a mixture of good leaf-mould and sand; some recommend loam, peat and sand, but my observations lead me to prefer leaf-mould, provided it is good and free from worms. The arboreal species, the præcox group, should be grown in baskets in sphagnum, to which a little Oak bark and a few dry Oak leaves may be added with advantage.

In their native haunts the ground is often liberally carpeted with their flowers at the commencement of the rainy season, hence they have received the vernacular name "Indian Crocus."

Pleione lagenaria (fig. Warner, pl. 17; *Bot. Mag.*, 5370).—A native of Darjeeling and the slopes of the Himalaya, at an altitude of from 6000—8000 feet. It grows on the ground. This species is named "lagenaria" from its flagon-shaped pseudobulbs, which have the appearance of a box covered by a conical lid with a thick rim. The bulbs are green, spotted with brownish-red, and surrounded by a brown network derived from the bracts which surround them when young. The flowers are solitary, borne on short lateral scapes, two or more growing from each bulb. They are from 2 to 3 inches in diameter, of a pale rose colour. The lip is cornet-shaped, yellow within, with a white margin spotted with large crimson blotches. Although the commonest it is perhaps the most beautiful of the section. Some exceptionally fine varieties are in cultivation. It flowers in winter. This plant is so easily grown that it ought to have a place in every warm greenhouse. A plentiful supply of air is needed for its full development.

P. maculata (fig. *Pax. Fl. Garden*, ii., 39; *Bot. Mag.*, 4691).—A native of Khasya, Assam, at an altitude of 4000—6000 feet. The pseudobulbs resemble those of the last species, but are constricted by a horizontal groove. They have no network over them, but when young they are enclosed in broad scale-like imbricated bracts, which become brown as the bulbs mature. The flowers are white. The lip, which is also white, is marbled with golden-yellow in the centre, and spotted with crimson around the margin. It flowers in October and November.

P. humilis (fig. *Bot. Mag.*, 5674).—A native of Upper Nepal and Sikkim, in even loftier regions than the two former. It is found at an elevation of 8000—10,000 feet. The pseudobulbs are ovate and pointed, not more than half an inch in diameter, and covered by a sparse network of brown fibres. The flowers are larger than those of P. Lagenaria, white, or a faint rose colour. The lip, which is fringed with sharp teeth, is covered with a brown marbled network of veins. It flowers in March.

P. humilis tricolor (*Orchid Album*, iii., pl. 102).—The lip is pale yellow, with a golden-yellow network, and very large.

P. præcox (fig. *Bot. Mag.*, 4496).—Sikkim and Nepal, 5000—7000 feet above the sea. This species is also known as P. Wallichiana. It grows upon the branches of Oaks, and should be cultivated in a basket. The pseudobulbs resemble those of P. Lagenaria, but the circular rim is not so marked, or is altogether absent. Each bulb produces a single flower 3 inches in diameter. It is rose-coloured, with a white labellum. The labellum is beautifully fringed with sharp teeth, and has a few small round crimson spots near its margin.

P. birmanica, from Burmah, is undoubtedly the same as P. præcox. It is said to have two flowers on each peduncle.

P. Reichenbachiana, Moulmein.—The pseudobulbs are something like a Dutch bottle, and about 2 inches high. The flowers are very large, two from a single scape. The sepals and petals are lilac. The lip is broad and open, with a notch at its tip. The throat has three raised crests. The limb is spotted with large deep purple spots. It is exceedingly rare.

P. Schilleriana (fig. *Bot. Mag.*, 5072).—Also a native of Moulmein. It produces its flowers from the axils of the young leaves. The flowers are fawn coloured or pale buff. The lip is three lobed. The lateral lobes shorter than the column. The median lobe nearly twice as broad as long, deeply notched, with recurved edges. It is ochre coloured, veined and marbled with golden-brown. It flowers in June and July.

P. Hookeriana (fig. *Bot. Mag.*, 6388.—The pseudobulbs are only half an inch to an inch in length, smooth, ovoid, and perennial. They form close tufts on the branches of Oaks. It is a native of Sikkim at an altitude of 7000—10,000 feet. The flowers are borne on a long scape, springing from the axils of the young leaves. They are 2 inches in diameter and rose coloured. The lip is blotched with pale purple-brown maculæ. It flowers in May. *B. T. Lowne.*

(*To be continued.*)

IRIS CENGIALTI.

AN ATTEMPT TOWARDS GARDEN NOMENCLATURE.

Under this name there has recently been introduced into cultivation a dwarf free blooming, light blue, bearded Iris, which, especially when grown freely in masses, is a welcome addition to the floral beauties of the latter end of May or early June, though its somewhat flimsy and tender petals are apt to be torn and disfigured by the, alas! too frequent fierce winds of early summer. It needs no special care, only asking to be placed in light but rich soil in some sunny spot, where the dark dampness of winter shall not lay too firm a hand upon it.

But it is not about its culture or the worth of its beauty that I wish now to speak; I desire rather to call attention to it because it seems to illustrate exceedingly well certain difficulties of nomenclature which so often arise, or, may I say, always arise, whenever any one attempts to cultivate all or even a large number of different kinds of the same sort of plant. (I purposely use the untechnical words "kind" and "sort.")

And first let me speak concerning the authority for applying the above name Iris cengialti to the plant introduced under that name.

My earliest specimens came to me from my friend, Mr. Max Leichtlin, and probably reached him from Vienna; but two years ago I brought away from a visit to that admirable botanist, Don Pedro Porta, in his lovely home in the Val di Ledro, on the west side of the Lago di Guarda, a plant which he called Iris cengialti (and his knowledge of the flora of the

neighbourhood is nearly perfect), and which I understood him to say had been gathered on Monte Cengialto itself. This plant proved to be identical with that which I had received from Mr. Max Leichtlin. It may briefly be described as follows :—

The leaves are yellowish-green, 6—9 or more inches in length, half an inch or more in breadth, the scape 1 foot, more or less, high, and thus overlapping the leaves, bears three or four (rarely more, sometimes fewer) flowers ; the terminal bud supplying two flowers, and the two or more lateral flowers being supported by short peduncles. So far the plant is not unlike some of the so-called I. bifiora group ; but the flower itself, though small, is in all its essential features the flower of I. pallida. The ovary is a short ellipsoid, deeply six-grooved ; the perianth tube is short and broad, the perianth segments are similarly broad and short ; the beard is short, dense, with thick, stunted hairs, white, with orange tips ; the pollen is abundant and coarse grained, and the spathe valves are papery membranous, scarious long before the bud expands, though not silvery-white but slightly flushed with purple. Both falls and standards are nearly of the same colour, a beautiful sky-blue flushed with violet, and the styles are of a similnr blue but much paler.

The name Iris cengialti was introduced by Ambrosi in his *Flora Tyrolex Australis*, i., 643. He there says that Bertoloni speaks in his *Flor. Ital.*, of having obtained from Facchini a specimen of Iris pumila, gathered on Monte Cengialto, near Roveredo ; but that that species is not found among the plants collected by Facchini, and that the only Iris from Cengialto is one which, with hesitation, he proposes as a new species under the name Iris Cengialti. His diagnosis runs thus :—"Caule tereti bifloro ; foliis ensiformibus caule brevioribus ; spathis membranaceo-scariosis perigonii tubo longioribus, laciniis exterioribus oblongo-obovatis, apice rotundati-subemarginatis, interioribus subæqualibus ; antheris filamento breviori-bus." He adds that the scape is divided above into two pedunculiform branches, and that the dried flower is in colour a dirty yellow flushed with violet, the beard white, tipped with orange. This description unfortunately omits many of the distinctive features of the plant we are now discussing, but it contains nothing to contradict the idea that the plant now cultivated as I. cengialti was the one Ambrosi had in view, if we allow ourselves to suppose that his specimen was imperfectly grown, and therefore had only a two-flowered scape, and that a naturally sky-blue perianth may in drying become a dirty yellow. Seeing that no other Iris answering to Ambrosi's description has been found on Cengialto, we may probably without fear conclude that the plant which we now call I. cengialti, coming from that mountain, is the plant which Ambrosi described.

But now comes the question, Is this Iris a "good species," deserving to be written "Iris cengialti Ambrosi"? If any one were to take the flower alone he would, I think, unhesitatingly say that it was simply a small flower of I. pallida, of somewhat flimsy texture ; unhesitatingly, I think, save for the purplish flush on the otherwise silvery spathe-valves. Indeed we may at first go farther, and say that the whole plant is a dwarfed I. pallida with shortened inflorescence, small flowers, and stunted foliage, and may speak of it as a dwarf variety of I. pallida. But by a dwarf variety it must be understood to be meant, not a form rendered temporarily dwarf by imperfect nutritive conditions, but a form whose dwarfness has become permanently fixed in the plant. Even the generous culture carried on for five years has produced no material change in the plant ; moreover, I have raised seedlings from cengialti crossed with the pollen of a large I. pallida, and these, some to a very great, others to a less extent, carry the dwarf features of the mother.

I. cengialti, however, differs from I. pallida in points other than those relating merely to size of parts or to vigour of growth. While the leaves of I. pallida proper remain above-ground and green all the winter those of cengialti die down altogether, so that if the rhizome be at all deeply buried the winter buds are completely hidden. While the seeds of I. pallida are larger perhaps the largest of the bearded group, red-brown, and if sometimes oval, frequently at least by compression angular, those of I. cengialti are quite small, grey in colour and regularly oval, resembling, save in colour, the seeds of the I. pumila group. The former difference may not have much value, but the latter seems to me of considerable importance, one which, taken by itself, would justify specific recognition.

For what do we mean now-a-days by a "species" and a "variety?" We certainly do not mean by variety the embodiment of temporary distinctions which have arisen in the course of time, and which may be expected in the course of time to disappear, the variety being then absorbed again into the species, for we apply the term "variety," again and again, to forms concerning which we have no jot or tittle of evidence that their distinctive features are ever likely to disappear. And there are few at least, if any, of us who, when we call one plant a species and another a variety, do so because we have evidence that the one existed *ab initio*, or was specially created, while the other came into existence *post initium*, "by the natural course of events." I take it that most systematic botanists, whatever their theoretical views as to the "origin of species," practically "make" a species when the difference between the plant which they are describing and others has a certain large magnitude, and make a variety when the difference has a certain small magnitude.

But what in such cases is the canon by which we can measure the magnitude? There can be only one true canon, and that is the amount of energy, expressed as units of heat, or otherwise, required to be expended in order to bring about the difference. We cannot, in our present ignorance of the events which lead to differences among plants, make an exact use of this canon, but we may, nevertheless, in a rough and approximative way employ it. Thus we can see that the change from a blue flower to a white flower entails very little expenditure of energy ; though we do not clearly see, we dimly judge that a very little twist in the working of the plant's machinery might bring about such a result. Similarly, we may conclude that a larger expenditure is needed to materially change the form of a petal, and so on ; so also, though we know very little about the causes which determine the form and character of seeds, we may probably presume that a change in these means a considerable amount of labour, and conclude that a difference in seed is a difference of a large magnitude.

So that, comparing as well as we are able the magnitude of the difference between the Cengialto Iris and the typical I. pallida with the magnitudes of difference usually recognised by botanists as justifying specific distinction, we should, I venture to think, be inevitably led to consider I. cengialti as a "good" species.*

But observe what this leads to. We thereby wipe out of the name of the plant every indication of its many and striking affinities with I. pallida. The name itself, then, tells us nothing about the plant, except that it is an Iris connected in some way with Monte Cengialto. Yet surely a plant's name ought, if possible, to tell us something about the plant's nature. The generic name always does, though often, of course, some amount of interpretation is necessary. The words Iris, Crocus, Fuchsia, &c., are all compressed definitions ; and ought not the specific name, as far as possible, to give us similar help ?

Shall we then fall back on the phrase I. pallida var. cengialti, using the word variety with the cautions given above ?

But this leads us into difficulties in another direction. In the spring of 1884 I found on the northern slopes of Monte Baldo, overlooking the little lake of Loppio, at the height of about 3000 feet, a small clump of an Iris with dwarf foliage. It was not living under favourable conditions, having obviously been often eaten down by goats or cattle, and there were no signs of its ever having flowered. It was the only patch of Iris of any kind which I saw on that hillside. I gathered some pieces of rhizome, sent them home, and cultivated them. They grew vigorously, and in the summer of 1885 bloomed, showing me that I had thus obtained an Iris very similar to the Cengialto Iris, but in some respects quite different from it. It had the same dwarf foliage, stunted inflorescence, small pallida-like flower, and the same small grey seed ; and it died down in winter. But the leaves were narrower and taller, bluish-green, not yellowish-green, and the flower had not only somewhat narrower and longer perianth segments, but instead of being a very pale blue, was a full dark rich blue. Any gardener seeing the two plants side by side, would say they were different plants from the foliage and mode of growth alone, and when he saw them in flower would insist on their receiving different names.

Now this Iris, being of sufficient beauty to deserve being cultivated, therefore needs a name, and I want to associate its name with that of my friend Don Pedro Porta, of Ledro, in memory of the pleasant day I spent with him. But how am I to do this ?

Many in my place would, I dare say, call it at once I. Portæ, but the reasons I urged just now are valid also against such a course. If we were agreed to consider the Iris from Cengialto as a specific form and call it I. cengialti, I might call this Monte Baldo Iris, I. cengialti var. Portæ. But if, as we just now suggested, the former is to be called I. pallida var. cengialti, is the latter to become I. pallida var. cengialti, something Portæ ?—I say "something" because we have no other titles but "species" and "variety," and the distinction between the Monte Baldo Iris and the Cengialto Iris is of much less magnitude than that between the latter and a typical Iris pallida.

I certainly shall not myself propose a name so "intolerable and not be borne," and propose to get out of the difficulty by following the plan which I adopted in dealing with I. reticulata (see *Gardeners' Chronicle*, vol. xxiii., 1885), and making use of the term subspecies, with the sign *s*, or, better, *s-s*. I suggest, therefore, that the Cengialto Iris should be called I. pallida, sub-species cengialti, and written shortly I. s.-s. cengialti.

The Iris from Monte Baldo might then be called I. s.-s. cengialti var. Porta. It will be convenient to say var. Porta, and not var. Portæ, as indicating that we are dealing with a distinction of the third degree with a variety of a subspecies of a species. This would enable us, if it became necessary, to use the term var. Portæ when we had to deal with a variety of a typical species. And I have already distributed this Iris to some of my friends under this name, or under the unnecessarily longer one, I. s.-s. cengialti Don Pedro Porta. But for reasons which I will urge presently, I desire to withdraw this and substitute for it the geographical name, "Loppio," since it was near the little lake of that name that I found it.

M. Foster, Shelford.

(To be continued.)

* There remains a possibility—one which must not be neglected—that this Iris from Monte Cengialto is a natural hybrid. I have considered this possibility and come to the conclusion that there is no evidence in favour of it. Not only do I not see any distinct evidence of any but "pallida" blood in the plant, but such seedlings as I have obtained, show no sign of any admixture in the parent of foreign blood. Such evidence is of course not conclusive, but is at least strong, and in the absence of any positive evidence in favour of the plant being a hybrid, we may, I think, at once dismiss the view.

CULTURE OF TRICHOMANES AT KEW.

THE beauty and interest attached to these Ferns is of no ordinary kind, and although the peculiar conditions necessary for their existence present a formidable barrier to their becoming so popular as many other members of the same family, yet if seen in a thriving condition they could not fail to be appreciated. Their proper place is in the moist shade of the fernery, and if grown in a special case, they well repay the extra trouble by their more robust growth and finer appearance. The degree of moisture necessary for their welfare depends to some extent on the temperature of the house in which they are grown. The greater number are natives of the woods and moist ravines of tropical countries ; but coming as many of them do from considerable elevations, they are amenable to cultivation in a cool fernery.

This latter statement is amply illustrated by the collection at Kew, where most of the undermentioned species are grown in special cases, lining the shady side of the house in the temperate fernery. Previous to their removal here they were grown in the tropical house, but in the lower temperature it has been found convenient, if not absolutely necessary, to reduce the amount of atmospheric moisture generated in the cases by occasinally opening them for some time in the morning Under this treatment the results are quite satisfactory. A considerable variety of types are represented, but for horticultural purposes it will be sufficient to distinguish those of tufted habit from those having long creeping rhizomes. The former may conveniently be grown in pots—a statement that applies in a measure to the latter, but these develope their truest character when grown on a Tree Fern stem, or something similar, to retain the moisture and allow them space to ramble.

T. Prieurii has broadly ovate fronds, three or four

times pinnatifid, forming a compact spreading tuft. It has a bold appearance for members of this genus, and the deep green colour has a peculiar lustre when seen in bright light, so much so, that it has been described as smaragd-blue.

No less striking in many respects is T. pinnatum with simply pinnate fronds, well known for their remarkable mode of proliferation. The slender mid-rib very frequently becomes attenuated, bearing here and there buds, that under favourable conditions produce young plants. The venation is beautiful, and the sori being abundantly borne on the margins of the pinnæ, have given rise to the name T. floribundum, under which the plant is also known.

T. alatum and its variety attenuata are natives of the West Indies and some parts of South America, but thrive satisfactorily in a cool house. The lanceolate, feather-like, bipinnatifid fronds are of a beautiful green, and sometimes attain a considerable length. This species and T. crispum, although less decidedly tufted than those already mentioned, still deserve to be grouped here. The fronds of the latter attain a length of 12 inches or more, closely pinnate or deeply pinnatifid, resembling in outline Polypodium pectinatum. The sori are borne around the tips of the pinnæ only, differing in this respect from T. pinnatum and in the absence of proliferation. It is an extremely variable plant in a wild state, and some forms are rendered strikingly handsome by a dense covering of rusty-brown hairs.

In possessing fertile and barren fronds T. spicatum bears a striking resemblance superficially to a small species of Blechnum. The fruit-bearing urns are borne on a two-ranked spike consisting of a frond, almost or wholly reduced to the midrib. There are at least three other species belonging to this botanically distinct type, apparently not yet introduced to cultivation. T. fœniculaceum would be a desirable introduction on account of its tufted habit, finely and densely segmented fronds.

Enjoying a wide distribution throughout all quarters of the world, it is but little surprising to find T. radicans, our native species, exhibiting a great amount of variation, and very accommodating to a variety of cultural treatment. Its large and handsomely divided fronds, robust habit, and hardiness, recommend it to general cultivation. At Kew, where it is planted out in cases in the cool fernery along with a number of distinct varieties, it rambles about with great freedom, and attains handsome proportions. All the undermentioned are grown in the same house, either planted out or fastened to pieces of Fern stem, where they soon establish themselves by their slender creeping rhizomes. T. radicans will even resist some degrees of frost with impunity.

T. auriculatum, if devoid of the graceful character of its nearest allies, is, nevertheless, a very distinct form with nearly sessile fronds and broad blunt pinnæ, with peculiar venation. It approaches a variety of T. radicans named frondosum. Two healthy pieces of T. maximum are small, but full of promise. The rather finely cut fronds at present recall the appearance of Onychium japonicum. In its native Java, Borneo, and Polynesian Islands it attains a length of 18 to 24 inches. Some patches of T. venosum, in spite of the short little divided fronds, are both strikingly distinct and deserving of cultivation. One patch covers a block on which Tmesipteris Forsteri is suspended, and the short pendent fronds seem peculiarly appropriate. In T. pixidiferum we have a slender finely divided frond, the ultimate segments of which are linear, and the whole aspect of the plant approaches the slender habit of many species of Hymenophyllum. Its variety, T. p. olivaceum, is characterised by broader segments and a finer green colour. Fine as it is, however, it is far surpassed in this respect by T. trichoideum, a species inhabiting several tropical parts of North and South America. The low temperature, however, seems to meet its requirements admirably, and no more convincing proof is needed than the dense spray-like mass of finely divided fronds. These are lanceolate in outline and tripinnatifid, but description hardly conveys an idea of the delicate hair-like divisions of every part of the frond, the most conspicuous or opaque objects on which are the sori. This species possesses at all times a fascinating appearance, but particularly so when the capillary segments are hung with pearly drops of moisture. Forms possessed of such rare beauty would do much to popularise the class, and need only be seen to be appreciated.

T. parvulum is totally distinct from all the previous forms that have been noticed, and bears a superficial resemblance to Davallia parvula. The creeping hairy rhizomes permeate the ground in which they grow, supporting miniature, somewhat fan-shaped or radiating deep green fronds, that merely carpet the ground.

Of similar habit, but totally different appearance, T. Petersii, with its small, entire, variously shaped fronds, recalls to mind some of the Liverworts rather than a Fern. There are several species belonging to this type, of no great beauty certainly, nor very attractive for horticultural purposes, but, nevertheless, interesting objects to the pteridologist. The same thing would apply to T. reniforme, which is another of the many instances of mimicry amongst Ferns.

The above enumeration does not exhaust the number of species belonging to this genus, and cultivated at Kew, but it embraces a number of widely distinct forms, all necessary to illustrate the polymorphic variations in a single genus of Ferns, the greater number of which deserve cultivation on their merits. *T. F.*

POISONING BY AGARICUS DEALBATUS.

Agaricus dealbatus is probably one of the safest of edible fungi. The subgenus Clitocybe, to which it



Fig. 121.—Agaricus dealbatus.

belongs, consists of eminently safe species. The species itself, and many of its allies, have a very pleasant odour and taste, and a considerable number are known to be esculent and quite safe. Nevertheless it would appear that Agaricus dealbatus when prepared for the table is, on rare occasions, capable of causing considerable inconvenience. This inconvenience is, I think, due to the bodily condition of the person who consumes the fungus rather than to the nature of the fungus itself; or the fungus may on very rare occasions contain some material which is more or less poisonous, or the nitrogenous substance of the fungus itself may have undergone some change.

Agaricus dealbatus is a small white Mushroom, very common in the autumn in short pastures and on downs, and generally about an inch, or at most 2 inches, in diameter. The accompanying illustration with a section, engraved from Nature, natural size (fig. 121), gives a correct idea of the species. It is acknowledged by all authorities to be pleasant eating, and quite safe.

On Wednesday, August 22, 1885, I gathered a considerable number of perfectly fresh and sound examples of this species on Dunstable Downs; some of these specimens I ate for breakfast the next morning. I had been at work writing for two hours before breakfast and was hungry and tired at breakfast time (eight o'clock). I ate about a dozen examples of dealbatus, and found them, as usual, pleasant eating.

The morning was cold and there was a brisk fire in my breakfast-room. A few moments after eating dealbatus I complained of what I took to be the intense heat of the fire in the grate. I said it was making me perspire. The heat of my body and the perspiration were, however, due to dealbatus. At first I noticed drops of moisture all over my hands, then the perspiration quickly poured out of and down my face: soon it literally poured from my whole body, it came out of my head and soaked my hair. In twenty minutes after eating dealbatus my clothes were as wet as if they had been exposed to a storm of rain. I was obliged to put on dry clothes from head to foot. I now became so cold that I was obliged to wrap myself in a blanket and sit before the fire. About three-quarters of an hour thus passed, when the heat and perspiration suddenly came on again with redoubled force, my clothes again became soaked, the perspiration coming out of my body in streams.

By mid-day the inconvenience had passed off, and I was left thirsty, drowsy, and weak. No other unpleasant effects followed.

A day or two before the last meeting of the Woolhope Club I sent the particulars of the above case to Dr. Bull, of Hereford. Dr. Bull had just been stricken with the fatal illness which a few days afterwards carried him to his grave; but ill as he was he immediately wrote me a reply, which was one of the last letters he ever penned. He wrote:—"The 'colliquative' sweats, as we doctors call them, that you experienced were due, I am inclined to think, to A. dealbatus acting as a sort of nerve poison or nerve depressant (and the best remedy, should the mischance occur again, would be a stiff glass of hot grog). Twice this autumn—once after common Mushrooms, and once after nebularis—I have had a diarrhœa that I could not put down to anything else—a colliquative diarrhœa pouring from me, without the least pain—but passing off without other inconvenience, as I hope yours has." It should be remarked that the nebularis mentioned by Dr. Bull belongs to the same subgenus as dealbatus.

A second person who took breakfast with me and ate A. dealbatus was not inconvenienced at all. A well known fungus has long been known as "the slayer," another is known as "the griper;" A. dealbatus will always be remembered by me as "the sweater." *W. G. Smith*

HIBERNATION OF UTRICULARIA VULGARIS AND U. NEGLECTA.

The various phases in the life history of these plants are singularly curious and interesting, and although not without parallel in the vegetable kingdom, yet direct our attention to conditions of existence by no means of common occurrence. The fact of their being rootless, floating aquatics, determines to a great extent their structure, mode of obtaining nutriment, their hibernation and renewal of vegetable activity in spring. They are doubtless the remnants of what they formerly were when the conditions of our planet were more suitable for an aquatic vegetation, as their distribution and that of our other British species amply testifies.

Having matured their growth in the autumn, and when preparing to hibernate, the tips of the stems exhibit a thickening or swelling of the terminal bud from the size of a small Pea to that of a Hazel-nut. Finally the whole plant sinks under water and dies away, except the terminal and swollen buds, which become reduced to a minimum. These now assume the appearance of small dark coloured balls, and under a low power of the microscope are seen to consist of bulbils made up of the excessively shortened multifid leaves surrounding the growing apex. Under normal conditions the leaves are distantly toothed; but in the resting stage these slender teeth, being more densely aggregated or collected together, give the little mass a bristly appearance, and no doubt this serves in a measure to protect it from small aquatic animals.

Formerly the bladders on the leaves were supposed to act merely as air-floats, and that they carried the plant to the surface of the water by becoming filled with air; and again that the plant sunk in the autumn after producing seeds by the bladders becoming filled with water. Darwin, however, proved that the plant would float after the removal of every bladder from the leaves, and that the function of the bladders was to obtain the necessary supply of nitrogen by catching and digesting small animals, and then absorbing the nitrogenous material.

After resting in the above described condition all winter, growth recommences in spring, the axis elongates, the leaves spread out, and the plant soon attains a considerable size upon the advent of warmth in spring and more sunlight. This mode of hibernation, and, so to speak, vegetative reproduction, is evidently of great advantage to the plant in several ways. The small buds would act as a means of distribution; their inconspicuousness would save them from destruction when vegetation was scarce in winter; and they would attain a considerable size long before seeds could germinate and approach a reproductive state. The bulbils or buds are even now well started into growth, with bladders on them, where they have been sheltered under glass, and without artificial heat. *J. F.*

GARDEN PALMS.

(*Continued from p.* 75.)

Lodoicea, *Commerson.*—There is only one species of this, the Coco de Mer, or double Cocoa-nut of the Seychelles, where only it is found wild. It attains a height of from 50 to 100 feet, the trunk unarmed, smooth, except for the annulations of the fallen leaves, and the swollen Onion-like base. The leaves are palmate, flabellately cut, 6 feet broad, the segments bifid; their stalks are 8—10 feet long, stout, the base broad and sheathing. In the *Botanical Magazine*, 2734—8, there is a series of figures of this remarkable Palm, the first showing the mature appearance of male and female plants, the second the large Willow catkin-like spadix, which is composed of rounded overlapping scales, the yellow stamens protruding beyond them. In the third picture we have the female spadix, which is 2—4 feet long, thick, woody, and also clothed with scales, between which are numerous egg-like germens. After fertilisation, all but about six of these germens fell off, those that remain developing into enormous fruits, containing usually four nuts, which take twelve months to mature. It is stated that, after having ripened, the fruit sometimes hangs on the tree for two or three years. A year after falling the seed germinates. The character of the seeds or nuts is of a very extraordinary kind. They are 1½ foot long by 1 foot broad, and are two-lobed at each end, with a division all down one side, so that each nut looks as if two had been welded together by their sides. When germination commences (fig. 122) a thick fleshy growth is pushed from between the lobes, and extends to a length of about 2 feet, after which it thickens at the end, and finally the first leaves are developed from this thickened part. Hitherto all attempts to obtain a plant from imported seeds have failed both at Kew, Hanover, and elsewhere, although they have been got to germinate, and leaves grown to the height of a yard or so. The nearest approach to success was made in the Liverpool Botanic Gardens, where a plant was raised from seeds, and grew vigorously for about two years, after which it died. A plant with leaves 4½ feet long, and established in a tub, the whole weighing 10 cwt., was received at Kew from the Seychelles in 1853, but it did not long survive the change. It is strange that so much difficulty should be experienced with the seeds of this plant, seeing how easily plants are raised from seeds of other Palms from the Seychelles, and which grow alongside of the Lodoicea. We believe a plant is now being established in a box at Mauritius to be forwarded to Kew when fit, and it is to be hoped that in this way the most wonderful fruited of all Palms will ultimately grace the Palm-stove at Kew. It will be interesting to admirers of Palms if we quote from the *Botanical Magazine* the early history of the double Cocoa-nut. It was discovered growing in the Seychelles in 1743, but till then was only known by the nuts found floating in the Indian Ocean. Rumphius was persuaded by the reports of sailors that the fruits were probably growing in the sea, the tree which bore them being concealed. The Malay and Chinese sailors used to affirm that the tree was visible in placid bays upon the coast of Sumatra, &c.; but that if they sought to dive after it the tree would instantly disappear. In the Maldivian Islands it was death to any man found with these fruits in his possession. All that were found became the immediate property of the king, who sold them at a very high price, or offered them as the most precious of royal gifts.

In the museum at Kew there is a series of specimens of the baskets, ornaments, &c., made from the leaves of the Lodoicea, and of the urns, boxes, &c., into which the nuts are made. There is also shown a photograph of a healthy young plant established in the Botanic Gardens in Ceylon. In the "North" picture gallery may be seen some beautiful pictures of this Palm in various aspects.

L. seychellarum, Labillardière.—Seychelles.

Loxococcus, *Wendland.*

Another monotypic genus, found in Ceylon, and flowered at Kew in 1878, when it was figured in the *Botanical Magazine* (t. 6358). It is an Areca-like Palm, not unlike some of the Ptychospermas, with which it was united by Thwaites. The stem is smooth, about 8 feet high, 2 inches wide except at the base, where it is swollen to 4 inches in diameter. Leaves pinnate, 5—6 feet long, the petiole about a third of that length, smooth, ths base broadened out to a clasping sheath. The pinnules, of which there are about twenty pairs, are 2 feet long, 2½ inches wide, recurved, the tip notched as in Ptychosperma; underside glaucous, bright green above. The inflorescence springs from below the leaves, and is dark blood-red, a foot long, branched,



Fig. 122.—Germinating seed of the double cocoa-nut, and cup-like base of stem perforated by roots: both much reduced.

and bears yellow flowers. Seeds as large as filberts and enclosed in a pale brown thin shell, which breaks easily, revealing a dark brown corrugated seed, which is slightly flattened and has a shallow channel down one side. Seedling leaves bipartite, brownish-red when young.

L. rupicola, Wendland, is a pretty Palm at all stages of its growth; it requires the treatment of a tropical moist stove. In Ceylon it is found in rocky places in forests, where it is said to grow to a height of 30 or 40 feet.

Maliortea, *Wendland.*

Two out of the five species belonging here are cultivated at Kew, both of them dwarf tufted Palms with slender, Bamboo-like stems, and general habit suggestive of some of the dwarf Chamædoreas, to which genus they are closely affined.

M. gracilis, Wendland, grows to a height of 2 feet, the stem less than an inch in diameter, smooth, ringed, except where hidden beneath the clasping sheath-bases of the fallen leaves. The leaves are irregularly pinnatifid, sometimes only split at the apex, about 8 inches long and wide, and curiously split near the rachis between each nerve, so as to present a lattice-like appearance, whence the name fenestralis, by which this plant is sometimes known. The inflorescence is an erect branched panicle, bearing numerous small yellow flowers; seeds very small, egg-shaped, and enclosed in a thin leathery pericarp. Native of Guatemala. This Palm is also known as Chamædorea, Chamærops, and Geonoma fenestrata.

M. simplex, Wendland.—This is distinguished from the preceding species by its reddish stems, simple Holly-like foliage (the blade being 2 inches by 1 inch, entire, except for a few spine-tipped dentations along the margin), the absence of the lattice-like character. It is a singular little Palm, very graceful when in good health, and clothed with leaves. In the Kew list is called M. intermedia. Native of Costa Rica. Both the above require a tropical, moist, shaded house in this country. *W. W.*

Florists' Flowers.

CHRYSANTHEMUMS FOR EXHIBITION.

In answer to the question of a correspondent in the *Gardeners' Chronicle*, I would give the following directions for the production of cut blooms for exhibition:—

Cuttings may be taken at any time from November until February. I have found no difference in the flowers, whether the plants have been struck in the first or in the last month; but I think they strike with less trouble in November and December. Stout cuttings or suckers about 3 inches long should be chosen, and inserted singly in thumbs, or put three into a 3-inch pot; the soil should be equal parts of loam and leaf-mould, with a liberal addition of silver-sand, making the cutting firm. Place them in a cold frame or pit, standing them on ashes close to the glass. Keep them well covered during frosty weather, but never neglect admitting light as soon as safe to do so. One good watering as soon as put in will generally suffice until struck, which is generally in about eight weeks. When the weather is mild admit a chink of air for an hour or two, to prevent them damping. As soon as nicely rooted, pot them off into 3-inch pots, using a little more loam and less sand. Return them to the frame, and keep rather close for a few days; then increase the air gradually, until the lights may be tilted night and day during favourable weather, always remembering to keep out frost. About the middle of March they may be placed in 6-inch pots, using soil composed of two parts loam to one of manure from an old Mushroom-bed, with a little sand if the loam is heavy. They should again be returned to the frames, the lights of which should be taken off in favourable weather. They may be placed outside about the middle of April, choosing a position where they are sheltered from cold winds.

About the middle or end of May they are ready for their final shift. I find 9-inch pots the most suitable: a few of the strongest I put into 10-inch and the weakest into 8-inch, the latter being potted in June. The soil I use for this potting is light fibrous loam cut during the previous winter and stacked. I spread on each layer of loam a layer of fresh cow-dung and a sprinkling of bone-meal, using a barrow-load of cow-dung to four of loam, and a 6-inch pot-ful of bone-meal to a barrowload. Should the loam be heavy I would use fresh horse-droppings and a good sprinkling of wood ashes instead of cow-manure. This soil is chopped down and pulled to pieces, picking out worms, and with a 5-inch potful of soot to each barrowload, it is then ready for use. The pots must be carefully drained, using, if to be had, half-inch bones or broken oyster shells for the top layer. In this potting the soil should be made very firm, and space left for a liberal top-dressing. Put a stake to each plant, and if possible choose a place where they will get the full benefit of the sun, and be sheltered from the wind. Plunge the pots about three parts of the way up in ashes in rows 3 or 4 feet apart and 1½ or 2 feet apart in the row, the greater distance being the best if room can be had. In June the plants generally make their first breaks. Select the three or four strongest and rub out the rest. The shoots that are left should be allowed to grow unchecked, and in about eight or nine weeks after they will set their crown-bud, which, providing it does not come too early, will make the exhibition flower. Should it appears before the 12th of August pinch it out and rub out all the shoots except one—this will grow for three or four weeks, when another will set again. Buds

that set late in August or very early in September come about right for exhibition.

To get some of the buds of the late sorts, such as Princess Teck and the sport from it, Hero of Stoke Newington, by the third week in August, they ought to be examined in June, and if they then show no signs of breaking, and if, say, three plants are grown, pinch one on the 10th, 14th, and 18th. Early sorts should either be stopped in April early, taking up two or three shoots which will break in July, or they should be grown without stopping until after they have their summer bud, when the young shoots may be stopped in July from the 3d to the 10th. They should have a good dewing from the syringe every evening, and must be well attended to as regards water from the time they are struck until the flowers are fully expanded, and they should never suffer through want of water, nor from the other extreme, that of being too wet: extremes of wet and dry must be avoided, especially in the early stages or when fresh potted.

Early in August top-dress the plants with equal parts of loam and horse-droppings prepared as for a Mushroom bed with a liberal addition of soot, and repeat the dressing in about six weeks' time, and in a week or so afterwards commence feeding with liquid manure in a very weak state.

As soon as the buds are set, rub out the small shoots clustered around it, and keep those and all below it, rubbed out, so as to throw the strength of the plants into the bud, which, by the way, is usually insignificant looking at first. Gradually increase the frequency of the application of the manure-water, until it may be used at every other watering, but always using it weak. A good way to prepare manure-water is to put cow, or sheep manure, or both, in a coarse sack with soot, and then put the sack into a tub or tank of water, and stir it about, renewing it every fortnight. This diluted state used alternately with house-sewage suits them well, until they show colour freely, when it must be gradually discontinued, and when the blooms are about three-parts expanded it may be left off. It may be reckoned that it takes a full month from the time the colour of the first petals is seen to finish a good solid flower. They should be taken indoors late in September, or early in October, out of danger from frost. An early Peach-house or vinery suits them very well, as by that time nearly all the leaves are off the trees. Put them well up to the glass, allowing them as much room as possible with a free admission of air night and day, always guarding against frost and heavy fog. During bright weather, when half or more open, the petals of some of the incurved are apt to reflex or turn back. When they do this the flowers should be shaded from the bright sun.

There are many other details which must not be neglected, such as keeping them free from greenfly in spring and summer; mildew in autumn; and a sharp look-out for earwigs must be kept, especially after the buds are set. *T. G.*

Orchid Notes and Gleanings.

PRUNING.

"A FACT worth recording" must be my apology for again entering upon this subject. In the *Gardeners' Chronicle*, June 20, 1885, p. 792, I described a plant of Phaius grandifolius as having two new growths, and bearing three spikes of bloom. I was then showing the result of the pruning; or, if Orchid growers object to the word pruning, say the removal of the old leafless bulbs. This same plant was shaken out of the old compost when the bloom had faded, the old leafless bulbs were cut clean away, and the two bulbs which still retained their foliage, and had produced the bloom, were potted in an 11-inch pot. Both of these bulbs made double breaks, and became strong as the season advanced; each of the young growths pushing up two spikes of bloom. Thus we have a specimen consisting of two old bulbs, which still retain their leaves, four new bulbs with fine healthy foliage, and eight spikes of bloom rising to the height of 3 feet 6 inches, and bearing a total of 116 fragrant flowers in an 11-inch pot. Some writers, in defending the old mode of culture, have said that examples as good can be produced from non-pruned specimens, and therefore pruning is no advantage. Will any of your correspondents kindly give a case in point? It would be of great value and very interesting; and as this Orchid is so generally cultivated there should be little difficulty in finding a specimen to compare with the one I have mentioned.

I cannot conclude this note without a word of praise for this handsome Orchid. It is of easy culture, sweet-scented, and lasts from one to two months in fresh condition. Where a conservatory has to be kept with flowering plants this Orchid will prove, under good management, very telling. The colour of the bloom is also very useful in toning down some of the more showy things, and thus giving a more refined appearance to the whole. *N. Blandford, Moor Hill, near Southampton.*

The Bulb Garden.

NARCISSUS BICOLOR OF LINNÆUS.

MR. BAKER's note on p. 489 suggests the question, which I have before raised—What was the N. bicolor of Linnæus? It might be thought that a reference to his herbarium would settle the question at once, but we are assured by both Salisbury and Herbert that in several cases—Herbert specifies bicolor as one—the description of the *Species Plantarum* is at variance with the dried specimens. For sixty years, and possibly for longer, a Daffodil known as "Ajax bicolor" has been cultivated in gardens, and this Daffodil, being multiplied by increase of the bulb, is very constant and very distinct in its character, but it is a Daffodil which we have hitherto failed to discover in a wild state, and I cannot find any old figure of it, or any description older than the time of Haworth, whose description of it as a flower "with a snow-white perianth" can hardly be referred to any other. This "bicolor of Haworth" is an interesting Daffodil to gardeners, having the exact form, and colour, and leaf, though not the great size, of the finest garden Daffodils in cultivation—Empress, Horsfieldi, bicolor grandis, Dean Herbert, Michael Foster, and others. But if we go back beyond Haworth's day the flower is neither figured nor described. Pritzel (*Index Iconum*) refers to only one figure of N. bicolor, viz., *Bot. Mag.*, tab. 1187, published in the year 1809, and this is certainly not Haworth's bicolor. Mr. Barr, however, says it is Haworth's "brevifios;" but this only raises the question, What was the history of Haworth's brevifios, and where did it come from?

"Nil agit exemplum, litem quod lite resolvit." *Bot. Mag.*, t. 1187, is certainly not a Daffodil with a snow-white perianth, and it is reasonable to suppose that had there been a flower with a perianth nearer pure white in cultivation in the year 1809, Dr. Sims would have selected it for his N. bicolor. The synonyms and references in *Bot. Mag.* do not help us much, though one is interesting. It is to Parkinson's *Paradisus*, p. 99, "Pseudo-Narcissus pyrenæus Hispanico et Anglico similis." This is figured in Parkinson (p. 101, fig. 2), where it is called P. pyrenæus, variformis. Now Mr. Ware and Mr. Barr and others have for two or three years had large consignments of Daffodils collected in the Pyrenees, which answer in every respect to Parkinson's "variformis," but having searched for two years their beds containing thousands of flowers of "variformis" I have failed to find "bicolor" amongst them. French and Spanish botanists seem by no means agreed about bicolor, the local botanists in Portugal send "lorifolius" for it, and three times from the Pyrenees I have had N. muticus of Gay sent for it. Indeed, some of the forms of this latter come so near the "bicolor" of gardens in the "elephant's ear" form of the perianth, the cylindrical corona, the broad, round-topped, thick leaves, and the exceptionally late flowering, that I believe the origin of the garden bicolor must be looked for in N. muticus, that is until something nearer to it is found wild. Two years ago I found a "muticus" so like the garden bicolor that I sent a sketch of it to the *Gardeners' Chronicle* as bicolor of the Pyrenees. I regret that I cannot give the reference. But after all these questions are of little interest to the botanist, who looks upon all the Trumpet Daffodils as varieties of a single species—a species of endless variableness; and I may conclude this note by copying the remarks of Parkinson in describing variformis (a coined word, meaning, I suppose, "variable"). After speaking of its many forms, he ends by saying:—"Some likewise have the wings of the flower longer then (? than) the long trunk, and some shorter. Some also are all yellow, and some have their wings only a little more pale or white, like the English kind; some, again, have their trunks long and narrow, others have been longer and wider open, and crumpled at the brims, so that it is needless to spend a great deal of time and labour upon such smally respected flowers; but that in the beholding of them we may therein admire the work of the Creator, who can frame such divarsity in one thing. But this is beside the text, yet not impertinent." *C. Wolley Dod, Edge Hall, Malpas, April* 17.

NARCISSUS BICOLOR EMPRESS.

This superb Trumpet Daffodil, with its stout and well-rounded white perianth and trumpet of rich yellow, is now being so much grown that the flowers are finding their way into the market, where they are readily sold. The Trumpet Daffodils are among the most attractive and imposing looking of this large family, and they are evidently destined to become great favourites. *R. D.*

The Apiary.

GLASS HIVES.

THERE are many persons who would like to interview their bees a little more without constantly disturbing the brood nest and smoking—which means punishing the poor bees. This article is mostly addressed to those persons, but it is hoped that others may gather a small amount of profit as well. I once knew a man who lived 18 miles from a railway station, and 24 miles from a place where he could have his hair cut. This man was suddenly seized with the bee fever. He got a lot of books and more catalogues, and from them he gathered that hives must be made very elaborate indeed. Extended legs they must have, covers firmly fixed with ropes and tent pegs, thick double walls all round, and, as a *sine quâ non*, the spaces filled with cork-dust to keep his pets warm. The village carpenter was afraid to attempt to make one, therefore my friend proceeded to walk the twenty-four miles to get his cork-dust and order his hives. As a consequence he found that every pound of honey he sold for a shilling cost him two. Of course such a thing as a piece of glass anywhere near bees was thought to be more fatal than chloroform itself. Now that we have had a cold winter every one will admit the kind of hive that would carry bees through last winter would do for any English winter.

I left a hive with four glass sides out-of-doors all the winter. The said hive had merely some flannel hung outside the glass, and four pieces of wood outside that—that is, one piece over each pane of glass. This hive is in splendid condition, and the queen is laying eggs fast. But I have a still colder hive, and one in which the gods said the bees would most certainly die. This was simply a glass and metal aquarium, which I filled with bees. This hive had no wood round it, only some thin cushions, and a light but waterproof top. This hive is also in excellent condition. Of course these hives are not, strictly speaking, observatory hives, but they are hives in which a great deal may be observed without much trouble. There are, I think, many lessons to be learned from these facts, but it proves the truth of the saying of my friend Gibbons of Hungerford, viz., "In winter keep the bees dry, but it does not matter very much how cold they are; in fact, it seems the colder the better, as nothing is better for them then than complete torpor. When the spring begins they want to be kept warmer than in winter. You can't very well wrap them up too much then." This seems to prove that it is not absolutely necessary to go 24 miles for cork dust. *Walter Chitty.*

Forestry.

BARK: DRYING AND STACKING.

The same day on which the bark is removed from the tree it should be placed on the drying stages, these being erected in an open and airy situation, either along the woodland drives, or, better still, entirely outside the plantation, even though the bark has to be carted a considerable distance to the place. The drying stages are usually made of forked posts driven into the ground, which support the poles on which the bark is laid. When peeling is annually engaged in we have found it convenient to have a number of trestles 30 inches in height, drooping somewhat to one end, and on which rest the poles for placing the bark. The smaller pieces of bark are laid first on the drying stage to a depth not exceeding 6 inches, the larger pieces being placed on top as a protection against the inclemency of the weather, and in all cases with the fleshy side innermost, the declivity of the stages causing the rain to pass speedily off. During damp weather careful turning should take place every few days, but when possible leave the bark undisturbed for as long a period as possible. With favourable weather about a fortnight will be ample time for the bark to remain on the drying stages, but the fitness for removal may be readily ascertained by the bark breaking freely across instead of yielding to pressure.

When thoroughly dry the bark is removed from the stages and formed into ricks or stacks, these being 7 feet wide, of any length, and in height proportionate to the width. In the building of the stack some experience is necessary that it may be kept higher in the centre than the outside, so that the outer pieces of the bark may have a gradual declivity from their inner end, the larger pieces being reserved for thatching.

The forester should now avail himself of a temporary lull after the barking to effect a thorough clearance of all dead and decaying wood from the plantations under his charge. Where fallen branches, prunings, and other woodland *débris* is allowed to accumulate from year to year and become infested with insect and fungoid life, a healthy state of the plantations cannot exist, for to such alone may be traced the origin of nearly all the diseases from which our forest trees suffer, and scarcely a season passes that we are not confronted with numerous cases of serious damage perpetrated on Fir plantations by those dread enemies of such—the Pine beetle (Hylurgus piniperda) and Pine weevil (Hylobius abietis). By proper precautions being taken in the early part of the present month, that all decaying vegetable matter in which the above insects deposit their eggs and hibernate during winter, be destroyed, their numbers will be considerably reduced; and by prosecuting the same from year to year they will ultimately become almost or quite extinct.

The most effective method of keeping down these insect pests is to go over the various woodlands in March, April, or the beginning of May, and collect into heaps, in open parts of the wood, or along clearance roads, all waste timber, including dead and decaying branches, bark, sickly looking trees, and rubbish generally, and to have them burned on the spot. By this it is not meant to be understood that waste timber that can be disposed of to better advantage is to be reduced to ashes, but only such as may in the true sense of the word be considered rubbish.

Should any of the collected wood be lotted for sale as firewood or for faggot-making, make it clearly understood by the purchaser that he must clear it off at once or within a short, but specified space of time. In woods that have become badly infested with insect life we have frequently found it necessary, so as to effect a thorough clearance, to dig away the soil from around the stumps of cut trees with a spade, and remove the bark; by doing which the insects have nowhere to deposit their eggs, as it is always between the bark and wood that they do so.

This may to many appear useless precaution and the incurring of extra expense, but we may state, as before, that it is only in certain aggravated cases that such extraordinary precautions are necessary, and in such the expenses incurred in the first instance are far more than repaid afterwards by the disappearance of these tree pests, and consequent increased value of the timber. *A. D. Webster, Penrhyn Castle.*

The Flower Garden.

THE HERBACEOUS BORDER.

Daily attention will now be required in the herbaceous borders, thinning out weak shoots from Phloxes, &c., where more appear than the plant requires. Thin the earlier sown annuals by degrees; rather err on the side of over-thinning than overcrowding. Poppies which were early sown in heat will now be ready for transplanting; successional sowings may be made up to the middle of June. There are no annuals more showy than the Poppies. I find rats are very fond of the young seed-heads, and they make sad havoc with the plants to reach them. Transplant into nursery lines spring-sown Carnation, Picotees, Primrose, alpine Auriculas, &c.; give them good rich soil to grow in.

Hollyhocks.

These may be safely trusted out-of-doors now. Where they have been wintered in cold pits these stately plants require liberal treatment; assuming the ground intended for their reception was well manured and trenched in winter the pits should be taken out, and each plant should receive three or four spadefuls of good compost. Dahlias should be similarly treated if they are to be grown to perfection. Stir the surfaces of beds and borders frequently with the hoe to prevent the escape of moisture and rid them of weeds.

Pricking off.

Prick off Ten-week Stocks, Asters, Marigolds, Zinnias, Phlox Drummondi, sown in the beginning of last month; which will do pricked out-of-doors in sheltered situations. Look carefully after slugs, and frequently dust with powdered lime or soot.

Calceolarias, &c.

Where Calceolaris are standing too thickly in the cutting beds they may be transplanted with advantage into turf pits about 4 inches apart; they will be in fine condition for turning into the flower beds in the course of two or three weeks, and will not be so liable to suffer by the check. Coleus, Alternantheras, Iresines and Mesembryanthemums had better be retained in gentle heat for some little time yet, for if put into cold frames too soon they will drop many of their leaves. Propagation for this season should now be concluded. Should the stock of Verbenas and Ageratums be still too short, they may still be struck, only they will require to be closer planted in the beds. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

THE STOVE.

The earliest potted specimens of fine-foliage plants will have become well furnished, and if wanted for the decoration of the house or conservatory should be gradually inured to a cooler temperature, and a little more air admitted; they will keep in good order for a much longer time, and look much fresher than if not so hardened off. These consist of the different varieties of Pandanus, of which P. Veitchii and P. graminifolius are the most useful; Aralia Veitchii, A. elegantissima, A. Chabrieri, all very graceful subjects. Crotons are always good for their colours, to contrast with other decorative plants. The varieties of these have become legion, but the undermentioned will afford plants well adapted for most purposes, viz., C. angustifolia, C. Weismanni, C. pictum, C. Johannis, C. Queen Victoria, C. variegatus, and C. Massangeana; the last named shows well under artificial light.

Dracænas, again, stand a great deal of hard usage, providing they are judiciously prepared beforehand, and are not made use of indoors for too long a time. There are some beautiful varieties in D. Baptisti, D. Brausei, D. Cooperi, D. Goldieana, D. Guilfoylei, D. Macarthuri, D. Robinsoni superba, and D Gladstonei terminalis. The cool varieties are well worth growing, as D. indivisa, D. Veitchii, D. congesta, D. nutans, and D. australis—all useful for general decorative purposes. If all of these various subjects are taken out of their growing quarters it will give room for specimen plants and others to develope properly, which is impossible if they are overcrowded.

The flowering section in this structure will be making rapid progress. All the best kinds of stove plants are generally so rich in colour that every effort should be made to keep them in high condition for as long as possible. It will be found that the shrubby Clerodendrons fallax, C. Kæmpferi and C fragrans when throwing up their flower-stems do much better kept near the ventilators, for, although heat and moisture loving plants, they do not like shade, or to be deprived of fresh air. Plants of Thunbergia Harrisi that bloomed during the winter months should now be cut back, and if grown in pots a little of the soil should be picked off the side of the ball, and shifted on if possible; if planted out, as much of the soil in which they grew should be removed as possible, replacing it with fresh, as they are free rooters, and soon exhaust the soil. Aphelandra cristata is one of the most useful autumn bloomers; large plants if kept cool after blooming should now be cut back, and be repotted in good loam with a little decayed manure. A. Roezlii is a dwarf-habited species, and a striking plant when grown and flowered in small pots. It is valuable for cutting from, or for the margin of stages in stoves. *A. Evans, Lythe Hill.*

The Kitchen Garden.

CELERY TRENCHES.

A few trenches may now be prepared to receive the earliest plants. For the first and second plantings I prefer trenches 1 foot deep, and from 14 to 18 inches wide, and when manured and ready for planting, to be from 3 to 4 inches below the surrounding level, with a distance of 3 feet between them, and the plants placed 10 inches apart in the rows. Trenches for the later and main crops should be refilled entirely, so that the plants may stand on a level with the original surface. Planted out in this manner they are kept thoroughly drained, and consequently when earthed up do not suffer to such an extent as they otherwise would do from the effects of rain and frost during winter. A space of 6 feet between the trenches must be allowed, that should be utilised by being planted with some quick growing crop, such as Lettuce, French Beans, Turnips, or Spinach, which would allow of the ground being cleared in time for earthing up. The manure for Celery growing must be thoroughly good, and should have been prepared as advised in a former Calendar, and when placed in the trenches should be thoroughly incorporated and mixed with the soil, but it is best to defer this operation until the plants are quite ready for planting out.

General Work.

Quarters as they become cleared of Brussels Sprouts and late Broccoli should be dug over, and will be available for Celery, French Beans, or Scarlet Runners. Continue to earth-up and stake Peas, make additional sowings in trenches of late varieties—especially of Veitch's Perfection, Ne Plus Ultra, and Walker's Perpetual Bearer; if a mulching of good rotten dung from 2 to 3 inches in thickness can be given to these sowings, it will greatly benefit them during hot weather and keep mildew in check. The mulching should be put on when the soil is in a moist condition, and should extend to a distance of 2 feet on each side of the rows. Tomatos intended for planting outside against walls, should be hardened off and a portion of the largest planted—giving protection at night for a time, and until all danger from frost has passed away. *John Austen, Witley Court Gardens.*

Late Pears.—Some time since, several kinds of late Pears were mentioned in the *Gardeners' Chronicle* as superior kinds for dessert. One old kind, Colmar, which is also very good, was not mentioned, but I think will bear comparing with any other kind I am acquainted with. We finished our stock on April 15, when it was still buttery and melting. Dr. Hogg speaks very highly of this Pear, all which I can confirm. So good a Pear at this season deserves to be more cultivated. Maréchal à la Cour kept up a succession till April 10, and Knight's Monarch, still good, will carry us through another month. This is also very useful for stewing purposes when not in a ripe state. Broom Park is over, it was rather dry and poor this season. *W. Divers, Wierton, near Maidstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	May 4	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
WEDNESDAY,	May 5	Sale of the Collection of Orchids formed by the late John J. Barran, Jun., Esq., at Stevens' Rooms Sale of Imported Orchids, at Stevens' Rooms. Sale of Carnations, Picotees, Plants, &c., at Protheroe & Morris' Rooms. Meeting of the Linnean Society.
THURSDAY,	May 6	Sale of Importations of Orchids, from Mr. F. Sander, at Stevens' Rooms.
FRIDAY,	May 7	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.

SOME time since we heard glowing reports of the beauty of a new JAPANESE LILAC, perfectly hardy, very free flowering and beautiful, but devoid of perfume. As these reports came from no less authentic a source than Professor SARGENT, the Director of the Harvard Arboretum, at Cambridge, Massachusetts, we naturally accorded them a greater degree of attention than we might have done under other circumstances. In due course the Professor obligingly sent us a photograph and description of the tree, which we hasten to lay before our readers. Professor SARGENT writes :—

"Mr. W. S. CLARK, at that time President of the Agricultural College at Sapporo, in Japan, sent to the Arboretum, in the autumn of 1876, seeds of an Oleaceous plant, described by him as a small tree. The plants raised from these seeds flowered last summer for the first time, and proved to be Syringa japonica,* a species well described and figured by DECAISNE in his Monograph of Ligustrum and Syringa, and a native of both Nippon and Yesso.

"*Syringa japonica* has grown in cultivation with great vigour and rapidity, and already forms a small tree, 15 or 16 feet in height, with a clean straight stem covered with thin, very smooth, rather light-coloured red bark, resembling that of a young Cherry tree. The small white flowers, almost entirely destitute of perfume, are borne in immense compound panicles, 18 — 24 inches long, and 16 — 18 inches broad. The plant flowers very freely here during the first week in July, and remains a long time in bloom.

"The leaves, unlike those of many Japanese plants in this climate, fall early and without changing colour; they are 5 or 6 inches long, acuminate, cuneate at the base, coriaceous, strongly reticulate-veined, quite smooth above, the midrib and primary veins slightly pubescent beneath.

"This Japanese Lilac promises to be one of the most magnificent of all flowering trees hardy in this climate. It is perfectly hardy; it grows with great rapidity, and promises to attain a considerable size; and it has the advantage of blooming here after the flowering period of most trees and shrubs has passed.

"The figure upon p. 561 (fig. 123), from a photograph taken in the Arboretum, will give an idea of the size and character of the inflorescence. *C. S. Sargent, Arnold Arboretum.*"

THERE is, we believe, a rule, unfortunately as much or more honoured in the breach as in the observance, that plants shown before the FLORAL COMMITTEE shall, so far as possible, be correctly and appropriately named. As to the correctness, whether of a botanical or of a garden name, there can be of course no question. Appropriateness is another matter, and one open to difference of opinion. We are glad to see that in the nomenclature of Narcissus a determined effort is being made to avoid the use of Latin names for garden varieties raised or selected through the agency of the gardener, and not known in the wild state. On the same principle we were glad to find that Messrs. KRELAGE, of Haarlem, who sent a number of Fritillarias to the committee, and requested that body to affix names to the best of them, stipulated that the names should be in the vernacular. A pretty garden variety of Pteris cretica was shown at the last meeting with so formidable an array of Latin adjectives attached to it as would necessitate at least two ordinary labels for its display. The committee decided, wisely as we think, simply to call it Pteris cretica "H. B. May," and awarded it a Certificate under that name. If Mr. MAY prefers his Latin vocabulary there is, of course, nothing to prevent him from calling his plant what he pleases, but we venture to think the general convenience will be consulted if the variety be henceforth known under the name by which it was certificated, or as "May's variety." In any case it is a pretty plant, well suited for decorative purposes, and is described in another column.

The awards of certificates at this meeting is not likely to give confidence to outsiders when they learn that as many as four certificates were given to Daffodils whose only fault is that there are too many of them, and to a series of Fritillarias of no very great merit or interest, while an absolutely new and very beautiful Aroid was passed over without any recognition. Had a Certificate been given to the "strain" of Fritillarias the justice of the case would have been met, while the omission to recognise such a plant as the Alocasia affords another illustration of our contention that special sub-committees, to deal with new plants and sundry other too much neglected categories, are still required.

The awards of Certificates at the Primula Conference were also peculiar. It was very proper to make an award to Primula mistassinica on many grounds, but why give it so very inappropriate a distinction as a First-class Certificate? Poor little thing!

—— "GARDENERS' CHRONICLE" PRIZES.—We may remind the competitors for these prizes that the last day on which their essays can be received is Saturday, May 8. No extension of time can be allowed.

—— DRESDEN.—An International Horticultural Exhibition will be opened in this city from May 7—14.

—— ORCHID EXHIBITION.—The Orchid Exhibition in Mr. WILLIAM BULL'S establishment in the King's Road, Chelsea, opens on Tuesday, May 4, and continues through the months of May, June, and July.

—— THE COLLECTIONS OF PROF. MORREN.—We are glad to learn that there is a probability that the library, herbarium, and collection of drawings of Bromeliaceæ, belonging to the late Prof. MORREN, will become the property of the Belgian Government, and will form an important part of the Liège Botanical Institute which MORREN laboured so hard to complete, and which he lived long enough to see satisfactorily accomplished. The collection of living plants, &c., is to be sold, and offers an unrivalled opportunity to any one interested in Bromeliads.

—— SURVEYORS' INSTITUTION.—The next meeting of this Society will be held on Monday, May 3, when a paper will be read by Professor W. FREAM (Associate), entitled "The Geology of the Surface in its Practical Aspects." The chair to be taken at 8 o'clock.

—— DATURA STRAMONIUM AND THE PHYLLOXERA.—We see it asserted in a French medical journal that a correspondent has "killed" the Phylloxera by planting Datura Stramonium among his Vines. We venture to doubt the correctness of the assertion, or at least to suggest that more evidence be forthcoming.

—— HEREFORD AND WEST OF ENGLAND ROSE SOCIETY.—The date on which this meeting will be held is fixed for July 9, instead of, as at first announced, on July 8.

—— FLOWERS IN SEASON FROM IRELAND.—Mr. SMITH, of Newry, has sent us a charming bunch of Oxlips in great variety, and of exceptional robustness. The flowers bore the long journey admirably, and kept fresh several days in the not very salubrious atmosphere of Wellington Street. With these came some splendid examples of seedlings of St. Bridgid Anemones, of the rich tints found in these flowers. The flowers were of uncommon size, and possess the great merit of durability in the cut state.

—— NEWSPAPER ENTOMOLOGY.—A correspondent of the *Entomologists' Monthly Magazine* for May has forwarded a cutting from a Scotch newspaper, which we reproduce. The words italicised by us seem to indicate that a knowledge of elementary entomology is desirable in some quarters in Great Britain, as well as in South Africa :—

"*A Scourge of Caterpillars.*—Much alarm has been caused in the Camperdown district of Durban, says the *Cape Times* of March 6, by the scourge of armies of caterpillars, which have appeared amongst the forage crops. One army extends a mile and a half deep, and has swept over 70 acres of fine forage. It is now going in a westerly direction. Another, comprising many millions, has eaten every bit of forage in one district. By to-day the two armies will have joined, and threaten Boston. It is feared it will do more damage than the visitation of the 1878 pest. It makes its appearance in the form of a small moth, with velvety-black body and head, green stripes along sides, and is about ¾ inch long. In a few days *it sheds its wings, becoming a caterpillar, and in a week it lays eggs, each caterpillar producing two hundred!!* It grows 2 inches, and it blackens the field as they move about voraciously eating. In one place 40 acres of forage were reduced to stubble. Even grass has been eaten up."

This astonishing statement is, however, eclipsed in a usually well informed London paper, where we read :—

"In common with other countries, Natal has been troubled with an insect plague which has played sad havoc with the crops. It seems to be of the genus *aphis*, of which there are many varieties, and a description of it is appended, in order that those suffering from a similar pest in other parts of the world may compare notes :—The pest makes its appearance in the form of a small *moth*, &c."

—— LINNEAN SOCIETY OF LONDON.—The next meeting will be held on Thursday, May 6, at 8 P.M., when the following papers will be read :—1. "On Seedlings," by Sir J. LUBBOCK; and 2. "Physiological Selection; an Additional Suggestion on the Origin of Species," by G. J. ROMANES.

—— NATIONAL ROSE SOCIETY.—We are informed by the Secretary that arrangements have been made with the Royal Caledonian Horticultural Society to hold their provincial exhibition in 1887 at Edinburgh during the second week of July. The following list gives the names of those societies which have become affiliated with the National :—

Bagshot and Windlesham Rose Society	Farnham Amateur Rose and Horticultural Association
Bath Floral *Fête* and Band Committee	Farningham Rose and Horticultural Society
Brockham Amateur Rose Association	Hereford and West of England Rose Society
Canterbury and Kent Rose Society	Hitchin Rose Society
Cardiff Rose Society	Ipswich and East of England Horticultural Society
Christleton Rose Society	Maidstone Rose Club
Cray Valley and Sidcup Horticultural Society	New Brighton Rose Society
Croydon Horticultural Society	Reigate Rose Association
Diss Horticultural Society	Ryde Sports and Amusements Association
Ealing, Acton, and Hanwell Horticultural Society	Sutton Amateur Rose Society
East Gloucestershire Rose Society	Tunbridge Wells Horticultural Society
Eltham Rose and Horticultural Society	West of Scotland Rosarians' Society
	Wirral Rose Society

—— ROUTE MAP OF THE ROYAL GARDENS, KEW.—A very useful map has been issued, which will be of great assistance to visitors generally, and will save much time to specialists whose time is limited. By dividing the map into squares, and by the use of letters and figures, it is an easy matter to find what is required. Gardeners and foresters do not visit the arboretum so much as they might do. One reason for the scanty attention paid by those most concerned has doubtless been the apprehension of undue loss of time in penetrating the, as it seems, limitless pleasure-grounds, but by the aid of this map, and the direction posts in the grounds, this difficulty is obviated. An official guide to the collection of timbers in No. 3 Museum (the old Orangery) near the main entrance has also been published. The arrangement of the noble specimens in this museum is mainly geographical, and the specimens are selected to show the size to which the tree attains. Smaller specimens more convenient for study find their places

* *Identifications.*—Syringa japonica, Decaisne, Mon., *Ligustrum et Syringa*, in *Nouvelles Archives du Muséum*, 2 ser., ii., p. 44, t. 3; Ligustrum amurense, Ruprecht, Maximowicz, *iter secund.*; Ligustrum amurense var. japonica, Maximowicz, *Diagnoses, Decn.*, xix.; *Mélanges biolog.*, ix., p. 395; Franchet and Savatier, *Enum. Pl. Jap.*, ii., p. 435.

in the other two museums according to the natural order to which they belong.

—— A New Type of Auricula.—Some scepticism was expressed as to the red-grounded, green-edged Auricula mentioned by Mr. Horner in his paper at the Primula Conference, though on what grounds we do not appreciate, for there is no structural reason that we know of to forbid its occurrence. However, let the sceptics be reassured and hold their peace for the future! The flower lies before us with thrum eye, its paste, its girdle of red (purplish-red or reddish-violet we should call it), and its green edge. It was not for us to monopolise such a treasure, and so we availed ourselves of the meetings of the Floral and Scientific Committees to exhibit the novelty, and as these bodies comprised among others, Mr. Douglas, Mr. R. Dean, and Mr. Shirley Hibberd, Mr. Horner may regard his assertion as proven to the hilt, and we respectfully offer him our congratulations on the new departure.

—— Ferns, &c., at Chiswick.—During the past six months Ferns may be said to have been "great" at Chiswick. It has been already mentioned that consignments of these plants have been sent from the colonies for use at the forthcoming Colonial and Indian Exhibition, the plants in the meantime being grown on in the gardens of the Royal Horticultural Society. It would, doubtless, have been better had the plants been sent over twelve months sooner, in order to have developed their fronds more fully, when they would have made a more imposing display. The Todea barbara, from the colony of Victoria, is in enormous masses—one specimen is computed to weigh over 30 cwt.! This, with its very free growing, nearly erect, crisp, and dark green fronds, will be a conspicuous feature in the Fern gully, and give us some idea, when associated with



Fig. 123.—Syringa japonica: flowers white: reduced two-thirds. (see p. 560.)

other fine examples, of the wealth of vegetation in some parts of the colony. Todea superba is a splendid plant, and, like most good things, it must be seen to be appreciated, its fronds of bright green being very telling. T. intermedia resembles T. superba, only the ribs of the fronds are much darker. Cyathea dealbata (the Silver Tree Fern), from New Zealand, is a noticeable subject. This variety does well in a cool house with spring water rippling round about its roots, doubtless the condition in which it loves to luxuriate in its native habitat. C. Smithii requires a little more heat than C. dealbata; its graceful and feathery-like fronds are densely covered with chaffy scales, and are very effective. Dicksonia squarrosa, habit of the head quite flat, resembling a table-top; a peculiarity, too, of this particular variety is, that it sometimes forms young plants on the stem. Amongst the Filmies from New Zealand, in fine order, may be mentioned Todea superba, T. intermedia, T. hymenophylloides, Trichomanes reniforme, T. dissectum, and others. Alsophila crinita, a somewhat rare species from Ceylon, is worth recording on this account. Amongst Ferns of a miscellaneous character from various colonies in good condition, and well worth mentioning, may be noted Doodia blechnoides, Nephrodium decompositum, Niphobolus lingua, Polystichum vestitum, Lomaria alpina, L. discolor, L. lanceolata, Asplenium lucidum, A. viviparum, Alsophila australis, A. ferox, Hymenophyllum demissum, H. scabrum, H. flabellatum, Aspidiums, Gymnogrammas, and Polypodiums of sorts. Some of the varieties, not being yet fully developed, it has been impossible to name, in addition to Ferns, Palms, Cycadaceous and other plants, which will be represented at the forthcoming Exhibition, notices of which will be given later in the year, when their true characteristics appear.

—— Rose Show Fixtures, 1886.—Mr. Edward Mawley, in the *Journal of Horticulture* for April 28, gives the following for the guidance of those Societies which have not as yet fixed the dates of their exhibitions, and appends the following list of Rose shows arranged to be held during the coming season by the National Rose Society and Societies affiliated with it:—

Bagshot and Windlesham Rose Society, at Bagshot, Tuesday, June 29.

Diss Horticultural Society, at Diss, Tuesday, June 29.

Croydon Horticultural Society, at Croydon, Wednesday, June 30.

Farningham Rose and Horticultural Society, at Farningham, Wednesday, June 30.

Canterbury and Kent Rose Society, at Canterbury, Thursday, July 1.

Reigate Rose Association, at Reigate, Thursday, July 1.

Tunbridge Wells Horticultural Society, at Tunbridge Wells, Friday, July 2.

Eltham Rose and Horticultural Society, at Eltham, Saturday, July 3.

National Rose Society, at South Kensington, Tuesday, July 6.

Cardiff Rose Society, at Cardiff, Wednesday, July 7.

Ealing, Acton, and Hanwell Horticultural Society, at Ealing, Wednesday, July 7.

Sutton Amateur Rose Society, at Sutton, Wednesday, July 7.

Bath Floral *Fête* and Band Committee, at Bath, Thursday, July 8.

Hereford and West of England Rose Society, at Hereford, Thursday, July 8.

Crystal Palace Rose Show, Saturday, July 3.

—— Vegetation of the Paramatta.—The following notes are from a description of Sydney (New South Wales) and its environs, which recently appeared in a contemporary. Referring to Paramatta the writer says:—"The visitor passes islands like Cockatoo, full of historic interest for New South Wales. He will look up arms and creeks on the left-hand side which gleam like mirrors, and margined by thickets of Acacias in full flower; further on the broken ground is covered with bush, the chief part of which is due to the luxuriant growth of Acacia floribunda, whose Hawthorn-like perfume fills the atmosphere. Myrtaceous plants, such as Leptospermums and Melaleucas are also abundant, and some of them are in flower. Young saplings of Eucalyptus globulus are plentiful, and their glaucous leaves add to the variety of assembled foliage. The land rises in imposing masses. Cultivation and horticulture have done much for that part of the Paramatta River nearest to Sydney, such as Hunter's Hill. There he will see magnificent buildings, public and private, crowning the heights above, whilst villa after villa peeps forth from amidst the dense vegetation of the steep slopes to suggest the luxuries which abundant wealth can procure. As he draws further away from Sydney the country is less modified by cultivation. Nature is seen there with such portions of her original garments as men have left her. The lovely Australian wild flowers still blossom there, beautifully coloured and large butterflies come to visit them, and the green parrots and parroquets bear them company. If the visitor lands at Ryde, and walks to the Pennant Hills, he will pass many Orange gardens bright and beautiful in appearance; the glossy, dark green foliage of the trees and their luxuriant growth proclaim them to be healthy and well cared for. In one orangery at Pennant scores of acres of trees extend in serried rows; many are so abundantly laden with golden fruit that they have to be supported by props, while the ground beneath is strewn with the dropped fruit. The trees bear abundance of their sweetly-scented white blossoms, and they are crowded with fruit in every stage of development, from the newly set to the fully ripened Orange."

—— Covent Garden.—There is now a very good and varied supply of fruits and vegetables to be had in the market, and home produce is beginning to show itself in fairly large quantities. Asparagus and Strawberries, Sir Charles Napier being the variety of the latter which predominates, are both represented by English produce as well as foreign. America still keeps up the supply of Newtown Pippin Apple. Africa is not behind-hand, for very fine Glout Morceau Pears arrive from so far off as the Cape! Pines from Madeira, Maltese Oranges, Bananas, French salading, &c., are abundant. Of course there are numerous other fruits, &c., in smaller quantities, but the above are the most plentiful. Among flowers Cattleya Mendelii and others are abundant, as are also Odontoglossums, of which crispum is the chief. Other flowers comprise Eucharis, Roses in great variety, including Maréchal Niel, Wallflowers, Primroses, and allied flowers, and flowers of bulbous plants.

—— Rating of Market Growers and Others.—A large meeting of the nursery growers, with Mr. W. Poupart of Twickenham in the chair, was held at Simpson's Hotel, Strand, W.C., on Monday evening, April 19, to consider the best means of assisting Mr. Purser, a nurseryman of Worthing, in defending an action brought by the Worthing Local Board in the Court of Queen's Bench to recover local rates made upon his full assessment. Mr. Meer, of Worthing, explained that the Worthing Local Board had demanded rates of the growers based upon the full assessment, and he had refused to pay the amount so demanded, and calling the Board's attention to the case of Finchley Local Board *v.* P. Kay, tried at Middlesex Sessions, where it was ruled that nursery growers should be rated at one-fourth of their assessment. The Worthing Local Board, however, refused to accept this ruling, and have taken action against Mr. Purser to recover a rate as made upon his gross assessment. After considerable discussion, it was resolved that as the question was of great importance to the nursery growers throughout the country, the Market Gardeners, Nurserymen, and Farmers' Association should be at once requested to give their assistance in helping to defend this action. A committee was named, and a vote of thanks to the Chair terminated the proceedings.—At an extraordinary general meeting of the Market Gardeners, Nurserymen and Farmers' Association, Mr. W. Poupart, Jun., President, in the chair, held on April 27, the Secretary was authorized to place himself in communication with the Secretary of the Committee of the nurserymen appointed at the meeting held by them at Simpson's Hotel, Strand, on April 19, and to inform him that the Association is willing, in the interests of its members and the trade generally, to take up the case, with the assistance of the Worthing growers and others.

—— Publications Received.—*British Fungi* (*Hymenomycetes*), vol. i. (Rev. J. Stevenson).—*The Fern World* (F. G. Heath).—*Gardens of Light and Shade* (G. S. C.).—*The Agricultural College of Michigan, Bulletin No.* 13: *Farm Department.*—*Compendio della Flora Italiana* (Prof. Gibelli).—*New York Agricultural Experiment Station, Bulletin No.* 8, n.s.—*Route Map and Index to the Royal Botanic Garden and Arboretum, Kew.*—*Official Guide to the Museums of Economic Botany, Kew, No.* 3: *Timbers.*

TOBACCO CULTURE.

The growth of Tobacco in this country has been so limited, that few persons have had any experience in the matter. Col. Clarke, to whom Cotton growers are under such obligations, has been one of the few experimentalists in this direction, and his precepts are given in another column. It is certain, however, that if it were thought desirable (which we greatly doubt) to grow the plant on a large scale, it could be grown as advantageously here as in the North of France. For what follows we are mainly indebted to M. Boussingault.

The seed is sown in nursery beds in March in a warm part of the garden; in this country they should be raised under glass. In June the plants should be transplanted in lines 3 feet apart, the plants themselves being at a similar distance. The soil should be a rich deep loam, and requires thorough preparation and culture. Weeds should be looked after, and after the plants have attained a certain height and have produced seven or eight leaves the tops are pinched or cut off. The leaves, when cut for use, are hung up in drying-sheds, so that they do not touch.

Owing to the thorough cultivation of the soil that is required Tobacco is considered as a good element in the rotation, as Wheat can be successfully grown after Tobacco without additional manure. The leaves are also ploughed in green, and thus return to the soil a considerable proportion of the manure they themselves have received. Boussingault says the plant contains about 86 per cent. of water, and of the dry matter left after expulsion of the water by heat 82 per cent. consists of organic matter, 3.3 of nitrogen, 0 89 of phosphoric acid, 3.40 of potash, 9.41 of other mineral substances; hence the necessity for a rich soil or for the employment of a relatively large amount of nitrogenous manure. Nitrate of soda, from its rapid action, would probably form an excellent manure, and the employment of guano in small quantities at the right season is also indicated. Of course the question of cost has to be considered, and upon this point we have no data.

Probably most soils fitted for Tobacco culture would contain enough potash, but if phosphates were required bone-meal or superphosphate could be added to the nitrate of soda. When we consider the cost of production and our relatively sunless skies, we cannot look with any confidence to any useful result from Tobacco culture, unless under fiscal conditions such as are not likely to be adopted in this country. It may be well from this point of view to append a cutting from one of the American agricultural papers:—

"It is not prudent for any one unaccustomed to raising it to plant largely at first. Go slow and learn, is the safest and best way. The only grades of Tobacco which ought to enlist the best attention of beginners or old planters as well as are the fine grades. The markets are full of the mean grades, which are selling below the cost of production. In short, if you cannot produce at least a fair working or shipping grade of Tobacco, there is no money in it, and no inducement to grow it."

If this be the case, even in the Southern States, where sunlight and sun-heat far exceed what is vouchsafed here, what profit can be looked for here?

REMAINDERS FROM THE PRIMROSE CONFERENCE.

In the inevitable hurry to give some record of this interesting meeting last week, when additional work was associated with a diminished period of time in which to effect it, some few matters of interest were omitted. These omissions we can now supply. Among the objects exhibited were two sheets of coloured drawings of Auriculas, beautifully executed by Madame Merian, and interesting as showing the great advance in floral taste since the early part of the eighteenth century. Madame Merian's magnificent publications on the insects and plants of Surinam are well known to bibliophiles and naturalists. This work was first published in 1705, and the death of the lady took place in 1717, so that we may assume that the Auriculas in question were those that found favour in the early part of the eighteenth century. These beautiful drawings were exhibited by the kindness of Professor Oliver.

The Native Country of Primula sinensis.

M. Franchet communicated the proofs of a second paper on new Primroses collected by the Abbé Delavay in Yunnan. The paper will be published

in full in the *Bulletin* of the Botanical Society of France. Among the more interesting details may be mentioned the discovery of certain species which bridge over the gap between the two genera, Androsace and Primula, and of wild specimens of Primula prænitens (sinensis, Lindl.). It appears that Dr. Hance, whose knowledge of Chinese plants is unique, has only once seen a wild specimen of this plant. The discovery therefore of the plant by the Abbé Delavay on calcareous rocks by the margin of the Blue River in the gorges of Y-Tchang, in the province of Ho-Pé, is a matter of much interest. M. Franchet says that the wild plant only differs from the cultivated plant in its more slender proportions. Mr. Westland, the acting Superintendent of the Botanic Garden of Hong Kong, says, "We manage to grow the cultivated variety of Primula sinensis in Hong Kong during the cold season, but they invariably damp off when the hot weather sets in. They have not even time to mature their seed, and we have to get a fresh supply from England every autumn."

PRIMULA MISTASSINICA.

Of this little gem a plant in flower was shown through the kindness of Professor Asa Gray. Professor Macoun, of Ottawa, also sent a series of dried specimens of this plant, and of P. farinosa. Respecting the former he writes :—"P. mistassinica always grows in wet, springy places along the margins of brooks, lakes, or ponds, and extends from Labrador to the centre of the Rocky Mountains. The prairie form of P. farinosa is a giant, often attaining a height of 18 inches, capped with a multitude of flowers.

PRIMULA BALEARICA.

Professor Willkomm, of Prague, calls attention in a letter to this species, originally described by him as a variety of P. vulgaris, and figured by him at t. xxxv. of his *Illustrations of the Flora of Spain and the Balearic Islands*. Professor Willkomm now considers that this form is worthy to take rank as a species. In habit it is like the common Primrose, but the leaves are nearly glabrous beneath, and the base of the leaf is much more narrowed, forming a very long winged petiole, and the flowers are snow-white. It is a sub-alpine species, while the true Primrose is a lowland plant which does not occur in the Balearic Islands, nor in Valentia, Corsica, nor the South of France.

Cyclamen balearicum, t. v., differs from C. repandum in its white, not purplish, flowers, and other floral characters, as well as in the leaves, which are cordate-ovate, slightly toothed, not with projecting lobes or angles.

THE ROSE SEASON

By this I do not mean the character of the present season, but what we may in a well managed amateur's garden consider the duration of the season when Roses may be had. My reason for doing so is that it is often objected to its culture, that it takes up a very large portion of the garden, and that after all it is only to obtain flowers for about three weeks or a month. This, I think, is a very unfair way of looking at it. It is true that, like nearly all flowers, there is a short time when they are in their full blaze of beauty, but, unlike many, it has also the merit, by some of its many classes, of prolonging the period during which Roses may be gathered for many months. It is the same with some others of our most cherished flowers. The Carnation and Picotee grower has his eleven months of care and attention rewarded by a three weeks' or month's bloom; the Gladiolus grower is in the same position, but in both cases there is a much more lengthened period during which good and satisfactory blooms may be had. For instance, in my small collection of Gladioli I cut the first spike on July 27 and the last in the early part of October, but the full blaze of beauty was but for three weeks, at the end of July and begining of September.

When I write of a well managed amateur's garden I am not referring to a large and expensive establishment, but to those where the owner does no little of the work himself and is obliged to be somewhat circumspect as to expenditure; and although my acquaintance with Rose gardens is a very wide one, extending to all parts of the kingdom, I have specially in my mind those places where it is not impossible to grow Teas out-of-doors—and few people, perhaps, know how very capricious, according to latitude and longitude, are the climatic aspects of our kingdom. People who read of the beautiful balmy air of Cornwall will say, "Oh! what a delightful climate for Roses," and yet I have the assurance of my friend, Mr. Boscawen, so well known as one of our most successful horticulturists, that he thinks it would be impossible to grow an exhibition Rose in Cornwall. Then, again, it might be imagined that when we got to Scotland—to

> "Caledonia, stern and wild,
> Meet nurse for a poetic child!"

—we should find influences decidedly adverse to Rose growing, and of course in the far North it is so; but I have received from a lady correspondent at Forres in the month of December a box of Rose blooms, both hybrid perpetuals and Teas, cut from the open, and the other day when the committee of the National Rose Society were arranging about holding their provincial show in Edinburgh in 1887, they had to make the show a week later than was suggested by the Caledonian Society: in fact Roses in that part of Scotland are nearly as early as in the South of England. Of course when one gets to the Perthshire highlands the case is very different, as Mr. Gray has discoursed pleasantly about in the *Rosarians' Yearbook*. All these things make it somewhat difficult to write about the Rose season, but I will just say that if this is to be prolonged most dependence must be placed on the Teas and Noisettes. I have a small greenhouse in which some years ago I planted in a pot a Maréchal Niel; it has worked its way through the hole of the pot, and got well rooted in the ground on which the house is built: on this plant I had last year upwards of a hundred flowers, and it is on this that I rely for my first blooms of Roses. I may say that it occupies the back wall of the house, and that I have a Vine in it with which it does not interfere, as its blooms are over before the Vine has started much. I have also a wall facing south, and here I look for my next supply; on this are planted a few Tea Roses, and from them I have been able to cut some beautiful blooms every year, notably of Comtesse de Nadaillac, which has a colour with me I have seen nowhere else. These few trees, which are of a fair size, give me blooms until the earliest of the hybrid perpetuals come into flower—*i.e.*, about the beginning of June in these southern parts. Abbé Brameral is always the first to bloom, as in its day Géant des Batailles, from which it was doubtless a seedling, used to be. Madame Gabriel Luizet is another early bloomer, and so is John Hopper. At this time, too many of the summer blooming Roses will be opening their beautiful blossoms, and when the bushes have been left much to themselves some of these give a gorgeous display, such as is not to be equalled in any other class. And now the full blaze of beauty for the hybrid perpetuals gladdens the eye and delights the grower, and there is not much else now to engage him (if he is not an exhibitor) than to delight in the result of his labours; if he be an exhibitor, and goes thoroughly into it), I can only say that I know no one who has a harder time of it for about three weeks than he does, what with cutting his flowers, travelling here, there, and everywhere, by day and by night, going without his meals, burdened with a continual anxiety, with his mind ever on the stretch, he may say, whether he uses the word labour or *amor*, that it *omnia vincit*. When I have seen an amateur getting into the luggage-van, and keeping watch over his boxes, or snatching an hour or two of sleep in a waiting-room while he is on the watch for another train, I am amazed at the readiness with which people will voluntarily submit to things about which, if they were compelled to do them, they would make a pretty considerable noise. But this by the way. With regard to the hybrid perpetuals it is well known that they give a second bloom, and if the old flowers are cut off the eyes next to the top will start into fresh shoots, which in most kinds will give a second flowering; and hence the name applied to them by the French, *hybride remontante*, is much more correct than our hybrid perpetual. Exhibitors do not, I believe, care for the second flowers, and pinch them out (at least some of them do) but those who want a continuous bloom will gladly welcome them. It is now, however, that the Tea Rose comes in so delightfully to help to prolong the season; its China blood gives it much the character of the old monthly Rose, and so it is forever throwing out new shoots, and these bear excellent blooms. Formerly the Tea Rose was considered to be synonymous with all that was delicate and difficult to manage, but of late years new varieties have been added which combine beauty with hardiness and strength of constitution; in fact, quite as much so as many varieties of hybrid perpetuals. Take, for example, such varieties as Madame Lambard: nothing can exceed the exquisite beauty and variableness of this lovely flower—sometimes almost a red, at others a pure yellow, at others that exquisite combination of colouring which makes the Tea Rose so beloved by all Rose-growers; and then, unlike a hybrid perpetual, it does not fly so rapidly. You bring in a lovely bloom of Charles Lefebvre or Duke of Edinburgh, but almost at the time it is put into the vase its freshness seems to be departing, and next day slatiness and dulness take the place of its glowing colours. Not so with Madame Lambard and with many Teas—they will last three or four days, and yet seem to keep their freshness. I have known a bloom of Souvenir d'Elise to have been shown at two exhibitions three days apart. I have instanced Madame Lambard, but there are other Roses in the same class quite as vigorous. Perle des Jardins, one of our best yellow Roses, and Sunset, its American sport; Marie van Houtte, one of the best flowers that Ducher has given to us; Souvenir d'un Ami, Hon. Edith Gifford, Jean Ducher, another of those delightfully variable Roses, salmon-yellow, rose, and Peach, all combined, and sometimes one and sometimes another of these colours acquiring predominance, and giving its character to the flower; Catharine Mermet, a lovely Rose; Comtesse Riza du Parc, a very fine Rose, though uncertain, as it is apt to split and make an irregular bloom; Bouquet d'Or, a very vigorous and handsome Rose; Anna Ollivier, a very lovely and vigorous Rose. These and many others of a similar character will give blooms, at least in our southern and south-eastern counties, right into October, and if that month be not very wet, well into November.

Taking all these things into consideration I do not think that it is fair to declaim against the Rose as if its season were a short one; and when we consider how it combines everything that a flower ought to have—beauty of form and colour, delicious perfume, bright foliage, and good habit of growth—it is not to be wondered at that it is so popular, and that even under the most unfavourable conditions persons will still attempt to grow the queen of flowers. *Wild Rose.*

ORIGIN OF THE AURICULA.

It may possibly interest some of your readers, especially those who were present at the Primula Conference last Wednesday, if I send you a statement of the main points contained in Kerner's *History of the Auricula*.

Mr. A. W. Bennett published a summary of it in the *Gardeners' Chronicle*, vol. iv., p. 806; still, a re-statement may be desirable now, *apropos* of Mr. Hibberd's paper.

Kerner's article appeared in the sixth volume of the *Zeitschrift der Deutschen und Oesterreichischen Alpenvereins*, Munich, 1875, and was published also as a separate pamphlet of sixty-four pages 8vo, at Innsbruck. For clearness I will number the different points of the history.

1. About the year 1570 the Emperor Maximilian II. possessed a large garden in the neighbourhood of Vienna, which Clusius repeatedly refers to as containing a great number of species, to which both Italy and the eastern Mediterranean supplied a rich contingent.

2. A passion for gardening had seized upon the noble Viennese ladies and others of that period; and the peasantry used to bring down to the Viennese markets for sale specimens of many kinds of alpines—among others, Primula Auricula, L., P. Clusiana, Tsch., and P. farinosa, L.

3. The Belgian L'Ecluse (Clusius), who was the greatest botanist of his day, was in 1573 invited by the Emperor to Vienna, and received the honorary title of Court Botanist.

4. In his Vienna garden Clusius had a special portion devoted to alpines, and cultivated as many as fifty species, with the object of making them permanent ornaments of a garden.

5. He had an especial preference for the alpine Primula.

6. Others, as Professor Aichholz, in Vienna, who in 1576 made excursions in Styria; Camerarius, of Nuremburg, in the Alps of Salzburg and Tirol; and Schlick, of Kaufburen, in the Rhœtian Alps, brought down, like Clusius, for cultivation, numerous alpines.

7. When Clusius left Vienna to settle in Frankfurt-

on-the-Main he commenced a most active correspondence with Viennese and other ladies, noblemen, landowners, priests, apothecaries, and others, upon botanical matters; and in this way was continually receiving both living and dried specimens of Styrian, Carinthian, Salzburg, Tirol, Bavarian, Swiss, and Venetian alpines, as well as plants from Belgium, England, Spain, Italy, Hungary, Crete, and Constantinople.

8. Clusius bewails the difficulty he meets with in "taming" these alpine Primulæ; and especially laments his want of success with the "blauen speik" (P. glutinosa). Two only, P. Auricula, L., and P. pubescens, Jacq., responded to his efforts to cultivate them.

9. Of the latter Primula, which he calls Auricula Ursi II., he says that he saw it first in the garden of his friend Prof. Aichholz in Vienna, who had received it from a noble lady, but did not know whence she obtained it. He had sought for it in vain in the Austrian (Archduchy) and Styrian Alps; but, later, learnt from his friend that it was found in the Alps near Innsbruck.

In confirmation of this I intercalate the next paragraph.

[10. In Amthor's *Alpenfreund*, vol. x., p. 178, it is stated that a certain Countess Trautsmannsdorf, who passed her "Sommerfrisch" at Schloss Trautson, near Matrei, on the Brenner Pass, sent the P. pubescens to Clusius for his alpine garden.]

11. About 1582 Clusius sent from Vienna to his friend Van der Dilft specimens of P. Auricula and P. pubescens.

12. Their cultivation spread so rapidly that they appeared in most gardens in Belgium, Germany, England, and Holland by the middle of the seventeenth century; and in the year 1664 several cultivated forms of P. pubescens of different colours were known. They were also tried in Italy, but without success.

13. P. Auricula, not yielding varieties, gradually disappeared from cultivation, while the other increased them continually until more than a thousand forms were in cultivation.

14. After Clusius' time the knowledge of the original habitat of P. pubescens gradually faded away.

15. But between 1774 and 1794 the P. pubescens was again found in Tirol by Wulfen, not on the Alps near Innsbruck, but in the peasants' gardens at Windisch-Matrei. The peasants, on being interrogated by Wulfen as to its origin, would probably reply that they came from the neighbouring mountains. Wulfen, however, never sent any wild specimens, but sent specimens of the cultivated plant to Jacquin at Vienna, who gave it its present name.

16. Since then, although the Iselthal Mountains from Windisch-Matrei to Pregraten, and all the neighbouring Alps, have been by later botanists most diligently searched, no wild specimen has ever been found.

17. Not only in the gardens near to Windisch-Matrei, however, was it grown, but also in many of the valleys of the Pusterthal, and also in North Tirol in the Innthal.

18. In the year 1867, however, Kerner, who was accustomed to spend his summer holidays in the Gschnitzthal, discovered the P. pubescens (superauricula × hirsuta, All.) growing with its two parents, and another hybrid (subauricula × hirsuta, All.), P. arctotis, in the upper end of the valley in the neighbourhood of the Tribulaun, a dolomite peak.

19. Kerner adds that, as far as he knows, the Auricula (through P. pubescens) is the only alpine plant that has become a generally cultivated florist's flower.

I think that to many minds the above paragraphs will be convincing as to the origin of the Auricula. I have seen in herbaria specimens of P. pubescens (wild, of course) with much more of meal and of darker maroon colour than appeared in any living specimen produced at the exhibition. But there are two other points that Mr. Hibberd did not call attention to, and these were—1st, the occasional great size and variation in the form of the bract; and 2dly, the deep and narrow denticulation of the leaf of some of the Auricula forms. I think he might well have asked how those two points could have been evolved from P. pubescens. But if he would once more cast a glance at wild specimens of the despised P. Palinuri, he will find that it possesses by far the largest bract of any European Primula and that its denticulation is deep and close, more so than that of P. Auricula, L., and in exact correspondence with the leaves of some of the forms of the florists' plant. In addition, it will supply a golden-yellow for the flower, and abundance of meal, if it be thought that P. Auricula, L., be too pale and too bare of meal to supply enough to P. pubescens. This conjecture, indeed, has already been made by Stein in his List of Primulæ, 1882. I think it very plausible.

It is possible that another hybrid still may have assisted in the formation of the florist's flower, P. Göbelii (superauricula × villosa, Jacq.), originating in Upper Styria, and first named by Kerner in 1875, in his paper *On the Hybrid Primulæ of the Alps*, Vienna, 1875, offers meal in abundance. Any one who saw the splendid specimen exhibited by Messrs. Backhouse of this wild hybrid, would see the close resemblance exhibited by it to the "tamed" plant. And it must be remembered that Upper Styria was one of the regions searched by Clusius and his friends: and as the butterflies were no doubt as busy in the work of fertilisation in those days as now, P. Göbelii may well have existed then, and been brought down into lowland gardens by Clusius or others. I have been on the ground, but was only successful in finding the other hybrid (subauricula × villosa, Jacq.), viz., P. Kerneri, Stein. *G. C. Churchill.*

DISEASES OF PRIMULACEÆ CAUSED BY FUNGI.

THE members of the natural order Primulaceæ are attacked by but few fungi, and of these the majority



FIG. 124.—PRIMULA DISEASE: PERONOSPORA INTERSTITIALIS.

grow on the species belonging to the genus Primula. In the case before us, as in several others, where the number of species of fungi belonging to any natural order of plants is small, the smallness of the number is counterbalanced by the virulence of one or two of the fungoid species.

The beautiful Soldanella is often deformed by Æcidium soldanellæ, Hornschuch; a second pest on this plant is Septoria soldanellæ, Berkeley. The Lysimachia is attacked by Septoria lysimachiæ, West., and Phoma lysimachiæ, CK.; the Trientalis by Tuburcinia trientalis, Berkeley and Broome; Ascomyces trientalis, Berkeley, and Penicillium abnorme, Berkeley and Broome. I have noticed no other fungi than the above on the genera of Primulaceæ, exclusive of Primula.

Amongst diseases of Primulas the one caused by the attack of the fungus named Urocystis Primulicola, Magnus, on Primula farinosa, is a notable one. It was illustrated and described (for the first time as British) in the *Gardeners' Chronicle* for August 30, 1884, pp. 268, 269. Phyllosticta primulæcola grows on fading leaves of the common Primrose.

The Primulaceæ have their fair share of species of Æcidium and Puccinia, two sets of fungi which are believed by many botanists to be genetically connected. It happens that the species belonging to the Primulaceæ have been dubbed Eupucciniæ, which means that all the spore forms—Uredo, Puccinia, and Æcidium—are supposed to grow on the same host plant. Beginning with Soldanella, we have Æcidium soldanellæ, Hornschuch, a fungus which was published by Mr. Berkeley in the *English Flora* fifty years ago. As far as I know, the Puccinia which should accompany it on the same host plant, has modestly kept in the background, for it has not yet been seen in Britain.

Puccinia primulæ, Greville, grows on Primrose leaves from June to September; Æcidium primulæ, its supposed second, grows on Primrose leaves in May. The Puccinia is sometimes called Uromyces, at other times, Trichobasis; the last name has recently been most approved.

We now come to the two species of Peronospora; these parasites cause great destruction. The larger in size of the two is P. candida, Förckel; it forms dense white effused patches on the underside of Primrose leaves in summer and autumn. It is an ally of the Clover Peronospora, and belongs to the group Effusæ. The second species is P. interstitialis, a very much smaller plant; this grows on the underside of Primrose leaves in the summer, and is generally confined to the interstices of the veins; the conidia are often terminal, *i.e.*, one conidium or spore to a fungus stem. In this simple state it resembles Ovularia. Both fungi produce resting-spores. I am not acquainted with any illustrations of these fungi other than the two herewith appended (figs. 124, 125), which have been engraved from Nature to the same scale, viz., enlarged 400 diameters. The larger (fig. 125) is P. candida, Förckel, a very handsome, much-branched fungus; the smaller, P. interstitialis, Berkeley and Broome. The "Dames" and "Knights" of the "Primrose League" should look after these two species of Peronospora, gather the infected leaves, and show them "the primrose way to the everlasting bonfire," as the "Porter" says in *Macbeth*. The abundant germs of these two Primrose fungi are of course infectious, cuticle piercing, and "putrefactive;" but all "Carpet Knights" and "Habitation Dames" may possibly be aware of this fact. The Primroses are just now having a bad time of it between "Knights" and "Dames," and the fungi which give rise to putrefaction. *Worthington G. Smith, Dunstable.*

Foreign Correspondence.

HARDY CYPRIPEDIUMS IN AMERICA.

I SELDOM take the *Gardeners' Chronicle* in hand without deriving benefit from it, and am therefore willing to contribute to its widely read columns any little information I may chance to possess. In the paper on "Hardy Cypripediums," p. 107, Mr. J. Douglas remarks:—"They (C. spectabile) evidently grow in moist peat in their native country (North America), but it is fibrous peat, with a considerable proportion of vegetable matter, and the roots run along close to the surface, protected doubtless from the vicissitudes of the weather by thick herbage." This is no doubt quite true in many instances. Now in the close vicinity of this place (Chicago, Illinois, U.S.A.) there are two stations of this, our most admired native Cypripedium, and the plants flourish equally well in each, while the conditions are by no means the same. Chicago is situated near the southern extremity of Lake Michigan. At this point the shores of the lake are very low, and a little distance south of the city are of a semi-marshy character, with shallow lakes, ponds and small streams. In many places a peculiar formation exists along the shores, apparently formed at a remote period by the action of Lake Michigan; consisting of long low sand bars covered by a depth of light, sandy, black alluvial soil varying from 6 to 12 inches. These bars (too low to be called ridges), are usually 50 to 100 feet wide, and the highest point is often not more than 4 or 5 feet above the water, which partly fills the shallow canal-like depressions between the bars; the whole running parallel with the shore of the lake. Frequently, almost usually, these bars show a fine clean growth of Oaks, but do not boast much in the way of thick herbage.

The alluvial soil when dry, is fine grained, black and powdery, the sand not what one would call "sharp," but showing in small grains; when wet it is rather pasty. Growing near the edges of these bars, and in the same soil near the marshy streams in the vicinity, with the crowns 1½ to 2½ feet above the water level, we find C. spectabile, C. pubescens, C. parviflorum, Habenaria ciliaris, &c. I call this one station, although, strictly speaking, this may not be correct, for C. spectabile is found all about this region on the prairies, or at least near the lakes. My place is on the lake shore, about 4 miles

north of the city, and here the sand is in ridges about 30 feet high above the lake, the shore gradually rising, until 12 miles further north; the banks are of clay, and are bolder, and at Highland Park, 22 miles, they are bold blue clay bluffs, 100 feet and upwards in height. These bluffs are cut by deep ravines or gullies running from the lake, each with its little brook, and are of clay, as seen from the lake, as it washes up against them, but they are overlaid by a heavy yellow clay loam, of considerable depth. On the north banks of the tortuous ravines, where the plants can get a southern outlook, the aspect otherwise not being unfavourable, we find, on June 1, C. parviflorum and C. pubescens in bud and bloom, while C. spectabile is just pushing its downy head up through the naked ground. The Cypripediums do not seem to have any protection in the winter worth mention beyond snow, for as high winds prevail here all through the autumn months, the fallen leaves are blown down to the bottom of the ravines, where I have never found any Cypripediums, but where we do find plenty of Erythroniums, Habenarias, &c., though I have never seen H. ciliaris on the clay. The whole country is subject to snow, which at the time of writing was 18 inches in depth on an average, but which is liable to go off the ground very rapidly during a thaw, as is now happening. Some winters the snow lies to a protecting depth for months, and through the greater part of the severe weather; and again the snow may all melt off, leaving the ground perfectly bare to receive a "cold wave," freezing the ground to the depth of 36 to 50 inches, with the thermometer registering 10° to 30° below zero, F. for five to ten consecutive days. Therefore, these plants have often to encounter 60° of frost for upwards of a week, and without protection worth mention. Through the summer in many instances (next summer I will observe how generally) these plants are shaded more or less by the trees which grow in and about the ravines. In transplanting Cypripediums from either station I have been most successful with those removed in full bloom, and I believe that the roots of healthy specimens run down vertically at least 10 inches into the heavy clay loam, but to a less depth in the alluvial soil. Taking a trip through the White Mountains in New Hampshire, I visited the cascade known as Thompson's Falls, just off the "Glen Road," and as we were climbing up over the stumps, ledges, and rocks, all deeply covered with a cushion of live moss, my wife, a little in advance (I weigh 200 lb.), called out, "Here is a beautiful white Cypripedium!" and, sure enough, close to the foot of the Falls proper was a beautiful delicate white Cypripedium, probably a variety of candidum. The pouch or lip was clear pure white, both without and within; the sepals and petals were of a very delicate sea-green on June 26; they rooted simply into the moss, and I took them up with my hands without breaking a single root. These plants are bedewed continuously all summer with the spray from the Falls, and in the winter they must be buried under the snow in a solid mass of ice. The few plants I got I sent home, thinking I could keep them in my Odontoglossum-house, but the following spring they were dead. I shall try again.

These few instances give an indication of what Cypripediums endure in their native habitat, and I will further remark that in all the localities mentioned they get every summer 95° to 100° in the shade. *Wm. H. Chadwick.*

Clianthus Dampierii.

Those of your readers who have never experienced the delight of seeing this plant growing in its natural habitats can form but a faint idea of its gorgeousness. The poor ludicrous daubs we are sometimes treated to from England as imitations are indeed almost contemptible in comparison to the natural flower. Under artificial treatment it soon gets into a debilitated state of health, being furiously attacked by red-spider, its soft downy leaves being just the place for it to revel in. The two redoubtable travellers, Dampier and Sturt, must indeed have felt rewarded when they first beheld such a glorious object on the plains of New South Wales. A large patch of this in flower is something to see, and not soon forgot. Our New Zealand one, C. puniceus, grand as it is, is nowhere in comparison. Such is the brilliancy of its intensely scarlet-crimson in these latitudes, that I doubt if there is any material, either in the way of vegetable or mineral dyes, which can truthfully portray it upon paper to equal the effects of tropical sunshine. Another of those pets I nursed unskilfully when in England. *T. Smith, Timaru, New Zealand.*

Home Correspondence.

The Fruit Crops.—Although the winter was not very severe it was long, cold, and drear, but this has been a decided advantage as regards fruit trees, which appear to be quite three weeks later this year than usual, as generally our Apricots are full in bloom by the middle of March, and this year they were not open till the end of the first week in April, and as the weather has since been remarkably favourable we have got a capital set. Peaches and Nectarines I have never seen looking better, as they have splendid wood, full of strong bloom, and the bees are busy at them daily, but I do not attach the importance to these insects some do in the fertilising work they are said to perform, and doubt not but that the trees would be quite as well and equally fruitful without their visitation, as they go off with all the pollen they can collect and empty the anthers. Plums will not be open for quite a week yet (April 12), but both on walls, bushes, and standards they are very full of bud, and must, one would think, escape frost this season, as the standards and bushes will not be out till May,



Fig. 125.—Primula disease: peronospora candida.

neither will the Cherries, which are equally crowded with bud, but the blossoms of these seem always in more danger, as the stigmas project so far and are more apt to get nipped through, being away from the sheltering influence of the petals and tubes. Pears will be thin of flower, and more especially is it so with trees that bore freely last year, many of which have no buds at all on, the effort of swelling and perfecting fruit during the dry autumn being too much for them, and they have thus eased themselves. Apples, being deeper-rooted, do not appear to have suffered in the same way, as they are very promising, the buds now beginning to show and open fast, and by-and-bye the trees will be a beautiful sight. Gooseberries and Currants are showing very freely, and as these are fairly hardy, and will be well protected by the leaves, they cannot take much harm, and it may, I think, be taken for certain that fruit of both will be abundant this year. Strawberries have been much cut up, like other vegetation, by the long searching winds, but it is only the old foliage that has suffered, and as the crowns are all right, and starting strongly, no doubt they will throw out plenty of blossom. *J. Sheppard, Woolverstone Park.*

Some of the Advantages (!) of the Foreign Parcel Post.—As many of your readers may have hailed the new extension of the parcel post system to several European countries, and may think of availing themselves of its privileges for sending or receiving plants from abroad, I think the following experience may be of interest:—I carefully packed some plants (Chrysanthemums) in a tin box, and addressed it to Geneva. It was duly posted on April 7 at the local post office. The postmaster did not forward it, but wrote me a note to say that before it was sent certain preliminaries must be gone through, and certain matters were to be signed by me. I therefore called and made this square, and the parcel was sent forward on April 8. This was how it was sent:—On its arrival at its destination there was a paper found attached to it stamped, "Foreign and Colonial Parcel Room, London, April 10." Thus, already three days were lost, one at the local post office and two in London. On reaching its destination there was attached to the box a paper containing a long story in German, to the effect that by an imperial decree certain formalities must be complied with; the box had gone to Hamburg, and it reached its ultimate destination on April 16. It had been unpacked, probably at some custom-house. I hear the plants are recovering; but nine days in transit from an inland post in England to Geneva will have to be taken into the calculation in estimating the boon conferred by the foreign parcel postal arrangement. *W. H. O.*

The Skylark in Scotland.—For the first time for some four years, I heard to-day the skylark close by here. The last I heard was in the neighbourhood of Sundwell Farm, on the road to Dornock. A friend to whom I mentioned the fact said that that was where he, too, had last heard it. I was lucky also to see it rise, and to watch it till it dropped into its nest. If the nest escape the eyes of the birdcatchers we may have them about us again. It is said that the starling is a great enemy of the skylark. Is this so? Unfortunately we have a good many starlings about home-hunting just now. *J. A. C., Northfield, Annan, April* 25.

Potato, Wormleighton Seedling.—Having grown this variety several years I can speak very highly of its good qualities, as a very heavy cropper, a long keeper, and of excellent table quality. It is rough-skinned and resembles Magnum Bonum in shape, but greatly superior in quality. We are using it at the present time, and it will carry us through till new ones come in in quantity. I use this variety to follow up Schoolmaster and Yorkshire Hero, two well known older varieties. *Edward Ward, Hewell Gardens, Bromsgrove.*

Hardy Aroids.—These are not generally popular plants, but I have always liked them, and have tried to get a complete collection. I subjoin a list of those which I grow, and have proved to be quite hardy. I have tried a few others, such as Arum speciosum and Amorphophallus Riverii, but without success, and I do not grow the aquatic species. I should be very much obliged if any of your readers could add to the list:—

Arisæma triphyllum
Arum maculatum
,, italicum
,, ,, v. pictum
,, elongatum
,, palæstinum
,, creticum?
,, crinitum
,, dracunculus
,, dracontium
Arisarum vulgare
,, proboscideum
Biarum tenuifolium
,, Sprunerí
Eminium Lederlourii
Helicophyllum Alberti
,, Lehmanni
Pinellia tuberifera
Sauromatum abyssinicum
,, guttatum
Symplocarpus fœtidus
Richardia africana
,, albo-maculata
Rhodea japonica

Henry Ellacombe, Bitton Vicarage, Gloucestershire.

Calceolaria pinnata.—I have been growing Calceolaria pinnata (Lady's Slipper) in many ways for the last seven years, and I find it a very desirable plant to have in the conservatory mixed with other flowering plants through the dead winter months and early spring. It has been admired here very much this last winter on account of its nice soft yellow colour. I have had plants in flower all the year through by picking the seed-pods off. I have been in the gardening line for the last thirty-six years, and I have never seen the plant in any garden before it came into my possession. I do not see it in any seed or plant catalogue, so that I think it must be lost sight of. I find it in Abercrombie's *Practical Gardener*, "Half-hardy Annuals," table 2. Will you be kind enough to let me know in your correspondence if it is in commerce? *Joseph Willis.*

Mr. John Downie's Cinerarias.—At his new place, Beech Hill Nursery, near Edinburgh, Mr. Downie has a remarkably fine strain of Cinerarias in bloom. They are characterised by great vigour and compactness of habit, being very dwarf yet free in growth, and throwing up open broad corymbs of bloom well above the foliage. The flowers are enormous in size, averaging from 2¼ inches to 2¾ inches in diameter, and the substance is cor-

respondingly great, there being no flabbiness in the broad florets, but a smooth symmetrical outline with recurved margin, which gives a bold massiveness of appearance seen only in first-class strains of this flower. The colours, too, are very fine, rich, and varied in the selfs, and pure and well-defined in the variegated flowers. A white variety amongst the rest is the purest dead-white I have ever seen; and so rare is it to meet with such a pure colour in self varieties of Cineraria that Mr. Downie is resolved to make the most he can of this exceptionally good type. *W. S.*

Origin of the Potato.—"W. S. M.," in your number for April 17, writes well about the origin of the Potato. I do not quite gather whether he has doubts about old Gerard being good authority for stating the root to have come from Virginia, because he says, "Gerard does not say from whom he received his roots, nor in what year he had them." I do not see why Gerard should be discredited because he does not give names. I have an old Gerard of date 1597, and the frontispiece is the effigies of the old herbalist, and he has in his hand a flower which certainly is a Potato blossom: the date of his portrait is 1598. I think, therefore, the old man knew what he was saying about the Potato, and took interest enough in it to be painted with a flower of it in his hand. *W. M. Rowland, Bishopstoke Vicarage.*

Double Chinese Primroses from Shipley Hall.—There was so much of detail to gather up respecting the Primula Conference, and, owing to the recurrence of Good Friday, so restricted a portion of the usual time in which to do it, that some things were unfortunately overlooked—among them the four splendid plants of Marchioness of Exeter double Chinese Primrose, shown by Mr. W. Elphinstone, gardener to A. M. Munday, Esq., Shipley Hall, Derby. Such plants as these are seldom seen in London. They were growing in square pans, and averaged over 2 feet in diameter; the foliage was all that could be desired, and they carried excellent trusses of large white flowers. Who that saw these plants will venture to say that Gilbert's double Chinese Primroses are "miffy," as they are sometimes termed? Those who looked upon these specimens will perhaps be surprised when they learn that they were only ten months old from cuttings, and yet of such a prodigous size. Mr. Elphinstone hoped to have shown a collection, but this particular variety was the only one in flower, consequently the others remained behind; but they served this other valuable purpose—besides being specimens of unusual cultural excellence, they were the only representatives of the fringed Chinese Primrose in the show. Mr. Elphinstone's method of propagation of these plants may interest some of your readers. It may be stated that, as he grows a batch every year for exhibition at the Chrysanthemum Exhibition in November, of the Manchester Botanical and Horticultural Society, he has to get them into flower earlier than usual with this class. When they have gone out of flower they are allowed to become pretty dry, and some fine charcoal is laid over the surface to absorb any damp. Then when the wood has become firm, the side shoots are cut half way through in a downward direction by means of a sharp knife, and without becoming severed from the plant they drop down and rest upon the charcoal. In two or three days the plants are placed in a temperature of from 50° to 60°, and soon the partly severed shoots begin to put forth root at the point where the cut was made with the knife. When sufficiently rooted, they are cut away, potted in small pots, and plunged in a bed of about 80°, grown on, shifted, hardened off, grown on in a cool temperature until they are in their blooming pots, when they are placed in a greenhouse to bring them on into bloom. This is both a novel and successful method, and it is matter for regret that the Royal Horticultural Society could not have awarded Mr. Elphinstone a medal for his highly meritorious productions. *R.*

Commercial Bulb Culture in England.—Like "A. D.," I have often wondered how it is that we do not grow our own bulbs, or, at least, a portion of them, instead of being dependent, as we now are, on the Dutch to supply our wants; but the Editorial note at the end of "A. D.'s" article gives the reason, which is, that though Hyacinths have been cultivated in England up to the average of the Dutch, London houses would not buy them. This aversion to purchasing home-grown roots can surely only arise through doubts as to their giving satisfaction to their customers, who have been so well served, as it cannot be supposed that they would prefer bulbs from Holland if they could get them as good and cheap here; and that they may be produced quite equal to any imported, I feel certain from the little I have had to do with them here. All they want is deep rich light soil, and with that and ordinary attention fine marketable bulbs may be grown. It is only for Englishmen to set about this industry of bulb cultivation for them to succeed, but to do this they must carry it on as it is in Holland, and pitch on the right spots for the work. As an inducement and a beginning cannot the Royal Horticultural Society offer prizes for home-grown roots at the spring shows, and see what that will do towards starting the thing? And prizes might also be given for the best developed bulbs in the autumn at the great fruit exhibitions, as they could then be judged fairly, one sort with the other, and the prejudice that now appears to exist against them would probably soon be done away with if they are brought before the public and proved to be good. The money that is sent out of this country for them must be something considerable; as the annual demand is enormous, and the trade in them and the industry resulting from it ought to be in our own hands, and will ere long if the right move is made. Messrs. Kelway of Langport, and Campbell of Gourock, Scotland, have shown what can be done with Gladioli, and it is to be hoped that some one equally enterprising will take up and manage Hyacinths in the same way; and if they will only do so it seems that there is a fine field before them, and one likely to be far more profitable than Tobacco cultivation, that is held out as a remedy for distressed agriculture. Japan Lilies seem a puzzle, at least so far as L. auratum is concerned, and why they die out in the manner they do is a mystery, for though a clump may succeed in places here and there for a time, they vanish in a few years and are no more to be found. In their native country, however, they must increase like weeds, or they could not be sent here yearly in the vast quantities they are, and before we can do anything with them we must know more about them. This dying-off is not only with those in beds and borders, but they are as bad, or worse, in pots, and the more room they have in these the more they seem to go off. *J. Sheppard, Woolverstone.*

The Primula Conference.—This proved a decided success, and was most enjoyable; but it unfortunately attempted too much: the time was too short to admit of all the points raised in the papers being fully considered and discussed. After all the largest and best part of the time at the disposal of the Conference was consumed in the discussion of a matter of the least practical importance, viz., as to the origin of the florist's Auricula, but then who would have missed the passage of arms between Mr. Shirley Hibberd and Mr. J. G. Baker? It was an incident long to be remembered. It was unfortunate that the Rev. F. D. Horner was not there to read his own paper; the result was that two hours at least of the best time allotted to the Conference had passed before it was reached; an inward craving for refreshment was being felt by many; the paper was presented in a fragmentary form, and the portions read were by no means done justice to by the reader. But it was strictly a paper from the florist's standpoint, admirably conceived and executed, dealing fully with familiar points with which the florist is thoroughly conversant, but of which a large number of those present must have been entirely ignorant. Hence it failed to interest; it lacked the living voice of the author with illustrations at command. It was a strictly orthodox paper; all the more recent claimants to popular favour—the coloured Primrose, fancy Polyanthus, laced and double Auriculas—were quite overlooked. Thus, any discussion that took place upon it was greatly narrowed in scope, and confined to two or three experts. The most useful discussion in the whole time consumed by the Conference—like the good wine in the parable—came at the close of the intellectual feast, following Dr. Masters' paper, and dealt with the management of Himalayan and other Primroses. Leading cultivators threw out some suggestions of a highly practical character that I am glad to find embodied in your excellent report. I should like to see this Conference repeated in a year or two, with longer notice given of the intention, so that there might be more time to prepare collections, and the strictly florists' aspect of the question—I mean the considerations suggested by Mr. Horner's paper—should be taken at one sitting, and the more strictly botanical aspects, together with the culture of the various species and varieties of hardy Primulaceæ, be taken at another, and any eccentric forms of botanical interest should be invited, so that there might be as complete a representation as possible of the whole tribe. Could not the Auricula, Polyanthus, and Primrose, treated from the florists' standpoint—but in a broad and comprehensive spirit—be taken on the occasion of the Auricula show in 1887—for it was only incidentally considered last week—and the more general question be taken the year following? The classification of the hardy species and varieties is one requiring further attention, and papers on the cultivation of the various groups would be found highly advantageous. Let the present committee be retained with power to add to their number, and arrange for the two Conferences in 1887 and 1888, as I have suggested. And it would be well, by way of increasing the interest in hardy and other Primulas, if all the representatives were invited, whether they were in flower or not. I could have shown several not in bloom, some that had bloomed, others yet to flower, but I was under the impression only such as carried the inflorescence were wanted at the Conference. *R. Dean, Ealing, W.*

—— Permit me to explain that my remark (see p. 539) respecting Primulas dying off suddenly and without warning was intended only to apply to P. capitata, and not to the Fairy Primrose, P. minima, which latter I have always succeeded with in rich yellow loam, leaf-soil, and grit. This sudden dying off in the case of P. capitata, however, must not be regarded as universal, since there are instances on record quite the reverse, thus showing in minor form its fastidious disposition; for while it can hardly be accommodated in some gardens, it grows freely and produces flowers and seeds abundantly in others, with little or no care. It is worthy of note that those who gave their experience of practical culture were well agreed that altitude, position, and atmospheric conditions generally were of far greater moment in the culture of the various species of Primula than the soil. *E. Jenkins.*

Roxburgh Plants.—The enclosed Narcissus I gathered in an old pasture which I understand has not been broken up for upwards of 400 years. At one time a chapel stood close to where I found it, so it is possible it may have been introduced by the monks. A great number of Narcissus Telamonius plenus is growing beside the one I send. There is also a large quantity of the N. bistorta about the same place; also other rare plants, such as Scrophularia vernalis; I believe this to be the only recorded station in Roxburghshire. A great quantity of Poa sudetica grows in the plantations about here. *John C. Brotherston.* [The Narcissus is the common Daffodil. We should be obliged for a specimen of the Poa sudetica when in bloom. Ed.]

Mr. Rolt's Red Ground Auricula.—Permit me to correct what your reporter represented me as stating in regard to this flower in the short discussion which ensued upon the paper of the Rev. F. D. Horner. As this particular variety was specially mentioned by Mr. Horner, I took it from the table and passed it round to the company, remarking that the florists had endeavoured to deepen and render more solid and defined the zone of black body colour round that of the white paste; but as in the case of Mr. Rolt's flower the body colour was red instead of black, it was possible that a section of green-edge Auriculas might be obtained having well-defined solid and bright red zones of body colour in the place of the black. Without this explanation the closing remarks in the passage attributed to me must appear ridiculous to not a few of my floricultural friends. *R. Dean, Ealing, W.*

Cultivation of Tobacco in England.—In view of the widespread interest taken in this subject, we have raised about twenty varieties of Tobacco from seed, and will be pleased to present a few plants to any one desirous of giving them a trial. The plants will be ready for planting out by June 1, and will be distributed in the order of application until the supply is exhausted. *Little & Ballantyne, Seed Merchants, Carlisle, April 28.*

Fruit Trees at Chiswick.—The fine pyramidal trained Pear trees at Chiswick will soon be objects of beauty, as they are fast coming into flower, somewhat later than usual, owing to the cold season, which is perhaps not to be regretted, as probably all doubt of the frost doing much harm is now past. The Apples, which have been somewhat thinned, as worthless varieties, have been grubbed up and serviceable sorts only retained, are a little behind in the blooming process. The Vines, too, are breaking away merrily, the big vinery looking well, a happy omen for the coming harvest of fruit. *J. B.*

Zonal Pelargoniums from Chilwell.—The Auriculas and exhibition of Primulas, coupled with the engagements of the Primula Conference so completely overshadowed everthing else on the 20th and 21st April, that not only were the Daffodils comparatively unnoticed, but a collection of superb zonal Pelargoniums from the Chilwell nurseries appeared to scarcely have an admirer. The visitors went to worship at the shrine of the Primula; the glory of any other floral goddess was completely eclipsed. It has been said that "ninety per cent. of the best zonals sent out during the past twenty years" have been raised at Chilwell, and probably this statement is by no means wide of the truth; and this is because the Nottinghamshire seedlings have been carefully tested before being sent out. And what a prodigious size the flowers have reached! If any one could have laid a crown piece upon the pips of some of those shown by the Messrs. Pearson, a considerable margin would have been seen extended beyond the circumference of the silver disc; some of the pips measured 2½ inches across. In front of the stand was a line of single

trusses of large dimensions averaging 6 to 18 inches in diameter, large enough in themselves to form presentable bunches. The leading varieties were Aspasia, a very fine white with large, well-formed solid pips; Cato, rich vermilion; James McIntosh, crimson, with a bold white eye; Lady Chesterfield, salmon, suffused with orange; Lord Chesterfield, magenta, bold and solid; Lucy Mason, salmon, suffused with orange; Lynette, magenta, suffused with rose—a great beauty; M. Myriel, crimson-scarlet, with striking white eye—extra fine; Mrs. Gordon, scarlet, flushed with magenta; Mrs. H. T. Barker, dark rose, large, well-formed pip; Mrs. Holford, salmon; Mrs. Johnson, rose; Mrs. Miller, dark crimson; Norah, blush-white; Omphale, pale salmon; and Ruby, rosy-scarlet, with a bold white eye. There is a collection of sixteen varieties, admirably adapted for pot culture and greenhouse decoration; and, say what we may, it is difficult to name another plant so useful through the summer for this purpose as the zonal Pelargonium. The amateur cultivator, with his small greenhouse, depends in great measure upon the zonal Pelargonium to give him some cheerful blossoms during the summer; and if any one will attend a flower show where cottagers' plants are seen in good form he will find the zonal Pelargoniums not only one of the best done, but also most largely represented. *R. D.*

Clianthus magnificus.—The branch of Clianthus magnificus referred to in the *Gardeners' Chronicle*, April 24, has been taken from a plant growing in the conservatory and trained upon the roof; the border is made up of soil taken from an old turf wall (sandy peat), filled in without further preparation to the depth of about 2 feet over good drainage. In the same border are planted Passifloras, Tacsonias, Abutilons, Fuchsias, and Lapagerias, all doing equally well; no syringing or cleaning of any kind is ever applied except the annual cleaning in the winter time; a south aspect, no shading, and no heating, except to keep out frost; any difference of treatment is in watering the Clianthus more sparingly than any of the others. The growths made last year vary from 2—7 feet, with a cluster of flowers at the axil of each leaf, like to a pound bunch of Grapes for size, from twenty-five to forty single flowers in each cluster. No manure of any kind has been applied, as the border is only planted two years. *John Urquhart, Skibo Castle Gardens.*

Reports of Societies.

ROYAL HORTICULTURAL: Tuesday, April 27.

Many interesting subjects were exhibited at this meeting, as well as the usual display of Narcissi that have become a chief feature at this period of the year. A pretty collection of Ferns staged by Mr. H. B. May, of Edmonton, and one of hard-wood plants from Messrs. W. Cutbush & Sons' establishment at Highgate; although there was nothing that could claim to be called new in it the plants, which comprised a small portion of a class at one time very popular with gardeners, formed a capital diversion after the Daffodils and Orchids—the present favourites.

Two foreign exhibitors put in an appearance—viz, M. Linden, of Ghent, and M. Krelage, of Haarlem; the first-named with new plants of much merit, and the last with a large collection of seedling varieties of Fritillaria. Hardy plants formed an interesting section of the show, both in Mr. Ware's exhibit and that of Messrs. Paul & Son, of Cheshunt, the latter enhancing the effect of the show by a group of standard and bush Roses in bloom.

Scientific Committee.

Present:—R. McLachlan, Esq., in the chair; Messrs. W. G. Smith, Michael, Pascoe, Smee, Ridley, O'Brien, F. Murray, G. F. Wilson, and Dr. M. T. Masters.

Isosoma.

Mr. McLachlan, referring to this subject, repeated his doubts as to whether this insect was really the gall-producer on the roots of Cattleya, as he had bred a Cecidomya from the galls—a much more likely insect to have effected the mischief. Mr. O'Brien, on the contrary, had no doubt that the Cecidomya was the cause of the mischief.

Peziza firma on Anemones.

Mr. W. G. Smith exhibited specimens of this fungus attacking the rhizomes of the double variety of Anemone nemorosa, sent by a correspondent of the *Garden*. It was suggested that the roots had previously decayed, as P. firma generally grows on decayed sticks and decayed acorns. Mr. Smith also showed the Puccinia on Adoxa moschatellina; the fungus, it appears, persists during winter on the roots of the Adoxa. Mr. Smith had also infected seeds, with the result that the seedling plants were affected with the fungus.

Beetroot.

Mr. Smee showed a Beetroot which had developed itself under a stone, apparently without leaves. The subject was referred to Mr. Ridley to examine and report.

Growth on Passiflora.

Dr. Masters exhibited a specimen sent by Mr. Speed, of Penrhyn Castle Gardens, with a singular outgrowth, such as is frequently seen in Vines and other plants, but the cause for which is not known. The specimen was referred to Mr. Michael for examination and report.

Rhododendron niveum.

Mr. Bateman exhibited a specimen of this species in flower from his garden at Worthing, where "this and other species appear to succeed perfectly in a north aspect and under cover of some 20 feet of nearly perpendicular rockwork, which affords effectual protection from sea breezes and the rays of the sun." The flowers were relatively small and of a dull lilac colour. The under-surface of the leaves is covered with cream-coloured down.

Australian Acacias.

Mr. Bateman also sent for exhibitions specimens of Acacia verticillata in bloom, and which had had no protection other than that afforded by a south wall. Flowers of A. undulata and A. ligustrina were also shown, which had been grown without fire-heat in a glazed porch.

Portuguese Narcissi.

Dr. Masters exhibited specimens and drawings of certain Portuguese Narcissi from Professor Henriques and Mr. Tait of Oporto. They comprised forms of N. triandrus, showing great variability in the relative lengths of the stamens and style, and specimens of the form called N. Henriquesii, in which the perianth-tube was reduced to a minimum.

Auricula.

Dr. Masters showed for the Rev. F. D. Horner a flower of Auricula with a dark red ground and a green edge—a form mentioned in his paper read before the Primula Conference. It was recognised as an entirely new departure, and likely to excite great attention among Auricula growers.

Gladiolus.

Rev. J. T. Boscawen sent specimens of a Gladiolus. Referred to Mr. Ridley.

Tobacco Culture.

Colonel Clarke sent a communication on the culture of Tobacco in this country, in which he summarised the principal conclusions as follows:—1, Cultivation on ridges; 2, removal of all laterals; 3, the earliest harvesting of the crop consistently with a proper ripening of the leaf; 4, the absolutely dry state of the leaf before packing for fermentation. Dr. Masters alluded to the culture of the plant in Belgium and Northern France, and to the analyses published by Boussingault.

Marshall P. Wilder.

It was resolved, on the motion of Dr. Masters, that a letter of thanks be sent to this gentleman for his contribution to the library, and that the opportunity should be seized to congratulate the venerable President on the continuance of his useful labours in the promotion of all branches of cultural science.

Orchid Nomenclature.

In consequence of a communication from the Council it was resolved that a sub-committee be formed to co-operate "with the Society's Provincial Show Committee with a view to the holding of a Conference on the nomenclature of Orchids during the show to be held at Liverpool." The following gentlemen were selected from the Scientific Committee for the above purpose:—Sir J. D. Hooker, Messrs. Ridley, J. O'Brien, and A. H. Smee. It was suggested that Mr. Harry Veitch should be requested to form one of the committee.

Miscellaneous.

Mr. Wilson showed flowers of Menziesia empetriformis, Epigæa repens, and Rhododendron multiflorum. Flowers of Beaumontia grandiflora were shown from Lord Cowper's garden at Panshanger.

Floral Committee.

Present: G. F. Wilson, Esq., in the chair; and Messrs. Rev. W. Wilks, J. Douglas, W. Bealby, G. Duffield, H. Herbst, Shirley Hibberd, R. Dean, T. Baines, G. Paul, J. Dominy, H. M. Pollett, J. O'Brien, H. Ballantine, W. B. Kellock, E. Hill, A. F. Lendy, and Dr. M. T. Masters.

The Compagnie Continentale showed a variety of Cattleya speciossima, named Malouiana. The sepals and petals and tube are of a lively purplish-rose colour, the lip being striped to its inmost portion with deeper tints of purple. Cypripedium Hyeanum (Lindley), the sac grass-green veined with a darker tint of green, petals green likewise, and covered with short dark hairs. The dorsal sepal is white striped with green. The peduncle green and hairy, and leaves of the same markings of C. Lawrenceanum. The flowers are distinct, if not particularly pleasing as to colour. Dendrobium stratiotes, a species from the Maldives—a plant showy enough to please the orchidist, if it should be ever made to bloom freely under cultivation. As it was represented by a coloured illustration accompaning the exhibit, the flowers are individually of a small size, creamy-white, and suffused in the petals and sepals with pale green, the lip of white, beautifully striped with carmine. Alocasia Lindeni, a new Aroid of tufted habit. Petioles erect or spreading, about 12 inches long, terete, of the thickness of a swan-quill below, gradually tapering above, sheathing at the base; sheath occupying about half the length of the petiole, amplexicaul below, expanding above into a whitish membranous wing about a quarter of an inch in depth; blade of leaf 8 by 7½ inches, but probably larger when full grown, glabrous, dark green above, paler beneath, cordate ovate, gradually tapering into a long acumen; basal lobes widely spreading, roundish or subangular, having a wide triangular sinus between them; midrib broad conspicuous, white, depressed on the upper, prominent on the under surface, secondary veins arching, crowded near the base, wider apart near the middle and almost absent near the apex; tertiary veins numerous, inconspicuous, minute, arched, parallel. It is a distinct plant, and should make a good decorative subject when of a large size.

Messrs. J. Veitch & Sons, Chelsea, had a group of their fine hybrid Amarylli, receiving three certificates for three of the four shown, bespeaking the great merit of the varieties. King of Crimsons is a splendid vivid coloured flower of lesser dimensions than many that have originated at their nursery. It is of fine form, and is quite self-coloured. Duchess of Edinburgh is a larger flower, of a white ground, suffused and veined with carmine; Eclatante, densely striped with crimson-rose; Duchess of Albany is a flower of a dark crimson, a band of white traversing the middle of each petal; Mrs. Whitbourne is similar to Eclatante, excepting that the white ground is tinged slightly with green colour.

Mr. R. Ruffet, gr. to Lord Cowper, Panshanger, Herts, showed some branches in flower of Beaumontia grandiflora, the large Brugmansia-like white blossoms being admirably set off by the robust foliage. This plant was once commonly found in gardens, but has of late years dropped out of cultivation from its requirements not being well understood. The foliage is very similar to that of the better known Loquat.

Mr. T. Cripps, Nurseries, Tunbridge Wells, showed a plant of Cattleya Lawrenceana of a good type, carrying thirteen blooms, that were somewhat deficient in size, owing to the plant not having been long established.

Messrs. A. Page & Sons showed Odontoglossum Andersonianum, of good form, and Mr. H. Ballantine, gr., The Dell, Egham, showed Odontoglossum crispum apiatum.

Major Lendy, Sunbury, had Oncidium undulatum, a strong plant with a lengthy spike of bloom coiled round some sticks stuck in the pot, not thereby improving the beauty of the plant; the sepals are brown, of wax-like appearance, the petals being white with bars and spots of brown; the throat is much expanded. From the same exhibitor there came cut blooms of Cattleya Mendeli Lendyana, a grand form of this species in every point.

Mr. G. Bethel, gr. to the Duke of Marlborough, Blenheim, showed a well-grown plant of the seldom seen Epidendrum leucochilum, bearing eleven spikes of its green and white flowers. As a large plant it has considerable value as a decorative object, and is no bad foil to the gaudier inmates of the Orchid-house.

Messrs. F. Sander & Co., St. Alban's, exhibited Odontoglossum luteo-purpureum leuroglossum, a massive spike densely set with blooms of a large size, of dark brown colour, the lip well developed and beautifully frilled; O. luteo-purpureum, Lindl., a much longer spike than the foregoing, and the flowers placed wide apart on the stalk: the colouring is identical with it, but the form of flower is decidedly starry. Another form of this Orchid was shown of a yet lighter brown colour, and with a large admixture of yellow.

Mr. G. Gilbert, gr. to R. B. White, Esq., Earlsfield, Surrey, showed Cypripedium Hyeanum, with a flower much less in size than that of the Compagnie Continentale above mentioned.

Mr. E. H. Krelage, Haarlem, showed a large quantity of seedling varieties of Fritillaria meleagris, of which four were selected for special recognition. The flowers appeared to be larger than those usually seen, and the markings not of wide diversity.

Mr. R. Gilbert, florist, Dyke Bourne, Lincolnshire, showed a fine strain of double scarlet Anemone, neat and full, and furnished with a row of guard petals, as in Hollyhock—a fine thing for small beds in the spring garden.

Messrs. W. Cutbush & Sons, The Nurseries, Highgate, brought Azalea mollis The Queen, bearing pale primrose-coloured trusses of flowers. From these nurseries a nice collection of hard-wood greenhouse plants was exhibited, consisting of Correas, Boronia tetrandra, Eriostemon intermedia, Polygala Dalmaisiana, Erica Hartnelli, a scarlet-flowered species, well bloomed; Darwinia fuchsioides, Staphyllea colchica, Lilac, &c.

The plants were of the usual sale size, and were generally well bloomed and furnished with healthy foliage. A Silver Banksian Medal was awarded.

Mr. H. B. May, The Nurseries, Edmonton, N., staged a capital collection of Ferns, amongst them being many of their varieties of Pteris of new forms and showing many variations of cresting. P. cretica H. B. May is a branched and crested form of this well known Fern; Nephrolepis Duffii is a pretty small growing variety. Adiantum rubellum had bright red fronds when young; A. Pacotti and A. cuneatum grandiceps were well shown; as was Lygodium scandens trained as columns, and which helped to relieve the group. Leaf Begonias, Crotons, and Aralias further heightened the effect. A Bronze Medal was awarded.

DAFFODILS.

Messrs. Barr & Son had a fine group of cut flowers, conspicuous being Narcissus C. J. Backhouse, with a yellow perianth and orange corona of an intense tint; N. Beatrice, a pure white flower; and many of the incomparabilis, bicolor, and tazetta sections. A Silver-gilt Medal was awarded.

A similar award was made to Mr. T. S. Ware, Tottenham, for Narcissi and hardy plants. Sorts that found favour with the committee were Henry Irving, a golden-yellow Trumpet Narcissus spurius; N. Nelsoni aurantius, a flower with a creamy-white perianth and orange bordered yellow corona; Hemerocallis Kwansoi foliis albo variegatus, a fine showy hardy border plant with white banded foliage and thrifty habit. Primula Sieboldi varieties formed a feature of the group, and were found in considerable diversity. Anemone apennina, Heuchera pulchella, Megasea cordifolia purpurea, Arnebia echioides were likewise noteworthy plants.

Mr. J. Walker, Whitton, had a very beautiful collection of Narcissi, especially of the incomparabilis, bicolor (amongst the last named was the handsome variety, Michael Foster); Tazetta, Burbidgei and poeticus groups. A Silver Banksian Medal was awarded.

Messrs. Collins Brothers & Gabriel, 39, Waterloo Road, S.E., had a large group of Narcissi, in which the Phœnix, poeticus, and incomparabilis plenus types predominated. A Silver Banksian Medal was awarded.

MISCELLANEOUS.

Messrs. Paul & Son, The Old Nurseries, Cheshunt, showed a neat group of hardy alpines, consisting of Muscoidea purpurea, with red blooms of minute size; Saxifragas, Arctioides, with yellow blooms, and several with white blooms; also S. longifolium vera, with a cushion of recurved green leaves. Other plants were Waldsteinia trifoliata, Tulipa Clusiana, several Fritillarias, and a showy Aubrietia deltoides grandiflora.

The group of pot Roses from the Cheshunt Nurseries consisted of some thirty plants in 10-inch pots generally, mostly of well-known varieties, full of fully open bloom and bloom-buds.

A Bronze Medal was awarded Messrs. Paul & Son for their many exhibits.

A Bronze Medal was bestowed for a collection of cut Roses, sent by Mr. J. Walker, nurseryman, Thame. Several boxes were shown, and were of good quality for the season.

A showy group of eighty small specimens might have been made of a number of well-flowered Abutilons of many varieties, had the plants been intermixed with Ferns and other harmonising foliage plants.

Messrs. James Green & Nephew, Victoria Pottery and Glass Works, 107, Queen Victoria Street, London, showed a table covered with a variety of glasses, bowls, vases, both plain and coloured, of elegant shapes.

Mr. R. Dean, Ealing, showed several new Primulas and Polyanthuses, including a variety of Jack-in-the-Green named Crimson Beauty, a regular flower, of crimson colour and yellow eye; an alpine Auricula delicata, blue and white with yellow paste.

CERTIFICATES.

To Mr. H. B. May, for Pteris cretica H. B. May.

To Messrs. J. Veitch & Sons, for Amaryllis Duchess of Edinburgh.

To Messrs. J. Veitch & Sons, for Amaryllis Duchess of Albany.

To Messrs. J. Veitch & Sons, for Amaryllis King of Crimsons.

To Major Lendy, for Oncidium undulatum.

To Major Lendy, for Cattleya Mendelii Lendyanum.

To Mr. Ruffet, for Beaumontia grandiflora.

To Mr. H. Ballantine, for Odontoglossum crispum apiatum.

To the Compagnie Continentale, for Cypripedium Hyeanum.

To Mr. R. B. White, for Cypripedium Hyeanum.

To M. E. H. Krelage, for Fritillaria E. H. Krelage, Corneille, Siege of Haarlem, and Van Lerius.

To Mr. R. Dean, for Primula Crimson Beauty.

To Messrs. F. Sander & Co., for Odontoglossum luteo-purpureum.

To Messrs. Barr & Son, for Narcissus Duchess of Westminster.

To Messrs. Barr & Son, for Narcissus C. J. Backhouse.

To Mr. T. Ware, for Narcissus Nelsoni aurantius.

To Mr. T. Ware, for Narcissus spurius Henry Irving.

To Mr. T. Ware, for Hemerocallis Kwanso foliis variegatus.

To Messrs. Paul & Son, for Rose Gloire Lyonaise, H.P.

Fruit Committee.

Present:—H. Veitch, Esq., in the chair; and Messrs. J. Willard, W. Denning, J. Smith, G. T. Miles, G. Norman, G. Bunyard, Sydney Ford, J. Burnett, P. Crowley.

Nothing of any importance was brought under the notice of the above committee.

Narcissus Committee.

The last meeting of the Narcissus Committee for this season was held at South Kensington on Tuesday, April 27, when arrangements were made for next year. In order to include the whole of the varieties, early as well as late, it was decided to have one meeting in March, two in April, and one in May on the Council days of the Royal Horticultural Society, with an extra day if possible between the 10th and the 15th of April at a time when the largest number would probably be in flower.

A report was received from the sub-committee, appointed to enquire into the question of "doubling," to the effect that neither at Kew nor at Chiswick was any difference observed in the flowers of the bulbs planted last year for the purposes of observation. Different soils were used, some with manure and some without; but in each case all those which flowered had as yet retained their normal single form.

A sub-committee was appointed to draw up a systematic report of the work done at the meetings this year, which should include all the fresh information which had been obtained of the natural history, habitats, &c., of the various wild types, as well as a description of the new varieties for which names had been registered.

The following were the forms submitted for notice:—

1. Some varieties of incomparabilis, which were recognised under names already known.

2. "White Ajax," from Messrs. Collins & Gabriel, which were believed to be cernuus pulcher, but it was very strongly the feeling of the committee that it was almost impossible to decide accurately on blooms only of these white forms of varying ages and grown under various conditions, and that wherever possible a decision should not be given until they had been grown and tested side by side with other forms at Chiswick, Dublin, or some other accessible public garden.

3. "William Wilks," from Mr. Barr, a very bold and distinct variety of the Backhousei section, with somewhat rounded divisions of the perianth. It had been proposed at one time to call it "Henry Collins," but this latter name was withdrawn in favour of the other, which was registered.

4. Some varieties from Mr. Moore of Boston, which were deferred to another year to have an opportunity of seeing the foliage.

5. A form of double Narcissus, paler than is usual in Telamonius pl., and more like the double Pseudo-Narcissus, from Messrs. Veitch, who stated that it had proved constant for three years.

6. A variety of incomparabilis albus from Mr. Kendal, of Lulworth, described by him as apparently "a seedling of one of the bicolor varieties of Pseudo-Narcissus accidentally fertilised by N. poeticus angustifolius." The crown resembled that of C. J. Backhouse, the perianth partook largely of the form of poeticus ornatus, though more yellow in colour and not of equal substance. It had been deferred from last year to see whether it would prove constant, and it was much admired this season. The name was registered as "Lulworth."

7. Some varieties of incomparabilis collected by Mr. Godolphin Osborne in the Pyrenees, and found growing with poeticus and muticus. They appeared to be similar to some sent last meeting, and a vote of thanks was offered unanimously for the wild forms of great interest which had been received from him this year.

8. The first bloom of a seeding of N. incomparabilis, pallidus aurantiacus expansus, not artificially crossed. The cup of the parent becomes almost a trumpet in the child. From Mr. J. Allen. Deferred till another year, it being the experience of some of the members of the committee that the characters of seedlings flowering for the first time could not be reckoned upon to prove constant.

9. Empress, from Mr. Walker, in two instances having three blooms to the stem, and a very distinct and fine form of Ajax of a deep lemon colour, which the committee hoped to see again.

A flower of the rare double Leucojum vernum was received from Mr. J. Allen, who gave it as his experience of the plant that it was utterly worthless, being a shy bloomer and of a most disagreeable odour.

C. R. Scrase Dickins, Hon. Sec.

BRUSSELS HORTICULTURAL.

The 106th exhibition of the Royal Flora Society of Brussels was held on April 25. It was a great success, and very rich in new plants. The Compagnie Continentale, Ghent (Director, M. L. Linden), exhibited a large number of new plants, most of which were introduced from the East Indies. We noticed particularly Alocasia Lindeni with green leaves and the nerves and petioles of a clear white; A. Augustiana, with large green leaves borne on red petioles streaked with black. Very fine also was A. nigrescens, with its petioles of greyish-black on dark green; as well as A. Reginæ, which figured in 1885 at St. Petersburgh.

Many of M. Linden's Orchids were very attractive, among others Cattleya speciosissima var. Malouiana, dedicated to the eminent Belgian statesman; this species, related to C. speciosissima, has very large flowers, perianth of a fine magenta, and with two white spots in the throat of the very large lip. Cypripedium Hyeanum is C. Lawrencianum with green flowers; the dorsal sepal is white with green rays, and the sepals green with spots of a much darker tint. A novelty from New Guinea attracted some notice—it is Spathoglottis angustorum; the flower-stalk terminates in a sort of umbel, from which flowers something like Phalænopsids are produced for three months in succession; Odontoglossum Pescatorei var. Vervaeteanum, from M. Vervaet, Ghent, has flowers marked with large spots of reddish-violet. We also noticed Cyphokentia d'Haenei, from M. d'Haene, Ghent; Areca Baueri var. hieroglyphica, with striped leaves from M. de Hemptinne, of Ghent.

We must not forget M. Linden's two Cycads, C. Bellefonti and C. tonkinensis, two plants of great merit; and in the collections of the same exhibitor, Heliconia albo-striata, Colocasia Grusoniana, Sagenia mamillosa, a curious introduction from New Guinea; Pandanus Kerchovei, named after M. Oswald de Kerchove; Aphelandra macedonia, with its black leaves and nerves of silvery-white.

Besides these novelties there were superb Azaleas, Rhododendrons, Orchids, and Roses, shown by M. Peeters, Brussels, and a quantity of plants of irreproachable cultivation sent by MM. Hemptinne, d'Haene, Vervaet, Huye, Vandendriessche, of Ghent; Van Clist, Van Riet, Buquet, of Brussels, &c. The plants from the Jardin Botanique de Lille were very fine.

In the centre of the show the Society had placed a memorial in the shape of a crown of Immortelles, bearing the inscription, "A Monsieur Edouard Morren," in memory of that botanist who has rendered so many services to Belgian horticulture. The arrangement of the exhibits was highly satisfactory, and the whole show was worthy of Belgian horticulturists. *Brussels Correspondent.*

SPRING EXHIBITION, VIENNA: April 15—19.

The Imperial and Royal Horticultural Society held their annual Spring Exhibition in their locality in the Park Ring, on the above dates.

The new plants exhibited exceeded anything that had been observed in former years proving that the culture of rare plants is making much progress in Austria. Palms, New Holland plants, Aroids, form still the chief genera from which are selected the components of the great groups which form the background at these shows, against which the smaller flowering plants stand out well by contrast.

One of the finest of these groups was that from the gardens of Baron Nathaniel von Rothschild in Vienna, which contained a large example of Anthurium Andreanum, with eight blossoms; a fine plant of Alocasia Sanderiana, and one of the new A. Putzeyi. A few Orchids were observed in glass cases to protect them from the cold. These consisted of Odontoglossum crispum, O. vexillarium, with nineteen flowers; O. Halli, Cattleya Mossiæ, &c.

In corners of the saloon groups of Himalayan and hybrid Rhododendrons, Azaleas Mollis and indica, and Roses were arranged, one of the finest of these groups being from the gardens of Count Harrach, Bruck-on-the-Leitha.

In the annexes were other groups, notably that from the Imperial Gardens, Schoenbrunn, was unique, being composed of the fine Proteads for which these gardens have been long renowned. Mixed with the first-named were Aroids, Palms, Tillandsia Lindeni, &c., the crowning plant of the group being a specimen of Saribus subglobosus. Other groups from the gardens of the nobility were to be seen in various parts.

Trade groups were pretty well represented, especially fine were the alpine plants of Pschernikell, of Inspruck.

The difficult terrestrial Orchids, in eight species, were shown from the gardens of His Highness Prince Ferdinand of Sachsen Coburg Gotha. These comprised Aceras Robertiana, and species of Ophrys and Orchis.

M. Max Leichtlin, of Baden Baden, staged a dozen out-of-doors spring flowering plants.

Market plants were shown in quantity, and exhibited examples of very successful cultivation in the various subjects.

Fruit and vegetables were present in small quantities, but there was nothing that calls for special notice. *Vienna Correspondent.*

The Rockery.

HEPATICAS.

In his book on *Alpine Flowers* Mr. W. Robinson remarks :—"To add perfume to the Violet, paint the Lily, or gild the yellow Crocus, would seem to be no more wasteful excess than to praise this exquisite little flower. There is a cheerfulness and a courage about it on warm, sunny borders in spring which no other flower possesses; they are hardy everywhere, are not fastidious as to soil, though they love a deep loam, and present a charming diversity." I like the idea of attributing to this flower the quality of courage. It was the only one in my garden, excepting the Snowdrop, that during the bitter weather dared to unfold its blossoms. It seemed as if, having a duty to perform, it was undeterred by the frosty influences that kept other things from displaying their floral charms. Now that the genial open weather has come with gleams of sunshine, all the more welcome because they have been seen and felt so little of late, clumps of the single blue and double red Hepaticas, under a wall having a west aspect, are just now most attractive, and I notice that in regard to the former they seem to vary both in the size and colouring of the flowers. Some are much darker and larger than others, but it maybe this is but an accidental result. The clumps are large and were planted about two years ago in some good loam. It is a very hot and dry position during the summer, but during the trying time of the prolonged hot weather of last year the plants were top-dressed with soil, and a covering of cocoa fibre added—soapsuds being freely given also. I find the colours of the flowers grown in the open air are much better than those grown in pots in a cold frame.

In the cold frame the differences of colour between the double blue and the single purple, through the varieties of the angulosa type down to one of the latter named cœrulea, is remarkable. The double blue is a true blue, and the single purple is of a distinct blue-purple shade. H. angulosa lævigata has a tint of purplish azure-blue—peculiarly its own; then there is a descent to tints that are so delicate as to be termed silver-blue or grey-blue. Under the name of single red I have two or three distinct types—perhaps they are seminal varieties, some dark, some paler, some with broad, others with narrow petals, but all are very charming. The most delicate tints are very pleasing, the richer and deeper hues very bright and effective. To grow these plants in pots successfully during the summer of 1885 and the winter of 1886 was no easy task. For many days during February and March they were frozen hard, but by dint of keeping them fairly dry, and assisted by a bed of cocoa-fibre and leaves, not a pot was broken by the frost and scarcely a plant out of some sixty lost.

Last autumn I got quite a batch of self-sown seedlings in the cocoa-fibre on which the plants were standing during the summer. As soon as they were large enough to handle they were pricked off round the sides of small pots, and in a few weeks will be potted singly into pots to grow on into size. I hope there are seedlings from the single red and white among them. But there is not a trace of a self-sown seedling from the plants in the open air, though they were carefully top-dressed to assist germination.

The single white in pots appear to be later in flowering than any of the other colours; but it is charming in its purity of colour. I notice distinct types among the whites. One is very large, with a prominent brown calyx—in this respect quite distinct from any other.

In how few modern gardens are Hepaticas seen! Only a few days ago I was in a garden the owner of which claims to have—and possesses—a select collection of hardy plants; but I did not see a Hepatica among them. It may be that the soil does not suit them. I find they do well in a mixture of strong yellow loam and cocoa-fibre. They root freely into this when used in pots, and in the open ground an occasional dressing of cocoa-fibre on the surface appears to act as a satisfactory fertiliser. *R. D.*

Obituary.

REV. W. W. NEWBOULD.—British botany has lost one of its most enthusiastic devotees in the Rev. W. W. Newbould, who died of heart disease whilst recovering from a severe attack of pneumonia at Kew, on Friday, the 16th inst., at the age of 67. He was a native of Sheffield, and his early taste for botany was strongly confirmed during his student days at Cambridge, by the lectures of Professor Henslow, and still more by the help and companionship of Professor Babington. After taking his degree of Master of Arts, and being ordained as a clergyman, he took duty for some time in Huntingdonshire and Cambridgeshire. Here he prepared a list of Huntingdonshire plants for Mr. Watson, and worked hard in the field collecting material for Babington's *Flora of Cambridgeshire* and Gibson's *Flora of Essex*. Amongst the plants which he added at this time to British flora are Orobanche Picridis, Agrimonia odorata, and Apera interrupta. After this he removed to London, where he remained for the rest of his life. His later studies took more of a bibliographical direction. No one knew better than he the older books on British botany, such as Ray, Hudson, Withering, and Smith; and a large proportion of his time was spent in helping botanists who were writing local Floras and other works. He was a constant visitor at the reading-room of the British Museum and at the Linnean Society, and nothing pleased him better than to act as the guide and helper of any country botanist on a visit to London, or of one who wanted an extract made from some book to which he could not get access at home. Although he was so keenly interested in critical plants he published next to nothing on his own account. His name stands on the titlepage of some of the later parts of the *Supplement to English Botany*, and, in conjunction with Mr. J. G. Baker, he edited the second edition of Watson's *Topographical Botany*, which was published after the death of its author. Two years ago he paid a visit to Matlock in company with Mr. Baker, and they published in the *Journal of Botany* a paper on the flora of that neighbourhood. Though he published so little himself, it is hardly possible to over estimate the amount of assistance he rendered to others.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, APRIL 28, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 15 Years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 29 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity Sat. = 100.	WIND. Average Direction.	RAINFALL.
April	In.	In.	°	°	°	°	°	°			In.
22	29.85	+0.08	50.3	39.8	10.5	44.7	−3.1	37.5	75	N.W.	0.00
23	29.85	+0.09	61.3	38.9	22.4	49.4	+1.4	41.9	76	E.	0.00
24	29.83	+0.12	62.3	45.0	17.3	53.5	+5.3	46.7	78	E.; E.N.E.	0.00
25	30.02	+0.23	57.1	42.8	14.3	50.2	+1.9	40.6	72	E.; N.E.	0.00
26	29.95	+0.18	55.0	39.0	16.0	48.0	−0.5	36.4	63	E.; E.N.E.	0.00
27	29.70	−0.08	62.5	41.5	21.0	53.1	+4.4	38.9	60	E.	0.00
28	29.47	−0.31	65.5	43.8	21.7	55.0	+6.1	46.2	72	E.; N.W.; N.N.E.	0.03
Mean	29.82	+0.04	59.1	41.5	17.6	50.6	+2.2	41.2	71	E.	0.03

April 22.—Fine dull day.
" 23.—Very fine.
" 24.—Very slight rain in early morning, fine from 10 A.M.
" 25.—Very fine.
" 26.—Very fine, strong wind.
" 27.—Very fine.
" 28.—Slight rain in early morning, dull day.

LONDON: *Atmospheric Pressure.*—During the week ending April 24, the reading of the barometer at the level of the sea decreased from 29.98 inches at the beginning of the week to 29.81 inches by 5 P.M. on the 15th, increased to 30.05 inches by 1 P.M. on the 22d, decreased to 30 inches by 5 P.M. on the 22d, increased to 30.05 inches by 9 A.M., decreased to 30.02 inches by 5 P.M. on the 23d, and was 30.08 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29.96 inches, being 0.13 inch lower than last week, and 0.02 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 62°.3, on the 24th; on the 21st the highest was 47°.5. The mean of the seven high day temperatures was 54°.7.

The lowest temperature was 38°.9, on the 23d; on the 24th the lowest temperature was 45°. The mean of the seven low night temperatures was 41°.1.

The greatest range of temperature in one day was 22°.8, on the 19th; the smallest, on the 20th, was 6°.1. The mean of the seven daily ranges was 13°.6.

The mean temperatures were, on the 18th, 44°; on the 19th, 50°.1; on the 20th, 46°.6; on the 21st, 43°; on the 22d, 44°.7; on the 23d, 49°.4; and on the 24th, 53°.5; of these the 19th, 23d, and 24th were above their averages by 2°.9, 1°.4, and 3°.3 respectively; the rest were below by 3°, 0°.8, 4°.6, and 3°.1 respectively.

The mean temperature of the week was 47°.3, being 4° higher than last week, and 0°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 121° on the 24th. The mean of the seven readings was 93°.

Rain.—Rain fell on the 18th, to the amount of 0.09 inch.

ENGLAND: *Temperature.*—During the week ending April 24, the highest temperatures were 68°.7 at Bristol, 67°.9 at Cambridge, 67° at Truro; the highest at Hull was 53°, at Bradford 54°.6, at Preston 57°. The general mean was 61°.2.

The lowest temperatures were 32° at Hull, 33° at Truro, 34°.5 at Wolverhampton; the lowest at Brighton was 40°, at Blackheath and Liverpool 38°. The general mean was 36°.3.

The greatest ranges were 34° at Truro, 33°.7 at Bristol, 32°.9 at Cambridge; the least ranges were 18°.2 at Bradford, 19° at Preston, 21° at Sheffield and Hull. The general mean was 24°.9.

The mean of the seven high day temperatures was highest at Bristol, 57°.8, at Cambridge, 57°.3, at Truro 57°.1; and was lowest at Newcastle, 46°.6, at Hull 47°.7, at Bradford 49°.4. The general mean was 53°.3.

The mean of the seven low night temperatures was highest at Plymouth, 42°.5, at Liverpool 42°.2, at Brighton 41°.4; and was lowest at Hull, 37°, at Wolverhampton 37°.8, at Sheffield 38°.4. The general mean was 39°.9.

The mean daily range was greatest at Bristol, 18°.5, at Cambridge 17°.7, at Truro 17°.4; and was least at Newcastle, 7°.4, at Bradford 10°.1, and at Hull 10°.7. The general mean was 13°.4.

The mean temperature was highest at Blackheath, 47°.3, at Brighton 47°.2, at Bristol 47°.; and was lowest at Hull 40°.8, at Newcastle 41°.3, at Bradford 42°.8. The general mean was 45°.1.

Rain.—The largest fall was 0.55 inch at Newcastle, 0.52 inch at Truro, 0.31 inch at Plymouth; the smallest fall was 0.03 at Cambridge, 0.06 at Hull, and 0.09 inch at Blackheath. The general mean fall was 0.22 inch.

SCOTLAND: *Temperature.*—During the week ending April 24, the highest temperature was 59°.2, at Paisley; at Leith the highest was 49°.4. The general mean was 54°.5.

The lowest temperature in the week was 29°, at Perth; at Greenock the lowest temperature was 35°.2. The general mean was 32°.5.

The mean temperature was highest at Paisley, 44°.4, and lowest at Leith, 41°.9. The general mean was 42°.8.

Rain.—The largest fall was 0.48 inch at Aberdeen; and the smallest fall was 0.03 inch at Paisley. No rain fell at Glasgow. The general mean fall was 0.19 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, April 26, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been generally

fair and dry, but showers fell on our east coast during the early part of the week, and in the west towards the close of the period. Thunderstorms were experienced at several of the English stations on the 24th.

The *temperature* has been about equal to the mean over the extreme southern parts of the kingdom, but less than the normal elsewhere, especially over the east of Great Britain, where the deficit has amounted to 3° or 4°. The highest readings were registered over the central and southern parts of England on the 24th, and in Ireland on the 25th and 26th, when the thermometer reached 70° in "England, S.W." and "Ireland, W.", and 71° in the "Midland counties" and "England, S."; on the east coast of England, however, temperature remained below 50° throughout the week. The lowest minima which were recorded on various dates in the different districts, ranged from 24° in "Scotland, E.", and 26° in "England, S.W." (at Llandovery) to 37° in "England, S." and to 41° in the "Channel Islands."

The *rainfall* has been a little more than the mean in "Scotland, N." but less in all other districts. In some parts of "England, S." and "England, E." there has been an entire absence of rain.

Bright Sunshine has been more prevalent than during any previous weeks this year—the percentage of possible duration varying from 30 in England, N.E," to 51 in "England, S.," 58 in the "Channel Islands," and 64 in "Scotland, N."

Depressions observed.—During the earlier half of the week an anticyclone lay over Scandinavia, while areas of low pressure were found at first over France, and subsequently over Spain and the Bay of Biscay. The prevailing winds were therefore E. or N.E. The only depressions observed at this time were a small shallow disturbance which formed over the E. of England on the night of the 21st, and subsequently dispersed without changing its position, and a larger area of low pressure which advanced from the south and skirted our S.W. coasts on the 23d. The latter system occasioned moderate gales from E. in the S. of Ireland and the S.W. of England. During the concluding half of the week, the highest pressures were found over the North Sea and the east coasts of Great Britain, and the only depressions observed were some large but unimportant disturbances which passed over Scandinavia. The wind remained E. until quite the close of the period, when it shifted to S.E. or S. in the west and north.

Enquiries.

"He that questioneth much shall learn much."—BACON.

CHARCOAL STOVES FOR GREENHOUSES. — Can any of your correspondents tell me anything as to the merits or demerits of heating small greenhouses with charcoal? I have been trying a very simple charcoal stove, which will burn from forty to sixty hours without being attended to. Of course, burning so slowly, it only gives out a moderate heat. I used it in a greenhouse during the hard weather to keep out frost, and could not perceive that it had any bad effect on the plants, and I do not see why it should have, and it seems to be a very simple, convenient, and cheap way of heating to the extent of keeping out frost. *C. W. Strickland.*

Answers to Correspondents.

CEPHALOTAXUS: *A. D. W.* The leaves on the erect leader-shoots are in many ranks, just as in the Irish Yew; those on the side-branches are two-ranked. Such sports occur frequently on Cephalotaxus.

CORRECTIONS: "KEW AND ITS WORK": Whilst my lecture on Kew has been in course of printing two or three mistakes have been pointed out, which I should like to corect. 1. The present house near the great gates, devoted to Tree Ferns, Aroids, and Marantaceæ, was brought down from Buckingham Palace in the reign of William IV. The old Palm-house stood a stone's-throw further south, and was pulled down when the new Palm-house was built. 2. The earlier volumes of the *Botanical Magazine* are not annual volumes; the 112 volumes just cover 100 years. 3. Colonel Beddome's *Flora Sylvatica* of the Madras Presidency was started in 1866, so that it is earlier than either of the two other Indian forest floras. It came out in twenty-eight numbers, and was completed in 1873. *J. G. Baker.*

CYPRIPEDIUM CAUDATUM AND STEPHANOTIS FLORIBUNDA RETARDED: *Young Gardener.* Careful ventilation, adapted to the requirements of the plants, and the avoidance of drip and heavy syringing, will mitigate the injury. Dusting with flowers of sulphur will also help to eradicate the fungus, for such it is. Stephanotis floribunda can be retarded by keeping the plants cool and partially dry at the root during winter, and by pruning late in the spring—that is, if you do not want bloom before August.

DOUBLE CRIMSON PRIMROSE: *R. & A. Morrison.* The flower possesses a rich tint of crimson, is well formed, and of merit as a border flower.

HOLE IN BEECH TREE: *G. H.* Let off all the water in the hole, and then fill in with cement alone, or fine concrete, fastening a plate of lead over the top of the hole.

HOLLY BERRIES: *J. A. C.* The berries must be layered in the open in sand, or sandy loam, now, and be turned over with a shovel several times during the ensuing season. In October the seeds may be sown thinly, but regularly, in beds of well-dug soil, covering them with not less than an inch of the soil from the alleys. The seeds will be a year, and sometimes two years, before germinating.

INSECTS: *R. B.* Your insect is one of the omnivorous surface grubs (or larvæ of the common moth, Agrotis segetum). *J. O. W.*

LABRADOR KALI: *Clark Bros. & Co.* It seems to be an enduring kind; but as to its cooking qualities we cannot speak, not having as yet tried it.

NAMES OF PLANTS: *E. A.* Forsythia viridissima.—*A. D. W.* Rhododendron Thomsoni, red flower; R. Falconeri leaf only; Abies Webbiana, male flower.—*H. Hopkins.* 1, is a species of Philodendron, but we cannot tell which from a leaf only; 2, is Choisya ternata.—*Sir C. Strickland.* Scilla peruviana.

PEAT LAND: *A. Nesbitt.* Symphytum caucasicum and Tradescantia would grow in such land as you describe. Irish Heath, Gaultheria in variety, Ericas in variety, Arundo Donax, Phillyrea angustifolia, hardy kinds of Rhododendrons, Yew, &c.

PINK WOOD ANEMONE: *A. Nesbitt.* Propagate by division when large enough. You might try raising it from seed.

POLYANTHUS FLOWERS: *McClelland & Co.* A good strain, large and bright.

SEEDLING AURICULAS AND IMANTOPHYLLUMS: *W. W.* The first-named are strong, floriferous, and pretty, but when compared with Turner's strain of alpine Auriculas they are of undecided, confused tints; still, yours will make good border flowers. The Imantophyllums (Clivia) are poor compared with the best of the present day.

CATALOGUES RECEIVED.

WM. BULL, 536, King's Road, Chelsea, S.W.—New Beautiful and Rare Plants.

I. COCKER & SONS, Sunnypark, Aberdeen, N.B.—Florists' Flowers.

J. L. BOYSON, Caen, Calvados—Roses.

J. B. BAILLIERE ET FILS, 19, Rue Hautefeuille, Paris—Monthly Catalogue of New Publications.

COMMUNICATIONS RECEIVED:—W. E. G.—Prof. Caspary, Konigsberg.—Otto Forster, Scheibbs, Austria.—C. R. Scrase Dickens.—R. T. C.—John Stevenson.—G. M.—A. P.—A. J. L.—W. S.—W. T. T. D.—H. Correvon, Geneva.—J. A., Kew.—Emile Laurent.—Ch. Naudin, Antibes.—J. T. B.—J. B.—F. H.—Prof. Wittmack, Berlin.—Dammann & Co., Naples (with thanks)—W. W. (with thanks)—T. W. S. (on Blackberries, is delayed this week owing to pressure on our space.—J. F.—J. Watson.—A. D. J. R. J.—J. J. W.

MARRIED.—WM. CAMERON GULL, Esq., son of Sir Wm. Gull, Bart., to ANNIE CLAYTON, second daughter of the Right Hon. Lord Justice Lindley, at East Carleton, near Norwich, on the 28th ult., by the Rev. J. Cumming, assisted by the Rev. Canon Paget and the Rev. W. Williams.

Markets.

COVENT GARDEN, April 29.

MARKET still quiet, with little alteration. Grapes alling in price. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Apples, per ½-sieve	2 0– 4 0	
— Canadian, barrl.	8 0–21 0	
Grapes, new, per lb.	3 0– 7 0	
Kent Cobs, 100 lb.	40 0– ..	
Lemons, per case	8 0–10 0	
Pears, per dozen		.. 12 0 15 0
Pine-apples, Eng., lb.	1 0– ..	
— St. Michael, each	2 6– 8 0	
Strawberries, per lb.	2 0– 6 0	

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	4 0– ..	
Asparagus, Eng., 100 to	0 0– ..	
— French natural, per bundle	.. 3 0– 8 0	
— Spanish natural, per bundle	.. 4 0– ..	
Beans, Kidney, lb.	3 0– ..	
Beet, red, per dozen	1 0– 2 0	
Broccoli Sprts., bush	5 0– ..	
Carrots, per bunch	0 6– ..	
Cauliflowers, per doz.	3 0– 4 0	
Celeriac, per root	0 4– ..	
Celery, per bundle	1 6– 2 0	
Coleworts, doz. bunch	8 0– ..	
Cucumbers, each	0 9– 1 0	
Endive, per dozen	1 0– 2 0	
Herbs, per bunch	0 4– ..	
Leeks, per bunch	0 6– ..	
Lettuce, per dozen	1 0– 1 6	
Mint, green, bunch	1 0– ..	
Mushrooms, punnet	1 0– 1 6	
Mustard and Cress, do.	0 4– ..	
Onions, per bushel	5 0– ..	
Parsley, dozen bunch	2 0– 3 0	
Parsnips, per dozen	1 0– ..	
Potatos, per cwt.	.. 4 0– 5 0	
,, kidney, per cwt	4 0– 5 0	
Salsafy, per bundle	0 9– ..	
Savoys, per dozen	.. 3 0– 5 0	
Scorzonera, p. bundle	1 0– ..	
Seakale, punnet	.. 2 6– ..	
Shallots, per pound	0 3– 0 0	
Spinach, per bushel	4 0–6 0	
Sprouts, per pound	0 9– ..	
Sprue Asparagus, per bundle	.. 1 0– ..	
Tomatos, per lb.	.. 1 6– 2 6	
Turnips, bunch	.. 0 6– ..	

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9 0–18 0	
Arum Lilies, dozen	9 0–12 0	
Azaleas, per doz.	.. 24 0–42 0	
Begonias, per dozen	6 0–12 0	
Bouvardias, doz.	.. 12 0–18 0	
Cinerarias, per doz.	6 0–10 0	
Cyclamens, 12 pots	12 0–24 0	
Cyperus, per dozen	4 0–12 0	
Dracæna terminalis, per dozen	.. 30 0–60 0	
— viridis, per doz.	.. 12 0–24 0	
Ericas, various, per dozen	.. 12 0–24 0	
Euonymus, in var., per dozen	.. 6 0–18 0	
Evergreens, in var., per dozen	.. 6 0–24 0	
Ficus elastica, each	1 6– 7 0	
Ferns, in var., dozen	4 0–18 0	
Foliage Plants, various, each	.. 2 0–10 0	
Genistas, per dozen	8 0–12 0	
Lilies, per dozen	.. 12 0 24 0	
Marguerite Daisy, per dozen	.. 8 0–12 0	
Myrtles, per dozen	6 0–12 0	
Palms in var., each	2 6–21 0	
Pelargoniums, doz.	9 0–18 0	
— scarlet, per doz.	4 0– 8 0	
Spiræa, per dozen	.. 9 0–15 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Anemone, French, 12 bunches	.. 3 0– 6 0	
Arum Lilies, 12 blms.	4 0– 6 0	
Azaleas, 12 sprays	0 6– 1 0	
Bouvardias, per bun.	0 6– 1 0	
Camellias, 12 blms.	1 0– 4 0	
Carnations, 12 blms.	1 0– 3 0	
Cyclamens, doz. blms.	0 4– 0 6	
Daffodils, 12 bunches	1 6– 6 0	
Eucharis, per dozen	6 0– 9 0	
Gardenias, 12 blooms	1 0– 4 0	
Hyacinths, per box.	1 6– 5 0	
Lapageria, red, 12 blooms	.. 1 0– 2 0	
Lilac, French, bunch	2 0– 7 0	
Lily-of-the-Valley, 12 sprays	.. 0 6– 1 6	
Marguerites, 12 bun.	4 0– 8 0	
Mignonette, 12 bun.	3 0– 9 0	
Narcissus, various, 12 bunches	.. 2 0– 6 0	
Pelargoniums, per 12 trusses	.. 0 9– 1 0	
— scarlet, 12 trusses	0 4– 0 9	
Primroses, 12 bun.	0 6– 1 0	
— double white 12 bunches	.. 0 9– 1 6	
Primulas, double, per bunch	.. 0 6– 1 0	
Roses, Tea, per doz.	0 9– 2 0	
— red, per dozen	2 0– 6 0	
Spiræas, 12 bunches	6 0– 9 0	
Tropæolums, 12 bun.	1 0– 2 0	
Tuberoses, 12 blms.	1 0– 1 6	
Tulips, doz. blooms	0 4– 0 6	
Violets, Parme, Fr., per bunch	.. 4 0– 6 0	

SEEDS.

LONDON: *April* 28.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report an active sowing demand for all the various descriptions of field seeds. The orders, however, which come to hand are very much of a retail character, and values all round continue at the remarkably low level which characterises the present season. Holders of English red Clover seed are accepting reduced rates. For Alsike, white, and Trefoil last week's moderate figures are being paid. Sainfoin is rather scarce. Lucerne keeps firm. Grass seeds meet a free sale. There is no alteration in spring Tares; stocks are now getting into narrow compass. Canary seed steady. Hemp weaker. Feeding Linseed is flat. Blue Peas and Haricot Beans are firm.

CORN.

MARK LANE: *April* 26.—This being Bank Holiday, no business was done.

April 28.—In every department demand was wanting to-day. The tendency of prices for English Wheat showed little alteration. Foreign Wheats were quoted firm, but were very quiet. Flour was quite without change in value. For Oats the rates were unchanged with a slow trade.

Average prices of corn for the week ending April 24:—Wheat, 30*s.* 11*d.*; Barley, 27*s.*; Oats, 19*s.* 5*d.* For the corresponding period last year:—Wheat, 36*s.* 8*d.*; Barley, 32*s.* 6*d.*; Oats, 22*s.* 9*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *April* 28.—Fairly good supplies of all kinds of vegetables met with a good demand:—Quotations:—Apples, 3*s.* to 6*s.* per sieve; Spinach, 1*s.* 6*d.* to 2*s.* 3*d.* do.; Sprouting Broccoli, 2*s.* to 2*s.* 6*d.* do.; Turnip-tops, 1*s.* 6*d.* to 1*s.* 9*d.* do.; do., in sacks, 2*s.* to 2*s.* 6*d.* per sack; bunch Rhubarb, 2*s.* to 2*s.* 6*d.* per dozen bunches; do. Turnips, 1*s.* 6*d.* to 2*s.* 6*d.* do.; do. Carrots, 1*s.* 9*d.* to 2*s.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Onions, 4*s.* 6*d.* to 6*s.* 6*d.* per cwt.; Carrots, 22*s.* to 40*s.* per ton; white Turnips, 30*s.* to 60*s.* do.; Swede do., 17*s.* 6*d.* to 25*s.* do.; Mangels, 17*s.* 6*d.* to 22*s.* 6*d.* do.

STRATFORD: *April* 27.—There was a fair trade at the following prices:—Broccoli, 3*s.* 6*d.* to 4*s.* 6*d.* per bushel; Savoys, 7*s.* 6*s.* to 9*s.* do.; Greens (Kaile), 5*s.* per cwt.; Cauliflowers, 1*s.* 6*d.* to 2*s.* per dozen; do., 8*s.* to 12*s.* per crok; Turnip-tops, 3*s.* to 3*s.* 6*d.* per bag; Turnips, 50*s.* per ton; Carrots, household, 45*s.* to 50*s.* do.; do. cattle feeding, 25*s.* per ton; Parsnips, 1*s.* 9*d.* per score; Mangels, 20*s.* to 22*s.* do.; Swedes, 23*s.* to 25*s.* do.; Onions, 3*s.* per cwt.; Apples, English, 3*s.* 6*d.* to 6*s.* 6*d.* per bushel.

POTATOS.

BOROUGH AND SPITALFIELDS: *April* 27.—A limited demand, and confined to best samples. Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 95*s.*; and Champions, 55*s.* to 65*s.* per ton.

COLUMBIA (East London): *April* 28.—Quotations:—Magnums, 50*s.* to 80*s.*; Regents, 55*s.* to 70*s.*; Victorias, 55*s.* to 70*s.*; and Champions, 45*s.* to 55*s.* per ton.

STRATFORD: *April* 17.—Quotations:—Magnums, 65*s.*; Champions, 50*s.* to 60*s.*; and Heros, 60*s.* to 65*s.* per ton.

Government Stock.—Monday being Bank Holiday there was no business done on the Stock Exchange. Tuesday's consols closed at 100⅝ to 100¾ for delivery, and 100⅛ to 100⅛ for the account. Wednesday's final quotations were 100⅛ to 100⅛ for both account and delivery. Thursday's closing prices were 100⅛ to 101 for both transactions.

DARLINGTON BROS.'

ROLL TOBACCO PAPER AND Cloth (English) for Fumigating

is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb., 10s.; 28 lb., 20s.; carriage paid to London or any railway station in Kent. 2¾ lb., 2s. 6d.; 4¾ lb., 4s.; 6 lb., 5s.; 6¾ lb., 5s. 6d.; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8s. 6d.; 28 lb., 16s. TRADE INQUIRIES SOLICITED.

Manufacturers, Merchants, and Importers,

DARLINGTON BROS.,

NEW ROAD, CHATHAM, KENT.

Post-office Orders, &c.—DARLINGTON BROS., Chatham.

Horticultural Sundries.

GREENHOUSE and FRUIT TREE SHADINGS, GARDEN NETTING, and TOOLS. TOBACCO PAPER and CLOTH, STICKS and LABELS.

RUSSIA MATS, RAFFIA FIBRE, COCOA FIBRE REFUSE, PEAT and SILVER SAND, SACKS, BAGS, ROPES, LINES, and TWINES. At the lowest possible prices.

Catalogue and Samples post-free on application.
JAS. T. ANDERSON, 149, Commercial Street, London, E.

HOTHOUSE SHADING.

SPECIAL LOT.

Good, useful, open, and strong texture, suitable either for Netting or Shading, 72 inches wide, 50 yards long, price 6d. per yard.

Also Special Lot, commoner quality, 42 inches wide, 88 yards long, price 1¾d. per yard.

Also same cloth, 48 inches wide, price 2d. per yard.

TIFFANY, 55 inches wide, extra strong, price 4½d. per yard.

Write for Patterns to
MANAGER, Albert Mill, Swinton, Lancashire; or to
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GARDEN NETS,

Warranted to Protect Bloom from Frost, Winds, Hail, and Fruit from Birds, Wasps, &c.

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Established 1854.

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HOTHOUSE SHADINGS.
TIFFANY.

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MANUFACTURERS,
NEPTUNE WORKS, MANCHESTER

COTTON WOOL and WADDING for Florists and Nurserymen.
THE TRADE SUPPLIED.

To Nurserymen, Seed Merchants, and Florists.

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EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½d. per yard; 4 yards wide, 3d. per yard; or 2 yards wide, 10s. per 100; 4 yards wide, 20s. per 100 yards. New TWINE NETTING, 1 yard wide, 2d. per yard; 2 yards wide, 4d. per yard; 4 yards wide, 8d. per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7d. per yard run.
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NOW READY,

A New Reduced Price List of Shadings and Nettings for
CONSERVATORIES and GREENHOUSES.
THE
NEW CANVAS SHADING
Sold by BENJAMIN EDGINGTON will defy the action of all weather. It is perfectly rot-proof, keeps sound under conditions where other fabrics have shown fungoid growth and incipient decay.
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MARENDAZ AND FISHER can offer the above at lower prices than any firm. To the Trade only.
James Street, Covent Garden, W.C.

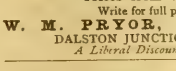
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MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
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DALSTON JUNCTION, LONDON, E.
A Liberal Discount to the Trade.

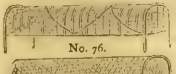
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No. 76.



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3 feet long.
Galvanised after made.
Either Pattern.
Price, 6s. per Dozen.
Two End Pieces included with each dozen.
Four Dozen Carriage Paid, on receipt of remittance for 24s.

GALVANISED PEA TRELLISES in Panels.

6 feet by 3 feet, 2s. each.
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6 feet by 5 feet, 4s. each.

Any size Panels made to measure at 2d. per square foot.
DOUBLE STANDARDS, as per Illustration, Galvanised, 2s. 6d., 2s. 9d., 3s. each.

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87, QUEEN VICTORIA STREET, E.C.;
285 and 362, EDGWARE ROAD, LONDON, W.



21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.
A large stock of similar current sizes of 16-oz. glass in 200 feet boxes.
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GLASS, LEAD, OIL and COLOUR MERCHANTS,
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Rosher's Garden Edging Tiles.



THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.





GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME" FRAMES, PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Design, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
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A liberal Discount to the Trade.

FLAGSTONE EDGING for Kitchen Gardens, or Walks under Trees. Prices, 8d., 10d., and 12. per yard run.
The GREAT SLEAD QUARRY, Brighouse, Yorks.

SHANKS'S PATENT Lawn Mower

THE ONLY LAWN MOWER FITTED WITH
DOUBLE EDGED SOLE PLATE
ENABLING THE CUTTING PARTS TO LAST TWICE THOSE OF OTHER MACHINES



Easily worked
Making the Lawn like Velvet
Does not get out of order

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A large Stock of Machines of all sizes always kept
AT 27 LEADENHALL STREET
WHERE REPAIRS CAN ALSO BE EXECUTED
SMALL LAWN MOWERS
6 INCH 25/- ; 7 INCH 35/- ; 8 INCH 45/-

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HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone.



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BEST QUALITY.
Largest Stock.
1½ to 30 inches diam.
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TO THE TRADE.

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LONG TOMS,
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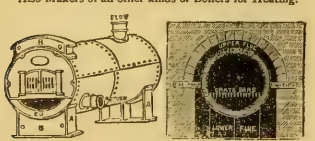
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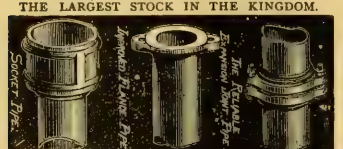


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15 gal. size, £3 15s.
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Every requisite for the Garden and Pleasure Grounds manufactured by ourselves. New General Catalogue sent free.

The Original and only Genuine Trentham Riveted Boiler.
Recently Improved and Reduced in Price.
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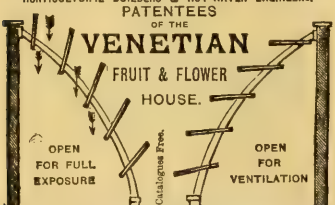
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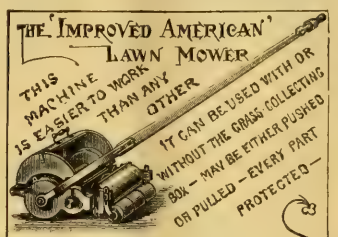
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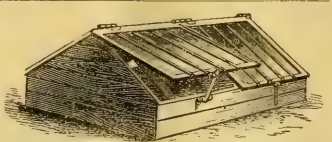
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10 INCH MACHINE, £3.0.0. 14 INCH MACHINE, £4.15.0.
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GRASS BOXES EXTRA

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PORTABLE PLANT FRAMES.
The above are without exception the most useful kind of Frame for Plant Growing, and every one with a garden should possess one. The sashes turn right over one on the other, and the boxes are put together with wedges, and can be taken apart in a few minutes. Sizes and prices, carriage paid to any station in England, ready glazed and painted:—

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The glass is nailed and puttied in.

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GREENHOUSE
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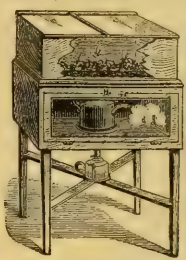


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Lean-to Greenhouses, made of Seasoned Redwood, in lights, and easily erected, glazed with 21-ounce glass, and painted three coats of good oil colour. Tenants' Fixtures. 12 feet by 8 feet, £17. For Brickwork, £15 10*s.*



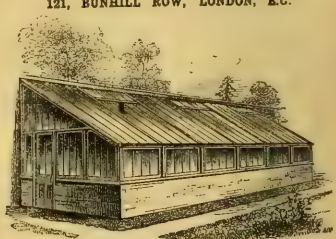
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Is the best and cheapest for striking cuttings, raising seeds, or growing any plants requiring bottom - heat. Strongly made. Price includes Lamp and (Registered) Central Heating Kettle, as engraving. Cost of working reduced to a minimum as all heat generated is utilised. At this season, no garden should be without one.
No. 1. 3 feet 6 inches high by 2 feet 6 inches long, by 1 foot 10 inches wide, £1 17*s.* 6*d.*
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Packing 5*s.*

The Cheapest CUCUMBER FRAMES in the Market.



Cucumber Frames, with sliding lights, glazed with 21-ounce glass, and painted three coats, ready for use, 6 feet by 4 feet, £1 7*s.*; 12 feet by 4 feet, £2. Cases, 5*s.*
Carriage Paid to any Railway Station in England and Wales; also to Edinburgh, Glasgow, Dublin, and Belfast.
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HORTICULTURAL BUILDERS
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W. H. LASCELLES AND CO. will give Estimates for every description of HORTICULTURAL WORK, free of charge, and send competent assistants when necessary.
LASCELLES' NEW ROCKWORK material in various colours. Samples can be seen and prices obtained at 121, Bunhill Row, and 35, Poultry, Cheapside, E.C.
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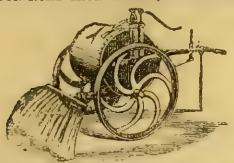


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Price Lists free.
T. WOOD, Hot-water Engineer,
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Agents Wanted to sell Wood's Boilers.

GLASSHOUSES & HEATING.
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Hand WATER-CART and Garden ENGINE,

For use in Gentlemen's Gardens and Grounds.
Holds 35 gallons.

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IRON GARDEN WHEELBARROWS

With TUBULAR FRAME and HANDLES.

Every Gardener should use the "Easy Tip."

No. 14, Japanned, 18s.; with Galvanised Body, 21s.
Galvanised all over, 25s.

Barrows forwarded, Carriage Paid, to any part of England on receipt of Cheque or Postal Order, payable to

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The "INVINCIBLE" LAWN MOWER.

GARDEN ROLLERS.

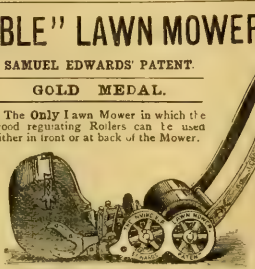
WHEEL BARROWS.

Horse-Power Lawn Mowers.
Side Delivery.

SAMUEL EDWARDS' PATENT.

GOLD MEDAL.

The Only Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



AWARDED the First Prize at each of the 3 Great Contests BIRMINGHAM, MANCHESTER, and LONDON.

Is the BEST in the Market

SIDE RESULTS OF CONTESTS.

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PRICES (including Grass Box),

6 in.	7 in.	8 in.	9 in.	10-in.	12-in.	14-in.	16-in.	18-in.	20-in.	24-in	32-in.	36-in	42-in.
30s.	40s.	50s.	60s.	70s.	90s.	110s.	130s.	150s.	170s.	190s.	£22	£26	£30

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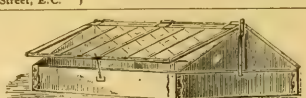
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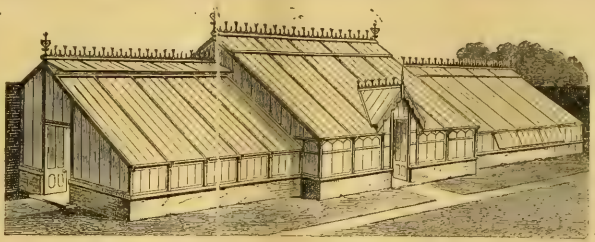
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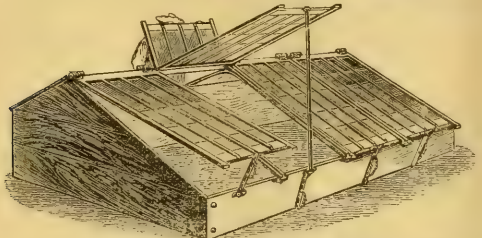
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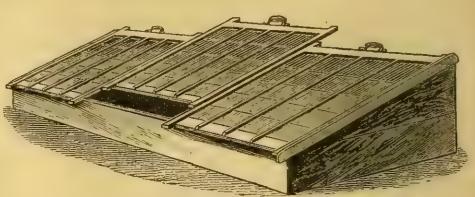


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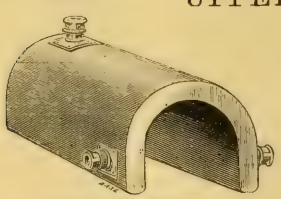
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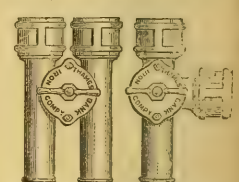


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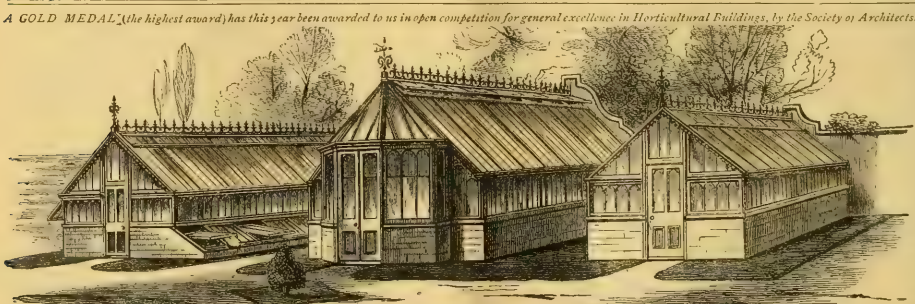
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THE

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CATTLEYA MENDELII.
ODONTOGLOSSUM ALEXANDRÆ.

MESSRS. PROTHEROE AND MORRIS are instructed by the New Plant and Bulb Company to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, May 11, at half-past 12 o'Clock precisely, a grand Importation of CATTLEYA MENDELII in quantity, large masses, in first-rate condition, leafy plants, with eyes just ready to start. Also a fine lot of CATTLEYA TRIANÆ, collected by Mr. Edward Wallace; C. GIGAS SANDERIANA; about 2000 ODONTOGLOSSUM ALEXANDRÆ, from a mountain in the Pacho district (whence come the best forms), hired by their agents; a grand lot of ODONTOGLOSSUM HASTILABIUM, in large pieces and splendid condition; COMPARETTIA ROSEA, APONOGETON DISTACHYON, LILIUM NEILGHERRENSE, EUCHARIS CANDIDA, &c.

On view morning of Sale, and Catalogues had.

Tuesday Next

ESTABLISHED AND IMPORTED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will include in their SALE by AUCTION, on TUESDAY NEXT, May 11, a small but choice lot of ESTABLISHED ORCHIDS, including a strong plant in bloom of Vanda Parishi Marriottiana, Cypripedium Selligerum majus, Odontoglossum Warscewiczii, Trichopilia marginata, in flower; Cypripeo um Veitchii, and others; also a quantity of imported Dendrobiums from Moulmein, comprising D. formosum giganteum, hedyosmum, Dalhousianum, Fytchianum, Pierardii, and other Orchids.

On view morning of Sale, and Catalogues had.

Wednesday Next.

600 CARNATIONS and PICOTEES from the well-known collection of Messrs Wood & Ingram, of the Huntingdon Nurseries, all true to name, and embracing the best varieties in cultivation; PHLOXES, PANSIES, PYRETHRUMS, and other HERBACEOUS PLANTS, HARDY BULBS, Maidenhair FERNS, PELARGONIUMS, and other PLANTS in variety.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, May 12, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

CATTLEYA GIGAS, wonderful masses
EPIDENDRUM WALLISI, strong plants.
CATTLEYA AUREA, extra fine condition.
,, IMPERIALIS, splendid plants.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, May 14, at half-past 12 o'Clock precisely, splendid importations of the above ORCHIDS; also ANGULOA UNIFLORA, ONCIDIUM KRAMERI, O. WELTONI, ODONTOGLOSSUM RAMOSISSIMUM, CYPRIPEDIUM SCHLIMII, ODONTOGLOSSUM PESCATOREI, O. SCEPTRUM, O. VEXILLARIUM, extra fine condition; and a specially fine lot, just received, of ODONTOGLOSSUM CRISPUM, in splendid masses, many very distinct, and in superb order, the fine broad-petalled type, &c.

On view morning of Sale, and Catalogues had.

Flowering Plants—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SPECIAL SALE of ORCHIDS in FLOWER will take place on TUESDAY, May 25, for which they will be glad to RECEIVE NOTICE of ENTRIES as soon as possible.

Wednesday Next—(Sale No. 7156.)

TWO GRAND SPECIMENS of CYMBIDIUM LOWIANUM, with seven spikes and 135 flowers, and five spikes and ninety-five flowers respectively, in splendid health.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 12.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7156)

SPECIAL SALE OF ORCHIDS IN FLOWER.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 12, at half-past 12 o'Clock precisely, a fine COLLECTION of ORCHIDS in FLOWER and BUD, comprising two magnificent specimens of Cymbidium Lowianum, with seven spikes and 135 flowers, and five spikes and 95 flowers respectively; fine varieties of Odontoglossum Alexandræ, O. Pescatorei, O. vexillarium, O. Ruckerianum, O. citrosmum (superb form); splendid pieces of Lælia purpurata, with many sheaths; Masdevallias, including many choice varieties of Harryana; Dendrobes, Oncidiums, Phalænopsis, Cypripediums, &c.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next.

A CONSIGNMENT of LÆLIA PURPURATA, L. PERRINI, CATTLEYA LEOPOLDII, C. HARRISONIANA, ZYGOPETALUMS, STANHOPEAS, BRASSAVOLAS, and other ORCHIDS, received direct from Brazil.

MR. J. C. STEVENS will include the above in his SALES by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, May 12 and 13.

On view mornings of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7157)

VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 13, at half-past 12 o'Clock precisely, fine Imported Plants of CYPRIPEDIUM SCHLIMII ALBUM, EPIDENDRUM WALLISI, ONCIDIUM MACRANTHUM HASTIFERUM ODONTOGLOSSUM NÆVIUM and MAJUS, O. LILIFLORUM, O. CORONARIUM MINIATUM, O. VEXILLARIUM, O. WALLISI, BOLLEA PATINII, B. LALINDEI, BATEMANNIA BURTI, ANGULOA RUCKERI, MASDEVALLIA HOUTTEANA, M. TROCHILUS, and other ORCHIDS collected by Mr. Chas. Patin, of Antioquia, who has been resident in the U.S. of Colombia for some years, and has collected many of the above in flower.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7157.)

ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 13, about 700 lots of good ESTABLISHED ORCHIDS, comprising fine plants of:—

Lælia Anceps Dawsonii	Cattleya Lawrenceana
Cœlogyne Massangeana	Cypripedium vexillarium
Odontoglossum nævium majus	Masdevallia Chelsoni
Cattleya labiata (autumn)	Dendrobium Ainsworthii
Cypripedium euryandrum	Odontoglossum Ruckerianum,
&c., &c.	

On view morning of Sale, and Catalogues had.

Kingsbury House, Shortlands, near Bromley.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, as above, by order of the Executors of the late E. K. Harrison, Esq., on SATURDAY and MONDAY, May 15 and 17, at half-past 12 o'Clock precisely each day, a fine COLLECTION of STOVE and GREENHOUSE PLANTS, comprising 200 Palms, Eucharis, Azaleas, Camellias, Ferns, &c., Established Orchids, Bedding Plants, Pot Roses, Rhododendrons, and other Plants; ORCHID and GREENHOUSES, with PIPING and STAGING, LAWN-MOWER, Garden ROLLER, Iron and Rustic GARDEN SEATS, CHAIRS and TABLES, BOAT, BROUGHAM and PHAETON by Mills, of Cogwell Road, &c.

On view the day prior and mornings of Sale, and Catalogues had.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

TO BE DISPOSED OF, a well-established and genuine FLORIST BUSINESS. Large and convenient House, well let, which clears rent. First-class opportunity for adding Fruit and Vegetables for a good family trade.

Apply on the Premises, 9, Swiss Terrace, next Swiss Cottage Station, Metropolitan Railway.

Important Market Town 12 Miles from London.

FOR SALE, owing to ill-health of the Proprietor, a GENERAL NURSERY and JOBBING BUSINESS. Established over 40 years. 4 Acres of Land. Dwelling-house with Seed-shop attached, with good frontage, and several Glass Erections. Low Rent. Incoming can be arranged to suit intending purchaser with moderate capital.

Apply to Messrs. PROTHEROE AND MORRIS, 67 and 68, Cheapside, E.C.

South Devon

TO BE SOLD, a FREEHOLD COTTAGE RESIDENCE, near Dartmoor; productive Gardens and Orchard, richly stocked and well established; ten rooms and excellent offices, with stabling—all in complete repair. Gravel subsoil. The whole about an acre. Grand country every way out, invigorating climate with influence of sea air, easy drive to seaside, railway station near. Price £1000.

Apply to Mr. JAMES STOOKE, Land Agent, Newton Abbot.—Newton Abbot, April 27.

FOR SALE, a FLORIST'S BUSINESS, within 5 miles of Covent Garden. Good neighbourhood. Freehold Ground. Capital double-fronted Residence, and 200 feet of Glass in first-rate order.

For particulars apply to Messrs. H. PARKHOUSE AND CO., Auctioneers, Crouch End Station, G.N.R.

TO BE DISPOSED OF, on easy terms, a small compact SEED BUSINESS in the West of England.

Apply to Mr. HEDGES, 33, Strode Road, Willesden Green, London, N.W.

TO BE SOLD, the LEASE of a MARKET NURSERY, 17 years to run. 2¾ acres, 13 miles from London. 230 feet of Glass in 5 Houses, 100 feet of Pits and Lights, a new Heating Apparatus. The Pits with Lights will be sold with the Lease. A good 8-roomed Cottage, with gas and water laid on, also Pottiog-shed, Cow-house, Stable, Cart-shed, and Pig-styes.

C. JOHNSON, The Cottage, Tangley Park, Hampton.

FOR SALE, the LEASE and GOODWILL of the Old-established NURSERY, known as Waverley Nursery, Waverley Place, St. John's Wood, N.W., together with the Retail Shop, in good position close by, and Greenhouses in the rear, with a first-class Jobbing connection.

For further particulars apply, W. A. CLINGO, 18, Finchley Road, St. John's Wood, N.W.

FREEHOLD LAND, £10. 20 by 100 feet. 32 miles out. Near stations. Good roads. Free conveyance. Instalments. Healthy and beautiful neighbourhood. BRAKE, Farnborough, Hants.

TO BE LET, an unusually attractive GARDEN and GROUNDS of 3 acres (kept by one man), with a capital moderate-sized House, Stabling, Cow, Greenhouses and accessories. 12 acres can be had. Favourite part of Kent. Twenty-eight minutes by train from Cannon Street. Rent £152. Drawing-room 36 feet by 21 feet, Billiard Room nearly as large, good dining Room, &c.

Personally inspected by Messrs. DEBENHAM, TEWSON, FARMER AND BRIDGEWATER, 80, Cheapside, E.C., who can give all details. In capital order. Lessee has occupied the Property for 23 years, and has expended £2000 in improvements Worthy the notice of any one wanting a roomy, yet inexpensive house, and who can at the same time appreciate really good grounds, quite different in character and appearance to the narrow "strip" gardens usually found now-a-days in connection with modern builders' house. (40 061)

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

115, Listria Park, Stamford Hill, N.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.

A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of

PHILIP MAC MAHON, Curator,

Hull Botanic Gardens.

The following, amongst other valuable Prizes, will be awarded:—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5

BEDS AGRICULTURAL SHOW at Luton, Beds, on WEDNESDAY, July 21, 1886.

A GRAND HORTICULTURAUL SHOW will be held in connection with the above, at which the following Prizes, open to all England, will be offered:—

Exotic Orchids	£32
Stove and Greenhouse Plants and Ferns	£57
Cut Roses	£12
Fuchsias	£6
Fruits	£32

Schedules and full particulars can be obtained of Mr. S. C. OLIVER Park Square, Luton, Beds.

TOBACCO CULTURE IN ENGLAND.—In view of the recent inquiries in the House of Lords, we have imported a collection of the most important varieties of Tobacco as cultivated for commercial purposes in the United States and other producing centres. The following kinds can be supplied (so long as stock lasts) in seeding plants for experimental purposes.

TOBACCO PLANTS.

Seedleaf.	Big Frederick.
Florida.	Maryland Broadleaf.
Yellow Prior.	Island Broadleaf.
Hester Virginia.	White Burleigh.
Pennsylvania.	White Stein.
One Sucker.	Yellow Orinoco.
Kentucky.	Connecticut.
Virginian.	Glasner.

Any variety.

Price 1s. 6d. per dozen, 10s. per 100; mixed price, 8s. per 100, post free. Carter's pamphlet upon Tobacco Culture is now ready, price 1s., post free (gratis to purchasers of Tobacco Plants).

CARTERS', Seedsmen by Royal Warrants to H M. the Queen, and H.R.H. the Prince of Wales, 237 and 238, High Holborn, London, W.C.

To the Trade

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.

Seed Growing Establishment, Wisbech.

CHEAP BEDDING PLANTS.

GERANIUMS, strong autumn-struck plants.
,, Vesuvius (scarlet), Jean Sisley (deep rose (crimson), Master Christine, Madame Vaucher, Happy Thought, 2s. per dozen, 12s. per 100, from single pots.
LOBELIA (true), from cuttings, Emperor William, 2s. 6d. per 100, 20s. per 1000
DAHLIAS, Single, named sorts, of all shades of brilliant colours, including White Queen and Paragon, 2s. 6d. per dozen, 18s. per 100, from single pots.
,, Double, best named show varieties, 2s. 6d. per dozen, 18s. per 100, from pots.
CHRYSANTHEMUMS, selection of finest named Show varieties, strong, and well-grown, 2s. 6d. per dozen, 18s. per 100, from single pots.

Package free. Plants allowed for carriage. Terms cash. CATALOGUE gratis.

H. I. HARDY, Stour Valley Florist Grounds, Bures, Suffolk.

PANSIES.—PANSIES.—VIOLAS.—Of all the leading and best varieties of both Show and Fancy, having about 30,000 more than we require for Retail purposes. Just ready for blooming, in strong, healthy Plants, 20 varieties, 1s. per 100, 5s per 300. Purchaser's selection in 50 varieties, 1s. per 100, 5s per 300. Violas in choice variety, 8s. per 100, 3 10s. per 1000. Package free, and cash with all orders to

T. FLETCHER, SON AND CO., Florists, &c., Chesterfield.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.

RICHARD SMITH AND CO., Worcester.

CLEMATIS JACKMANNI ALBA (Noble). The White Jackmanni.

The Raiser now distributes the above at the Reduced Price of 5s. each. The value of strong 2-yr. old Plants will be well understood by all.

CHARLES NOBLE, Bagshot.

A few thousand NANETTIS at a Clearance Price. Other Nursery Stock. Send for prices.

100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which will produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.

RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

Verbenas.

CLEARANCE OFFER.

1000 VERBENAS.—Clean and healthy, from cold frames, grand stuff including new. As there is some uncertainty about names, to be sold cheap for cash, 40s. per 1000, 20s. per 500, 5s. per 100, in less than 500. Carriage Paid.

The PLANT AND BULB CO., Gravesend.

FOR SALE, 300 AZALEA PLANTS, more than two-thirds Double White. Flower in November, December, and January. Several very large Plants. Six large GLASS HOUSES, about 1000 feet of Hot-water PIPES; One 3-cwt. SADDLE and One 4-cwt. TRENTHAM BOILER.

Apply, W. MAYES, 174, High Street, Southampton.

Brazilian Orchids.

SEN. A. F. SARAFANA, of São Paulo, Brazil, has on hand a splendid assortment of these beautiful Plants, in good and strong specimens. Also Plants of BROMELIAS, MELASTOMADS. PEPEROMIAS, PALMS, FERNS, CYCAS, &c., all of which he offers at very moderate prices.

CATALOGUES will be sent free if desired.

Garden Requisites, Florist's Sundries, &c.

HOOPER'S is the largest Depôt, and most extensive Stock in Europe. Lowest market prices. Highest quality in all goods. Exceptional terms to Cash Buyers. Wholesale CATALOGUE (illustrated) free on receipt of Trade Card.

HOOPER AND CO., Manufacturers and Merchants, Covent Garden, London, W.C. Established 50 years.

Paris Branches—Office, 59, Rue des Petites Ecuries. Factory, 249, Rue des Pyrenees.

New York—19, Broadway.

CHEAP PLANTS, all strong and well hardened off.—VERBENAS, White, Purple, and Scarlet, 6s. per 100. GERANIUMS, Vesuvius, Henry Jacoby, Bonfire, &c., 8s. per 100s.; Flower of the Spring, White Queen, and others, 10s. per 100. FUCHSIAS, strong, best sorts, 8s. per 100. PETUNIAS, 8s. per 100. LOBELIA, Emperor William, 3s. per 100.—W. JACKSON, Blakedown, Kiddermaster.

ALPINE and HERBACEOUS PLANTS a Specialty.

50,000 of the most desirable sorts, established in pots, and many other varieties growing in the open ground. To ensure flowers at all seasons, plant at once and do not delay. Special LIST of varieties on application. 4s., 6s., and 9s. per dozen. Cheaper if taken by the 100 or 1000.

R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 10 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12s. to 24s. per dozen, strong plants. Descriptive LIST on application. Plants may *now* be knocked out of pots and sent by parcel post.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

Cheap Bedding Plants.

WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off:—

TRICOLORS: Mrs. Pollock, 2s per doz., 15s. per 100; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s, 6d. doz., 18s 10s.; 12 sorts, 6d.

BRONZE: McMahon, Black Douglas, The Czar, 2s. doz., 12s 100.

SILVERS: May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.

GOLD-LEAF: Crystal Palace Gem, 1s. 6d. doz., 10s. 100; Happy Thought, 2s. doz., 15s. 100.

SILVER TRICOLORS in variety: best sorts, 2s. doz., 12s. 100.

ZONALS: Vesuvius, Jean Sisley, 1s. 6d. doz., 8s. 100; Madame Vaucher, Virgo Marie (white), 1s. 6d. doz., 10s. 100; Master Christine, Mrs. Levers, Jenny Dodds (pinks), 1s. 6d. doz., 10s. 100; Waltham Seedling, 1s. 6d. doz., 8s. 100; Henry Jacoby, Bonfire (crimsons), 1s. 6d. doz., 12s. 100; Mrs. G. Smith (fine salmon), 1s. 6d. doz., 10s. 100; White Vesuvius, 1s. 6d. doz., 10s. 100.

BEST WHITE ZONAL: Queen of the Belgians, 4s. doz., 25s. 100; Niphetos, 2s. doz., 15s. 100.

LOBELIAS: Blue Stone, Pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. 100, 20s. 1000.

CALCEOLARIAS: Golden Gem, 5s. 100, 40s. 1000; Camden Hero, 6s. 100.

HELIOTROPE: Jaun des Amours, Miss Nightingale (light), 5s. 100, 50s. 1000.

AGERATUM: Imperial Dwarf (blue), the best bedder, 5s 100, 40s. 1000.

TROPÆOLUM: Vesuvius, good dwarf crimson, 8s. 100; coccinea elegans, 10s. 100.

CENTAUREA: candidissima, healthy seedlings, 20s. 100.

FUCHSIAS: a good collection of single and double, 6s. 100.

PELARGONIUMS: Show and Fancy, good free sorts, 3s. doz., 20s. 100.

DOUBLES: F. V. Raspail (fine scarlet), M. Baltet (white), Madame Thibaut (pink), 1s. 6d. doz., 12s. 100.

IRESINE LINDENI, 5s. 100, 40s. 1000.

VERBENAS: see separate Advertisement.

Packing included. Terms cash with order.

Cemetery Nursery Gravesend.

Verbenas—Verbenas.

WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 6s. per 100, 50s. per 1000. Post-free 3d. per 100 extra. Terms cash, packing included.

Cemetery Nursery, Gravesend.

FERNS A SPECIALTY.

An IMMENSE STOCK, in SPLENDID CONDITION.

ILLUSTRATED CATALOGUE, containing "Hints on Fern Cultivation," 1s.

SMALLER CATALOGUE, of over 1300 species and varieties, including Descriptive "LIST OF NEW, RARE, AND CHOICE FERNS." and "HARDY NORTH AMERICAN FERNS," free on application.

W. & J. BIRKENHEAD,

FERN NURSERY, SALE, MANCHESTER.

Florists' Flowers our Specialty.

R. B. LAIRD & SONS

(late DOWNIE & LAIRD)

Have now issued their Descriptive Catalogue for 1886. Free on application.

ROYAL WINTER GARDEN,
EDINBURGH.

HOLLIES of all sizes up to 8 feet, or 8 feet. —These plants have been removed yearly, consequently are safe for transplanting. An inspection of the stock is the only test of their quality to be relied on.

CHARLES NOBLE, Bagshot.

IVIES.—IVIES.—IVIES.—A quantity of large Irish Ivies, in 24's, for Sale; 8 feet high. Price on application.

C. YOUNG. Upper Tooting Park Nursery, S.W.

100 000 VERBENAS.—VERBENAS. Our Verbenas are again this year unusually strong, healthy, well-rooted, vigorous, and clean, quite equal to previous years, which according to testimonials received, show they have given great satisfaction. Purple, White, Crimson, Pink, Rose, and Scarlet, 6s. per 100, 50s. per 1000; in 12 choice Exhibition varieties, 8s. per 100, 70s. per 1000.

Carriage free for cash with all orders to

T. FLETCHER, SON AND CO., Florists, &c., Chesterfield.

Vines—Vines—Vines

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.

The Vineyard and Nurseries, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

ROSES.

Cranston's Nursery and Seed Co.

(LIMITED)

Offer about 30,000 TEA-SCENTED, NOISETTE, CHINA, and other ROSES, in Pots, splendid Plants, in fine condition for potting on or planting out, well hardened for travelling. Prices very low. Special List will be forwarded on application.

KING'S ACRE NURSERIES, HEREFORD.

100,000 HARDY HEATHS.—These beautiful Plants are suitable for covering banks and mounds, or for rockwork. Will do planted in exposed situations, and the present is a good time to plant them. PRICES (exclusive of packing):—

	Per doz.	Per 100.	Per 1000.
A Selection of 10 varieties ..	3s. 6d.	16s.	140s.
A Selection of 20 ,, ..	3s. 6d.	18s.	150s.
A Selection of 30 ,, ..	4s. 0d.	21s.	160s.
A Selection of 40 ,, ..	4s. 6d.	24s.	180s.

JAMES SMITH AND SONS, Darley Dale Nurseries, near Matlock.

Hooper's

Splendid Seeds and Bulbs at low prices

The Covent Garden Seed Warehouse

Catalogues free to Buyers



CUTBUSH'S MILL-TRACK MUSHROOM SPAWN.—Too well known to require description. Price 6s. per bushel (1s. extra per bushel for package), or 6d. per cake; free by parcel post, 1s.

None genuine unless in sealed packages and printed cultural directions enclosed, with our signature attached.

WM. CUTBUSH AND SON (Limited), Nurserymen and Seed Merchants, Highgate Nurseries, N.

GOOD TURF for Sale—from 2000 to 3000 ft.; on rail at Sunninghill Siding, South-Western Railway, at 8s. per 100. Apply to

H. C. SPENGLER, Baker, &c., Sunninghill, Berks.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

4d. per bushel; 100 for 25s.; truck (loose, about 2 tons), 40s.; 4-bushel bags, 4d. each.

LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks 25s.; sacks, 4d. each.

BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; sacks, 4d. each.

COARSE SILVER SAND, 1s. 9d. per bushel; 15s. per half ton, 26s. per ton in 2-bushel bags, 4d. each.

YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1s. per bushel.

SPHAGNUM MOSS, 8s. 6d. per sack.

MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—H. G SMYTH, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18s.; ½-cwt., 9s. 6d. ¼-cwt., 5s.; ⅛-cwt., 3s.; Tins containing 7 lb., 2s. 6d.; 2½ lb., 1s.

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool.

Can also be had from all Nurserymen and Seedsmen.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

J. B. BROWN,

90, CANNON STREET, E.C.

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Not J. B. BROWN AND CO. *as formerly.*

IRON HURDLES.

IRON and WIRE FENCING.

STEEL BARB WIRE FENCING.

GALVANISED WIRE NETTING.

JET BLACK VARNISH,

The well-known quality, 1s. 6d. per gallon, free to any Railway Station, with no charge for Casks.

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TWO PRIZE MEDALS.

Quality, THE BEST in the Market. (All sacks included.)

PEAT, best brown fibrous .. 4s. 6d. per sack; 5 sacks for 20s.
PEAT, best black fibrous .. 3s. 6d. ,, 5 sacks for 15s.
PEAT, extra selected Orchid 5s. 6d. ,,
LOAM, best yellow fibrous ..
PREPARED COMPOST, best
LEAF MOULD, best only ..
PEAT MOULD, ,, .. } 12s. per bush. (sacks included).
SILVER SAND, coarse, 1s. 3d. per bush., 12s. half ton, 22s. ton.
RAFFIA FIBRE, best only .. .. .. 1s. per lb.
TOBACCO CLOTH, finest imported .. 8d. lb. 28 lb. 18s.
TOBACCO PAPER ,, (Spécialité) 8d. lb., 28 lb 18s.
MUSHROOM SPAWN, finest Milltrack .. 5s. per bushel.
SPHAGNUM MOSS, all selected, 2s. per bush., 6s. per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1s. each; 10 sacks, 9s.; 15 sacks, 13½.; 20 sacks, 17s.; 30 sacks, 25s.; 40 sacks, 30s. Truck-load, loose, free on rail, 25s. Limited quantities of G., special quality, granulated, in sacks only, 2s. each. Terms, strictly Cash with order.

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CRESYLLINE

(PATENTED),

WILL KILL

WIRE WORMS,

AND ALL NOXIOUS INSECTS, WITHOUT THE SLIGHTEST INJURY TO PLANTS.

7 lb., 3s.; 1 Cwt., 22s. Carriage Paid.

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W. H. KEYS, Hall End, West Bromwich.

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FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash. Per Cent.		Herring and Potash. Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15.0
10.0	Magnesia	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are £10 per Ton (bags included) for the COD, and £9 for the HERRING, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.

IN TINS.—2 lb. for 1s.; *and*

IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6d.; 56 lb., 10s. 6d.; 1¼ cwt., 20s.; 2 cwt., 30s. Bags free.

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SILVER SAND.—Best, 24s. and 30s. per truck of 4 tons; Peat, best, 60s., 80s., and 100s. per truck of 10 cube yards. Orchid and Decorative Moss, &c.—W SHORT, Horticultural Co., Midhurst, Sussex.

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NATIVE GUANO, price £3 10s. per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4s. per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5s.

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Sold in Packets, 6d. and 1s. each, and in

Sealed Bags only,

7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

CLAY & LEVESLEY, TEMPLE MILL LANE, STRATFORD, LONDON, E.

C. & L. also supply Crushed Bones, Bone Dust, Peruvian Guano, Sulphate of Ammonia, and Nitrate of Soda, in best qualities only.

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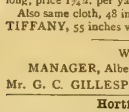
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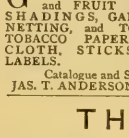
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3-in.	3 9	5 8	7 6	11 3
2-in.	5 4	8 0	10 8	16 0
1½-in.	6 6	9 9	13 0	19 6
1-in.	10 0	15 0	20 0	30 0



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100 yard Reels .. 7s. 0d.
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Special Quotations for large quantities.

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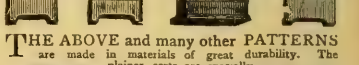
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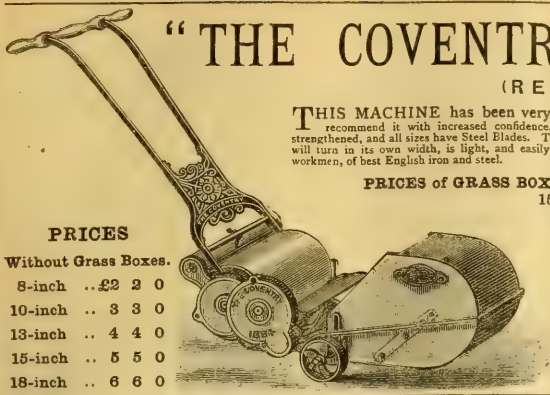
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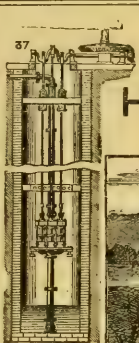
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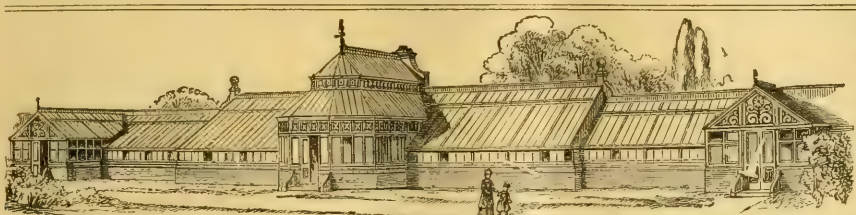
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THE

Gardeners' Chronicle.

SATURDAY, MAY 8, 1886.

PLANT NAMES DERIVED FROM PROPER NAMES.

THE task of naming flowers and shrubs from other countries has been a particularly interesting one, and it is not surprising that a large number of them were dubbed with the names of their introducers. The world seems to have become more self-conscious than it was of old since none of the earliest introductions, but many of the later ones, were named in commemoration of individuals. The strong attachment to the humblest forms of plants seems like a confession of kinship between the highest and lowest types of organised life—between man and the inconspicuous herb, the "wee, modest, crimson-tippit flower," which he loves while he treads it under foot.

On the principle we have thus endeavoured to explain it is easy to understand that even men of note have found it an honour to have their names attached even to a parasite, as in the case of that enormous species discovered in Sumatra by Sir Stamford Raffles, and named from him Rafflesia. In the absence of a living specimen of this wonderful flowering plant in this country, the life-sized model of one at Kew in the museum opposite the Palm-house proves doubly interesting. Only a very small fractional part of the long list of plants bearing proper names can be noticed here, and of course we have no direct concern here with historic plants, apart from nomenclature, such as Shakespeare's Mulberry tree, Pope's Willow, Byron's Elm at Harrow or his Oak at Newstead, Bacon's "little tufts of Thyme," Fox's Geraniums, Napoleon's Violet, Lord Beaconsfield's Primrose, and, prettiest tale of all, Picciola's one flower of his prison. We cannot even speak at length of Lady Holland's Dahlias, which she brought into fashion, or of Knight's Marrowfats, which we may say he created. Examples of the intimate connection of men and plants have been greatly increased in recent times, and are in fact innumerable. We merely propose to revive a few examples of the naming of plants after persons of distinction, botanists, collectors, and others. It seems unnecessary to attempt a chronological arrangement.

The naming of plants from persons naturally occurred on the arrival of unnamed species from their native countries. Numerous plants from America received their names from English and foreign botanists in the seventeenth century; the genus Lobelia, which has played an important part in the decoration of modern gardens, takes its name from Matthew Lobel, the Flemish physician and botanist to James I. The well known genus Aubrietia first settled on dry sites, and covered the rockwork of English gardens about seventy years ago, coming from Greece, and taking its name from M. Aubriet, a French botanical draughtsman. The Lapageria, the most beautiful climber of our greenhouses, bears its romantic name in memory of Josephine Lapagerie, the divorced Empress, consort of Napoleon I. It came from the Chiloe Islands, off the Pacific coast of South America—the introductions of the two

varieties with rose-coloured and white flowers occurring respectively in the years 1847 and 1855.

The name of La Peyrouse, the celebrated French navigator, is probably more familiar to the general reader than that of the genus of bulbous plants, Lapeyrousia, which was named from him by De Candolle early in the century. The same may be said probably of Laplacea, a stove plant here, and a tree of the height of 30 or 40 feet in Brazil, named by Humboldt from Laplace. The botanical name of the Honeysuckle was conferred on the first arrival from the South of Europe in 1596 of a very widespread genus, in honour of Adam Lonicer, a German botanist, who was fortunate in his commemorative plant, which has made his name familiar in every garden of England, and will hand it down to remote posterity. Near the last named in a plant dictionary would be found Lopezia, a plant from Mexico, named after Lopez, a Spanish botanist; and a host of plants, not better known to the general public, might be culled from among those whose names begin with the letter L, such as Lowea, Lubinia, Lahaya, Lardizabala, and Luxemburgia, named in honour of the Duke of Luxemburg, the patron of M. A. de St. Hilaire, who brought the plant from Brazil on returning from his botanical explorations.

Mrs. Lankester mentions in her recent work that Dr. Lindley paid her husband, Dr. Edwin Lankester, the compliment of naming after him Lankesteria, one of the not very numerous plants which we derived forty years ago from the west coast of Africa. The Loudonia, from the Swan River, also received from Dr. Lindley an appellation which makes one regret that the Honeysuckle had been named before, since a household name familiar to all would have been appropriate to that popular and enthusiastic writer.

In our own times the names of botanical collectors—that army of martyrs, as they have been called—have been worthily handed down. The Douglas Fir has already become a timber tree of its introducer's native land, and among all the species which he sent from the Rocky Mountains and California, such as Abies nobilis, A. amabilis, Pinus Lambertiana, P. ponderosa, P. Sabiniana—named from his friend, Joseph Sabine—the noble Douglas Fir has most appropriately taken the great collector's name. The Clarkia, brought by Douglas from the Rocky Mountains, appears to have been named from Captain Clarke, an earlier traveller in the same regions. The Eschscholtzias, which we owe to the same benefactor, were named after a botanist, and Dr. Lindley, a great plant namer, who is himself commemorated in the pretty evergreen Lindleya.

The Samphire of Shakespeare's Cliff at Dover and other places bears a name which is said to be a corruption of St. Pierre, the plant having been appropriately dedicated to St. Peter from its habit of growing on a rock. Our subject is so wide that examples might be drawn from all periods of history. The names of Daphne, Narcissus, and Amaryllis, with others of the kind derived from classic poets, are notorious, and they were bestowed on plants on the same principle of affectionate recollection and sentiment as in the commonplace examples of Rudbec, Professor of Botany at the University of Upsal, and Michel Begon, a French lover of gardening and promoter of botanic pursuits, who gave their names to Rudbeckia and Begonia. Linnæa, which bears the illustrious name of Linnæus, given to it with his consent, is a humble early flowering plant, a native of Northern Europe and sometimes found in the Highlands of Scotland. In the vegetable kingdom artificial honours are unknown, or the Kamel would have borne a royal name instead of that of Kamel, a Moravian missionary and traveller. The story of its reception in Europe is as follows. In the year 1739 Kamel returned from his travels, bringing with him the plant now so well known on which were two magnificent white blossoms amid the glossy leaves. Marie Theresa granted an audience to the missionary, and accepted his offering, and she immediately presented it to her husband, Ferdinand IV. of Spain, as "the new flower of the Philippines." Kamel had obtained it in the island of Luzon in that group. *H. E.*

THE ORIGIN OF THE POTATO.

(*Concluded from p.* 553.)

THE most important passage in Acosta is that in book iv., chapter xvii. Speaking of the sierra of Peru and the Collao district he says:—"The Indians use a kind of root which they call *papas*. These roots are like to ground-nuts; they are small roots, which cast out many leaves. They gather this *papas* and dry it well in the sun, then beating it well they make it into what they call *chuña*. . . . They likewise eat of these *papas* boyled or roasted. There is one sweet kind which grows in hot places." In chapter 18 *papas* is also mentioned again, and in book v., chapter 4.

In the writings of Garsilasso de la Vega, who was born and grew up in the country, we find similar references to *papas chuña* and Batata. He was born 1540, and his *Commentaries* (part i.) were published at Lisbon 1604.

Whether *papas* can be rightly spoken of as a South American word, or whether it was confined to the western and north-western parts, matters nothing for the present purpose. The word was in use in the districts visited by the Spaniards, and that suffices.

The next point for inquiry is this. When the name *papas* became known in Spain, and through Spain to Continental botanists, with what plant was the name associated? Knowing how the word Potato came to be gradually and imperceptibly shifted from what we recognise as the Batatas edulis to what we now know as the Solanum tuberosum, and knowing that what the Spaniards now call *papas* the Portuguese call Batata, we must proceed with that caution which will prevent us from jumping at a conclusion, and assuming that conclusion to be undoubtedly the right one. There is a link wanting in the evidence that may possibly be supplied by a special search among Spanish and Portuguese writers not generally known in our country. What we do know, however, is this.

By 1596, Bauhin, in describing the Solanum tuberosum in his *φυτοπιναξ*, at p. 302 uses the name "Pappas hispanorum and indorum" in connection with it.

In 1601 Clusius, in his *Rar. Plant. Hist.*, says there is no doubt it is the plant that Cieza de Leon refers to.

In 1620, Bauhin again, in his *προδρομος* says it is the plant Cieza refers to, and in 1623, in his *πιναξ*, says it is the plant Acosta mentions that *chuñas* was made from.

But it must be recognised that neither of these writers has the weight a Spanish writer would have. Their information is at best but second-hand, and if we accept Bauhin in one case we ought to perhaps in another, and he says the plant was first received in England from the island of Virginia (he is right to say island, no doubt, *i.e.*, Roanoak), and thence it spread to France and other regions. (This is in his *Matthiolus*, 1598, the year in which Gerard's *Herbal*, dated 1597, appeared.) Could the writers have foreseen the subsequent interest that would be attached to the new plant then being sent from one garden to another as a curiosity from the New World, they would no doubt have taken especial care their accounts should be exact.

There is no reason for supposing that Clusius, or Bauhin after him in date, and perhaps using his work, made any error in referring the S. tuberosum to the *papas* of Cieza, Acosta, Garcilasso, and others, the only point to notice is that the saying, "there is no doubt," does not make the proof complete. It would be quite beside the question to bring in as evidence for or against the accuracy of their statement, the consideration whether the S. tuberosum is now to be found wild in the districts or not. Humboldt, and many since, have doubted whether it is to be met with wild. That is carrying the whole question a step further back; and the travellers referred to speak of *papas* under such systematic cultivation by the natives, that it must have been practised for a long period. Garcilasso mentions that the Incas sent out colonies properly equipped for cultivation. We cannot reasonably doubt that Clusius was right in identifying the tubers he received in 1588 with the plant Cieza, in 1553, and others, mention.

Had Gerard read Cieza or Acosta he need not have quoted Clusius as his authority for his statement that the *papas* to which he referred his Potatos of Virginia "groweth naturally in America, where it was first discovered." To him America would mean what we now mean when we say South America, for the known lands north of the Gulf of Mexico were known respectively by the name Florida, Virginia, and Newfoundland, though in some cases "America" is used for the unknown lands. The word "Indians," too, appears to have been used only by Spanish or Portuguese writers. Our own travellers use the words "natives," "salvadges" or "sauages," and "cannybales." Gerard says, under section "The Names," "The Indians do call this plant *papus* (meaning the rootes), by which name also the common Potatos are called in those Indian countries." By "those Indian countries" he cannot mean the island of Roanoak and the mainland districts, to which excursions had been made from the Roanoak headquarters. It seems quite clear he had the name *papas* from Clusius, as the name of a plant "first discovered" in South America. When he received "roots" from Virginia he gave them the name *papas*. But it by no means follows his *papus* was identical with the South American, and this is a very important point to bear in mind. We have only his use of the name, and, as explained above, we have no means of telling what kind of value to set on his illustration.

Seeing as we do that Cieza, Acosta, and Garcillasso distinguish between *papas* and Batatas, he certainly had some confused and incorrect idea about the "Indians" using the word *papas* for common Potatos, by which he means Sweet Potatos (his page 780) or Batatas. But we know from what Johnson says of Gerard, and from his quarrel with L'Obel, that he was by no means a careful man, even if it is not true that he stooped to deliberate falsehoods.

In the *Herbal* the first name given is Batata, and to this Gerard adds "virginiana sive virginianorum." The use of the name Batata calls for consideration. Respecting the addition it might have been sufficient for identification if he had contented himself with virginiana, though with such familar examples as hispaniæ, angliæ, &c., he might have written virginiæ if he meant "of Virginia," or if he needed an adjective virginica would have been in keeping with such forms as britannica or gallica. The reason he added "sive virginianorum" probably

was that on the Continent the *papas* was called "hispanorum" and "indorum." Wishing not to lack dignity he coins virginiani as a name for the colonists, and gets from this virginianorum. If he could not translate Dodonæus he wished to show that he knew enough of Latin grammar to spell a genitive plural correctly. But his use of Batata is a more serious matter than the adjectival display of his vanity. To those who work with names only and not with plants, it has caused much confusion. Bauhin recognised the *papas* as a Solanum, a Nightshade, and the Batata as a Convolvulus; and had the distinction been kept much trouble would have been avoided. But the native names, Batata and *papas* became very loosely used.

The only consistent explanation with regard to Gerard is that he attached no botanical significance to his names at all. To him "Batata" meant an edible root. He does not seem to have recognised that Potades, or Potato, was only an anglicised pronunciation of Batata. He would have been right to have used Batata as the Indian name for Sisarum, but he was wrong to treat it as a Latin name, and give "Potatos of Virginia" as a translation of Batata virginiana. The only course to adopt is to do what Gerard himself should have done—let his Latin alone. It is worth noticing he gave papas the termination us.

If we cannot fix the date of the introduction of the Batatas edulis into Europe we know that figures of it under the name Sisarum were plentiful in the numerous editions of *Kruydboehs* and *Kreuterbuchs* that abounded. This for years had been our Batata, Potade, or Potato. Gerard then receives from Virginia a new root sufficiently alike to it in "shape and proportion," and in "the pleasant taste and virtues" that he says "we may call it in English Potatoes of America or Virginia." By the year 1599, if his names go for anything at all, he seems to have modified his idea, and in his second catalogue calls them bastard Potatos. He retains the word "orbiculatus," one which apparently he alone uses, but drops all allusion to Virginia.

To sum up. All that we can accept from Gerard as at all certain is that Clusius told him the Potato grows naturally in America, where it was first discovered; and that afterwards he received roots from Virginia which grew in his garden. We cannot tell whether the tubers in the figure he gives were the size of those that were eaten and said to have the same "temperature and virtues" as the hitherto known Potato; we cannot tell whether the figure was even intended to represent a plant he had grown. It cannot be put in as evidence that S. tuberosum did grow in Roanoak or its neighbourhood. There is no proof of any connection between the Openauk of Heriot and Gerard's Potato. There is no proof that the name *papas* was known in North America. There is no proof of Potatos having been brought from Virginia beyond Gerard's own statement. There is the probability he some how had two sets of roots mixed or confounded the one with the other. *W. S. M.*



FIG. 126.—AZALEA OBTUSA: HARDY SHRUB: FLOWERS ORANGE-RED.

AZALEA OBTUSA.*

THE accompanying illustration (fig. 126) represents a very charming little plant with vivid orange-red flowers. It was first sent to this country from Shanghai in 1844 by Fortune; but had probably been lost to cultivation for some time until its reintroduction from Japan by Messrs. Veitch. The specimen figured was grown in the gardens at Farnborough Grange, by Mr. John Crook, whose employer is a great lover of trees and shrubs, and knows them well. Azalea obtusa makes a floriferous, compact-growing little bush, and is quite as hardy as the well known and deservedly popular A. amœna. The following extract from a letter of Mr. Crook's is, as far as it goes, definite enough:—"I observe it stands very much more frost than the Indian Azalea; it was standing last autumn with some of the latter, every bloom of which was killed, but it had not a single bud injured. It is a much better plant than A. amœna." Dr. Lindley mentions that, in addition to its other merits, it possesses that of being sweet-scented like Sweet Brier. In his original description [Dr. Lindley speaks of A. obtusa as follows:—"This charming shrub may be regarded as the gayest of all the red Chinese Azaleas in cultivation. It is a little bush with very blunt leaves, both smaller and narrower in proportion than we find upon the species already in our gardens, and also smaller flowers of the most glowing red. . . . The segments of the corolla are nearly oval and sharp-pointed, the upper one is not much smaller than the others, and is faintly blotched with purple. Its high northern latitude would seem to indicate that this plant may be hardy, but it has hitherto been treated as a greenhouse shrub. . . ."

Botanically speaking there is no line of demarcation between the genera Azalea and Rhododendron, and so the former is merged into the latter by all the best authorities. For horticultural purposes our plant may, however, if only for the sake of brevity, retain Dr. Lindley's name. The correct appellation is Rhododendron indicum var. obtusum.

In Japan Azalea obtusa has been found in a wild state on dry stony hills in Nagasaki, and also amongst bushes in the hilly region in Senano. Like so many of the Japanese plants it is also widely cultivated in the gardens round the temples, &c. *Geo. Nicholson.*

* Azalea obtusa, Lindley, in *Journ. Hort. Soc.*, vol. i., part 2, p. 149; *Bot. Reg.*, xxxii., 37; Rhododendron obtusum, Planchon in *Revue Horticole*, 1854, 46; R. indicum., Sweet; var. obtusum, Maximowicz, *Rhodod. Asiæ orient.* 40.

New Garden Plants.

THRIXSPERMUM INDUSIATUM, *n. sp.**

ANOTHER discovery of Messrs. Linden in the Malayan Archipelago. It might be called an excellent orchidic *attrape*. The leaves are soft, shining, very long (exceeding a span), very broad, very promising; and there appears a brown peduncle, shorter than the leaves, with very short triangular bracts and one flower. Flowers expanding at long intervals, rather small, white outside, yellowish inside, with red spots, which are shiny also on the outside. The lip is white, ovary brown. The glory of the plan lies in its cylindrical spur having a kind of bucket at its apex, for which reason I called it "indusiatum." I had an inflorescence and a very good plant kindly sent me by Mons. Lucien Linden. *H. G. Rchb. f.*

CYMBIDIUM EBURNEUM (*Lindl.*) PHILBRICKIANUM, *n. var.*

Mr. F. A. Philbrick, Oldfield, Bickley Park, Kent, kindly sends me a two-flowered inflorescence of this. The plant is stated to be quite like Cymbidium Parishii in growth. The flowers are longish like those of Cymbidium eburneum, petals and sepals rather narrow, side laciniæ of lip angular, well apart from the narrower anterior mid-lacinia, wavy. Callus narrower with most obscure mid-keel. Colour quite white. This surprising variety is gladly dedicated to its intelligent possessor, who sent me lately five Barkerias, glorious! Phalænopsis Schilleriana, Cattleya Lawrenceana, and to whom also Lælia Philbrickiana was dedicated. *H. G. Rchb. f.*

CATTLEYA LAWRENCEANA (*Rchb. f.*) CONCOLOR, *n. var.*

Once more a most agreeable surprise from Mr. F. A. Philbrick, of Oldfield, Bickley Park. It is an exceedingly fine thing, a Sanderian importation, having the flower of one whole shade of fine light purple. The anterior part of the lip is not dark purple, it has the same colour as all the other parts. Thus Mr. Philbrick states rightly it makes one think of a Cattleya Skinneri with no dark colour at the end of the lip. It is said to be very attractive by candle-light. I really think it is quite an acquisition. May it appear at more places. *H. G. Rchb. f.*

ARCHITECTURAL AND BUILDING TRADES EXHIBITION.—The firm of W. Richardson & Co., Darlington, have secured the Silver Medal of the Society of Architects for their patent system of ventilation as applied to horticultural erections.

* *Thrixspermum indusiatum*, n. sp.—Foliis densis oblongo ligulatis spithamæis, usque tres pollices latis, apice inæqualiter bilobis; pedunculo racemifero foliis breviori, dense racemoso; bracteis triangulis parvis; sepalis ligulatis obtusis, lateralibus majoribus; petalis cuneato oblongis obtusis, labelli unguiculati, dentibus lateralibus semifalcatis parvis, lacinia mediana æqualiter retusa, calcari cylindrato magno ovarium non æquante apice quasi indusiato i.e. membrana crassa arguta cupulari supra tertiam apicilarem introrsum ascendente. Quasi Coryanthes inversa! Insul. Sondaic. *H. G. Rchb. f.*

SHADING OF ORCHID-HOUSES.

This is a subject which has exercised the minds of cultivators continually since Orchids were introduced to this country. The importance of the subject has been intensified during the last ten or fifteen years, owing principally to the build of the modern houses, which are of very light construction, the panes of glass being of large size, and the woodwork but very slightly obstructing the rays of the sun. It is very generally admitted that some kind of shading is necessary, the most primitive kind being the rather clumsy method of obscuring the glass by daubing it over, either externally or internally, with paint of some kind.

To this system of shading there are many serious objections, the principal one being this, that even on days when the sky is quite cloudless the shading is really required only when the sun shines directly on the plants. Let us suppose the house is of the span-roofed form, running north and south. In the morning the side of the house exposed to the east has to be shaded in the hot summer weather as early as 6.30 A.M. The other side will not be exposed to the sun for three hours longer, and by 2 P.M. the shading on the east side may be rolled up. That on the west side may not require to be removed until about 5 P.M.; this would be the latest hour. The plants should be exposed for an hour or more at that time, to the sun. In dull days it may not be necessary to shade at all; whereas if some kind of paint is used on the glass, the shade is always there, whether it is required or not, and the plants suffer by the loss of the light twice in a day, and sometimes all day long. It must not be forgotten that shading ought to be used only to prevent the plants being injured by the direct rays of the sun, and for no other purpose, if we except the use of it to protect the glass from frosts in very cold nights, as by that means the temperature may be kept at least 5° higher without raising the temperature of the water in the pipes.

The use of blinds is, of course, much more expensive, in the first place, and this expense is still further increased—perhaps it is doubled—by the attention required to roll up and let down the blinds. In the case of the plants under my own care the blinds are rolled up and let down again sometimes six times in a day, owing to the sun being obscured by clouds and shining unobscured alternately. The shading we use is not very thick, and the most durable is a screen made entirely of Flax, which is 2 yards wide, and is sold at a shilling a yard run. This is sewn together to the size required, and is bound round with strong webbing. It is nailed to a lath fixed to the top of the house, the other side of it being fixed to a roller, which is made to run up or be let down easily by means of a grooved wheel fixed at one end. It is easily pulled up by a cord wound round the groove in the wheel. My advice to Orchid growers is to shade, but the shading ought not to be used unless it is really necessary.

Some good Orchid amateurs and others have come to the conclusion that many Orchids ought not to be shaded at all. The owner of a large collection of Orchids known to fame, but whose name I may not mention without his permission, was looking through our collection the other day, and the question of shading was introduced. He told me that he did not allow the use of shading on his Cattleya-houses, in any form. No blinds are put up, so that from early morn to dewy eve the sun shines on the house. I have not seen the plants, but was assured their condition was very satisfactory. I had the opportunity of examining the large collection of Cattleyas, Lælias, Dendrobiums, &c., grown in the York nurseries of Messrs. Backhouse & Son, quite recently, and they were certainly very satisfactory. The large span-roofed house there is well known to Orchid fanciers. It is of light construction, the panes of glass are of large size, and yet no shading of any kind has been used for several years. The time of my visit was April 6. In the south of the country Cattleya Trianæ was nearly over, but in this house there was a magnificent display, some of the varieties being very fine indeed. The pseudobulbs and leaves were stout, and shorter than usual, the great profusion of bloom being due to their perfect maturation the previous season. The earliest plants of Cattleya Mendelii were mingling their gorgeous blooms with the above, and my attention was drawn to the particularly fine plants of C. gigas and the C. Sanderiana type. They were starting into growth, and such vigorous growths as are seldom seen anywhere. Water is used very freely to counteract the effects of excessive evaporation, and later in the season the plants are syringed overhead. Dendrobiums do well in such a house, and I noticed a small well-grown example of Renanthera coccinea; this is seldom seen in flower, but with the treatment it receives in this unshaded Cattleya house it had produced its handsome spikes of flowers on plants 2 feet high. Lælia anceps, and the white varieties recently introduced, succeed remarkably well in an unshaded house. The glass is thicker, and not so transparent as that in the large house. The appearance of the plants of Lælia anceps, and the satisfactory condition of the most recent growths, showed how well the cultural conditions agreed with them. The first white variety to flower in England from the large importations introduced in February, 1885, was produced in this house; it was a fine variety, and the pseudobulbs were very strong. Cattleya citrina seemed to be quite at home, suspended quite close to the glass roof; and notwithstanding the excellent condition of the two species named, I was informed that the usual run of Cattleyas did not succeed quite so well in this house as they did in the one with clear glass.

An experience of this kind would be evidence, more or less conclusive, that permanent shading, however thin, is not so good as no shading at all for such popular Cattleyas as C. Trianæ, C. Mendelii, C. Mossiæ, C. gigas, C. Warneri, or the C. labiata group, and C. Lawrenceana. I have several times seen Lælia anceps grown without shade, and it is well known that the beautiful L. majalis, and L. atumnalis also succeed remarkably well in a house quite unshaded, in fact almost scorched by day and comparatively cool at night. It is not proposed to do away with shading either for cool Orchids or for those requiring the temperature of the warmest house. On the other hand, there is evidence that a less amount of shading than is sometimes used would be better for Cattleyas, and what shading is used should be applied with more caution. I am sure many readers of the *Gardeners' Chronicle* would be glad of any information which would go to prove that a certain class of Orchids can be grown year after year well without shading. Many gardeners obtain successful results from particular modes of culture; but others do not share in their experience, because some of the best cultivators have such a decided repugnance to commit the details of their work to writing. *J. D.*

IRIS CENGIALTI.

(*Concluded from p.* 555.)

But my difficulties are not yet at an end.

1. My friend Mrs. Horace Darwin gathered for me, on the east side of the Lago di Guarda, low down on the slopes of Monte Baldo, an Iris, which I at first thought might be I. cengialti again; but which, on cultivation, turned out to be intermediate between I. pallida and what I have just described as the typical I. cengialti. It is a dwarf I. pallida, and it dies down nearly completely in winter, but the flowers are larger than those of I. cengialti, and more closely resemble those of the typical I. pallida, and the inflorescence though curtailed is more abundant than that of I. cengialti, six or seven flowers being produced. It has not ripened seed with me as yet, and, therefore, I cannot apply this test as to its cengialti nature. Pending knowledge on this point, I should describe it as closely allied to I. cengialti, but differing from that form by features marked enough to make it in the eyes of a gardener a distinct plant, the differences being in the direction of the typical I. pallida. I will call it for the present A.

2. I found on the hills to the west of Riva, and on Monte Brione to the east of Riva, an Iris, which on cultivation turns out to be a dwarf, or rather a small-flowered, low growing I. pallida—a true I. pallida, with the foliage perishing during winter, and yet by reason of its size and stature very distinct as a plant from the ordinary typical pallida. I will call this B.

3. Messrs. Backhouse have kindly given me plants of two forms of what they have been led to consider as I. cengialti, one a light blue, the other a deeper blue, both gathered I understand by Mr. Potter in the neighbourhood of Riva. I have not seen these in flower as yet, but I am confident that they are both of them different from the typical I. cengialti, for the foliage of both is quite persistent through the winter. I will call them C. and D.

4. Lastly, I have a plant from Mr. Ware, called by him formerly I. pallida minor, and now, I believe, appearing in his catalogue as I. cengialti. This resembles I. cengialti in so far as it may be described as an I. pallida, with dwarf foliage, abbreviated inflorescence and smaller flowers; it also dies down completely in winter. But the foliage is of blue-green, not yellowish-green hue, the rhizome is less compact, the perianth segments are narrower, as well as of a deeper blue; the spathe valves are more distinctly flushed with purple, and the plant flowers with great regularity a second time in autumn. This I have never known I. cengialti to do during the five or six years it has been under my observation; it has a faint distinct, alliaceous odour which is wholly absent from cengialti, and while I. cengialti seeds freely, Mr. Ware's plant has never once seeded with me during the four or five years I have had it; I can say nothing therefore about the characters of its seeds. I will call this E.

Now, the question which I wish to consider, and which I dwell on because it is an example of a difficulty which must always occur to almost every one attempting to study closely any group of plants is, Supposing all these forms, which I have called A, B, C, D, E, are for botanical or gardening purposes worthy of preservation, what names are to be given to them? For, if they are to be preserved, names must be given to them, otherwise confusion, worry, and disappointment are sure to arise. For my own part, I think that A, B, and E, ought certainly to be preserved. I say nothing at present about C and D, not having as yet seen them in flower, and thinking it possible that one of them may be identical with B. They are worthy, I venture to think, of being preserved for botanical reasons, since to such an one as myself, desirous of getting hold of "the whole story" of the nature of the plant form we call "Iris," these smaller variations are no less instructive than the larger differences which we formulate as species. Nor should I like to lose them from my garden, for they are all pleasant to my eyes and each possesses something which the others have not. For example, I should regret the loss of E, whose second flowers, wringing with dew on a cool September morn, awake afresh the memories of the bright May that is gone, and besides, by furnishing a link where the chain is weakest, help one to the boast that I am rarely three weeks in the whole year without an Iris bloom to look at.

In urging, however, that these forms should receive names I do not mean that these names should be brought out on every occasion just as for some purposes the larger tokens which mark a genus is all that need be made known, the smaller tokens which denote species being passed over in silence; so for some purposes the specific token is alone needed, and all the smaller differences may be ignored. Moreover there must be a limit to every human catalogue, and should increased knowledge extend my list from A to Z, and beyond, want of space and of time, and indeed of names, might put a stop to such continued naming. Lastly, it seems to me important that the name, while giving some indication of the nature of the plant, should be of such a kind that it should be at once recognised as not declarative of the possession of those strongly marked differences which are indicated by the term species. The name ought to tell us at once that the plant is not a distinct species, but simply a variation on a species, and that not a large variation, but a variation slighter than such as is indicated by the technical term "variety."

This end, I venture to think, may be gained by adding to the specific or subspecific or varietal name some trivial word, written in English, and chosen, according to pleasure, from the names either of personal friends, distinguished statesmen, ancient heroes, celebrated generals, or of places. I am aware that the Narcissus Committee proposed to limit the use of such words to new forms appearing under cultivation, in order to distinguish these from forms occurring wild. But such a proposal seems to me unphilosophical and, indeed, misleading. The new name is rendered necessary by the appearance of certain new features, the outcome of certain conditions, seminal or other, and those new features have the same differential magnitude, whether the agency concerned in their production is an insect, or the wind, or a man. When a flower which usually is blue is found as a white form, it does not matter two

straws in respect to the magnitude of the change from blue to white, whether the white flower is found on the mountain side or in a nurseryman's garden. It is the magnitude of the change, of the difference developed, which necessitates, and which alone necessitates the new name. I am therefore in favour of applying these trivial names both to wild and garden plants, in order to denote differences less even than those which constitute a variety technically so-called, and for which Latin names may be fitly used. Conversely, where a garden product exhibits permanent differences of adequate magnitude, such as would put it, differentially, on a level with a natural species or variety, I should have no hesitation in applying to such a plant a Latin name. I fully acknowledge the advantage in the name indicating whether the new form which bears the name is of wild or garden origin. But this, I think, may easily be gained by always using a geographical term for a wild plant (and this will have the further advantage in the name itself indicating the habitat) and a personal term for the stranger appearing in a garden. I may add that it would be of advantage if Latin geograpical terms were more largely employed for species, subspecies, and varieties, reserving the Latinised form of distinguished botanists and others for genera, or other larger groups, and honouring the zealous friend who sends home a new plant in some other way than by attaching his name to it.

I may here diverge for a moment to suggest that such trivial names should be (1) short, (2) if possible capable either of being easily pronounced in different tongues, or of being easily translated from English into other languages, and (3) if possible suggestive. It should be short, because, though the discoverer or raiser of a new form may wish to name it after his friend, "John Henry James Charles William Smith," the world will be distinctly the better if he is content to call it "John" or "Smith." That it should be such as different mouths can pronounce will be admitted by every one who reflects that such words as Bloughborough or Chronschkrewski are respectively "hard sayings" to different peoples. And that it should be suggestive is involved in the very essence of a name.

In my own garden catalogue I have labelled A, "Baldo," and B "Riva," and have provisionally called E "Ware," though I should like to exchange this for a geographical name if I could learn exactly from whence the plant came. These names, or rather the two first, satisfy the above conditions, and I venture to think that they are such as might fully become permanent.

But now comes the further difficult question, To what specific, subspecific, or varietal title are these trivial names to serve as respective additions? They all belong to the group I. pallida, but E is distinctly much nearer to I. cengialti than to the typical pallida; and I have no hesitation in labelling it I. s.-s. cengialti, Ware. Similarly B seems to me beyond doubt nearer to pallida than to cengialti, and I should therefore propose to call it I. pallida, Riva. I should of course desire that the name should indicate its proclivity towards cengialti, but I do not see how that could be accomplished, unless further study of the pallida group should render it necessary or desirable to institute a new subspecies, with a new subspecific name, intermediate between the typical pallida and cengialti. With regard to I. A I am at present in doubt, but see no reason why in the end, upon fuller knowledge, I shall not be able to make up my mind. I shall in all probability be largely guided by the characters of the seed. If the seed is like that of cengialti I shall call it I s.-s. cengialti, Baldo; if not, the plant will remain on my list as I. pallida, Baldo. I. pallida and I. cengialti thus become to me two centres of two circles whose circumferences possibly, or probably, cut each other, but whose areas can be kept apart, except perhaps just where the circles kiss; and, in all probability, these kissing points will be rare and not cause any practical confusion.

As to C and D, I hope to be able to make up my mind when I have seen them in flower, and have gained fuller knowledge of them. Nor do I despair of being able, after this fashion, to label and pigeon-hole any Iris belonging to these groups which I may come across. And of course the same principles may be applied not only to other groups of Irises, but to all other plants. The terms genus, species, subspecies, varieties (I keep all these words because they are in use) indicate to my mind tokens of differences of diminishing magnitude, and thus centres of groups of decreasing complexity; for all these I should propose to employ the Latin names. In the case of plants exhibiting differences of lesser magnitude I should propose to ascertain to which centre they were nearest, and to add to the Latin name of that centre a trivial English name. Or these plants, with trivial names may be regarded as satellites of some larger body—of a sun, of a planet, or of some moon itself. I have incidentally given above instances of a satellite to a species, and to a subspecies, but it would not be difficult to find the necessity of giving a name to a satellite of a varietas. Thus, I have argued that I. cengialti should be regarded as a subspecies, not as a varietas. But if the differences it exhibits were deemed sufficient only to justify its being called I. pallida varietas cengialti, we could still append the words "Loppio," "Baldo," &c., to designate the plants spoken of above. We might simply in such a case add "Loppio," &c., after cengialti, without any intervening word (in which case part of my argument concerning the Loppio Iris would fall to the ground); or, if we pleased, we could make a distinction between varietas in Latin and variety in English, corresponding to the distinction urged above between the Latin and English names. Thus, in general, while varietas Smithiana denoted differences only less in magnitude than those proper to a subspecies, variety Smith would mean much smaller differences. It may seem awkward—as, indeed, I wrote above—to write varietas cengialti, variety Loppio, but we undoubtedly do stand not only in need of three terms, like those of species, subspecies, and varietas, to denote differences of decreasing, but still considerable magnitude, but also a fourth term to denote still smaller differences. If we cannot use variety in English, as distinct from varietas in Latin, we ought to invent and to use some new term.

A plant which lies near the circumferences of two circles, will have to be studied sufficiently closely in order that its distance from the respective centres may be adequately judged before it is finally named. It may be difficult sometimes to make up one's mind, but in this, as in other things, the difficulty may be met by increased pains.

A short name will of course never tell everything about a plant, but with the above plan it will tell a good deal. *M. Foster, Shelford.*

THE EXTENSION OF VINE BORDERS.

In the case of young Vines which have been planted within the last few years in new borders, say at from 4 to 6 feet wide at first, to be afterwards made up annually in sections 3 feet wide as the roots extend, until the space allowed for the root is filled with compost, the present is a good time to proceed with the extension of such borders; and as we have just completed the making of a section 128 feet long and 3 feet wide, outside our principal range of vineries, a few remarks respecting the manner in which the work was done, and a description of the soil used, will therefore be not only seasonable, but may also be instructive to not a few of the amateur readers of the *Gardeners' Chronicle* whose Vine borders may require some extension or addition.

The compost which we used consisted of the following materials, in the proportion of five cartloads of good turfy loam which had been cut and stacked for twelve months, one load of horse-droppings, one load of wood-ashes, one load of lime-rubble (consisting largely of old plaster), and 4 bushels of fresh soot—the whole being turned over well when in a state of moderate dryness before being used. Before commencing, however, we had cut about sixteen cartloads of turf, of about 1¼ inch in thickness, from an out-of-the-way part of the park, with which a kind of retaining wall was built simultaneously with the breaking up of the previously made one, with a five-tined fork, and the making of the new section of border; making the latter about 6 inches higher than the section made last year, as the new soil will subside so much within as many weeks from the time of making it. This done, lay on a surface-dressing of short dung to the thickness of 3 inches. This will retain much of the moisture in the border.

I may remark that the depression caused in the park by the removal of the turf has been filled up with good soil, levelled, grassed and rolled, and enclosed by hurdles to keep the cattle off it for a few months. Thus treated, no reasonable employer is likely to object to his gardener having turf from the park for the purpose indicated after the matter has been clearly explained to him.

In the case of borders which have been made to their full extent for three or four years, a marked improvement in this year's crop may be effected by cutting out a space of either the inside or outside border to the width of 4 feet, commencing at about 6 feet from the stems, the entire length of the border, removing all soil and roots from that space, and replacing it with compost the same as that indicated above. *H. W. Ward, Longford Castle Gardens.*

ORCHID EXHIBITION AT MR. WILLIAM BULL'S.

In his show of Orchids this year, for extent, beauty, and variety, Mr. Bull has equalled, if not eclipsed all his former efforts. In the matter of variety and the presence in bloom of a large number of sterling new plants, the display leaves nothing to be desired, for while there appear glorious examples of the finest varieties of Cattleyas, Lælias, and Odontoglossums, there is hardly a genus of Orchid to be had in flower at this season which is not represented.

The approach to the Orchid show-house through the stately Tree Ferns and Palms of the large conservatory renders the effect of the transition into such a scene of floral beauty all the more charming, and the beauty of the varied Orchids in flower is in turn aided and heightened by their being skilfully arranged among Maidenhair Ferns, Cocos Weddelliana, Asparagus plumosus, and other plants of graceful foliage but sober tint. Still, again, with an eye to general effect, small-flowered Orchids are arranged among the Maidenhairs in clumps of six or eight—a plan which is infinitely better in every way than dotting them about, and one which many town decorators might study with advantage for practice with their humbler subjects.

The principal show house, which is 100 feet in length, but made to look much larger by a clever use of mirrors at each end, has the middle of the centre stage arranged with the taller Vandas, Sobralias, Dendrobes, &c., together with a few bold foliage plants, and both the centre and side stages are edged throughout with the elegant Panicum, which gives uniformity and seems to connect every portion of the charming and varied display which comes under the eye with an indescribable grace. But few of the flower-pots are left exposed by the frondage of the Ferns and Palms, and for the general arrangement it may be said that none could have done better with the material than Mr. Bull and his clever *chef*, Mr. Godseff. The whole show is arranged *en suite*, every part of it being of equal merit. The beauty of its specimens must impress all who behold them; but to the Orchid grower they have a double interest, for some of them he will probably never have seen before. The first which we notice of this class is Oncidium undulatum, a new species of the O. macranthum section. It has numerous large wax-like flowers, with olive-coloured sepals tipped with white, and white petals barred with pink and brown; the pink triangular lip with a tongue-like continuation is very peculiar, and altogether the plant, which is related to O. orgyale and O. ventilabrum, is very desirable. It was discovered on the Paramos de los Papas, La Ascension, New Granada, at an altitude of over 6000 feet. Near this is the grand yellowest form of O. macranthum, known as O. m. aurosum—the most effective of its section. Odontoglossum Alexandræ Chelseiense, with its massive fringed and spotted flowers, is, in its class, the most noteworthy. New Cattleyas are C. Skinneri splendens, a giant variety with ten very large and bright rosy-magenta coloured flowers on one spike, the size and quantity of the blooms so displayed proving its excellence and distinctness; Cattleya Lawrenceana oculata, a quite new form with rose sepals and petals and white-tubed labellum tipped with rose, which arranges well with the still new, almost wholly crimson ordinary type of C. Lawrenceana which appears in good quantity. The Cattleya Mossiæ have some grand forms, one being very near that known as Rothschildiana and the C. Mendeliis are superb, but C. M. grandis with its immense highly coloured flowers, and C. M. Empress,

which has blush sepals and petals and violet-crimson lip, are exquisite.

Before the visitor has been long engaged on his inspection he will be struck by the extraordinary variability of plants of the same species, and if he be a plantsman he will rejoice at the opportunity here given for noticing this unaccountable peculiarity. At Mr. Bull's show Odontoglossum citrosmum—always beautiful—appears in at least a dozen different garbs, running from the ordinary almost wholly pale pink form to varieties with white segments and rose-coloured lip; with rose-coloured flowers, dotted with crimson; with white flowers spotted with brown, some with lemon-coloured eye, and one, the rarest and finest of them all, named O. c. aurantiacum, with large rosy flowers with dark orange centre. Lælia purpurata, too, which is represented by a quantity of distinct forms, runs down from the grand nearly black-lipped Brysiana form through all beauty), Odontoglossum triumphans, the rare O. histrionicum, O. cirrosum, O. Hallii, O. nebulosum, O. n. pardinum, O. cordatum, many really handsome O. maculatum, O. Andersonianum, Masdevallia ephippium, M. Benedicti, M. ignea vars., M. Chelsoni, M. Wageneri, M. Veitchiana gigantea, which may be called the showiest of Masdevallias; and the numerous fine forms of M. Harryana, of which the distinct and brilliantly coloured M. H. acanthifolia is one of the handsomest. The Dendrobes are in profusion, a selection of the prettiest being D. thyrsiflorum, D. Falconeri, D. Farmeri, D. densiflorum, D. chrysotoxum superbum, D. albo-sanguineum, D. crassinode, D. cucullatum giganteum, D. transparens, D. Bensoniæ, D. Cambridgeanum, D. Paxtoni, D. Jamesianum, and D. aggregatum majus, the plants of the last two especially sending out showers of bloom. In bloom among the Oncidiums are the varieties of O. cucul- and some pretty scarlet Sophronitis in like profusion. Suspended all round are fine examples of Oncidium concolor and Cattleya citrina, and in the storehouses a grand succession of Odontoglossum vexillarium, Oncidium macranthum, Cattleyas, Lælias, &c., supply an endless prospect for the continuance of the show.

COCOA-NUT MATS AND MATTING.

In the *Gardeners' Chronicle* for December 26 last, at p. 808, a description, accompanied by a remarkable illustration, was given of the preparation of Cocoa-nut fibre for brush making and horticultural purposes. In connection with this subject an account of what I saw and learnt during a recent visit to a mat manufactory may be of interest.

The attractive premises of Messrs. Treloar & Sons,

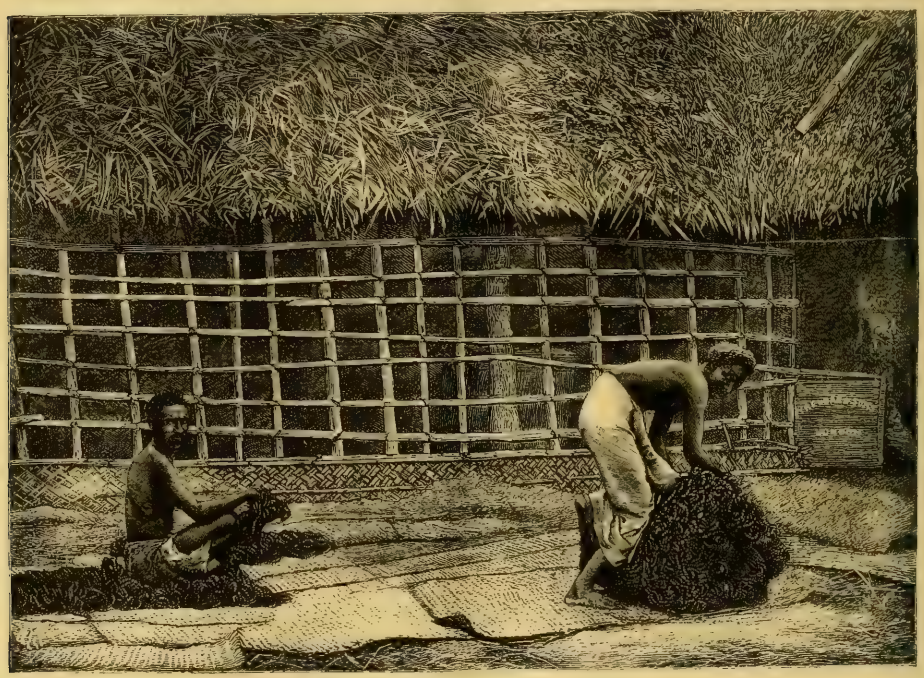


Fig. 127.—COCOA-NUT FIBRE: BUNDLING THE YARN.

the intermediate stages until it approaches on the borders of L. grandis with the handsome light coloured L. p. Schroderii and L. p. rosea, both of which exhibit traces of L. grandis, as well as L. purpurata. Also illustrating the great variety of Orchids, and exhibiting a sound reason why fine varieties should command high prices, are many grand specimens of Cymbidium Lowianum, one having several spikes over 5 feet in length, and with from twenty-four to twenty-seven flowers on each. These run from the almost wholly green ordinary form up to C. L. atropurpureum, which has flowers of fine form, the sepals and petals being traced with crimson, and the lip of a fine velvetty crimson, constituting it a grand and showy form, worth any number of the common kind.

Among the many very fine examples of Odontoglossum Alexandræ, O. Pescatorei, and other favourite flowers, we noted finely in bloom and frequently in quantity Ada aurantiacum, Vanda cœrulescens, Odontoglossum vexillarium splendens, O. v. roseum, many varieties of Lycaste Skinneri, including some good L. S. alba, and the new L. S. rubella marginata (a great latum, O. maculatum Russellianum, O. phymatochilum, O. nigratum, O. pubes, O. serratum, O. Marshallianum, O. Jonesianum. The Cypripediums are represented by C. barbatum Warnerii, C. b. pictum (a very lovely variety), C. ciliolare, C. Dayanum, C. concolor, C. niveum, C. Godefroyæ, C. lævigatum, C. Boxalli, C. vernixium, C. Hookerii. Among other species we noted Angræcum sesquipedale, A. Leoni, Phalænopsis leucorrhoda, P. Luddemanniana, P. grandiflora, P. rosea, Lælia cinnabarina, L. anceps oculata, L. elegans alba, Cymbidium eburneum, Epidendrum nutans (very rare and pretty), E. Parkinsonianum, a new white-flowered Maxillaria, the true wholly red Trichopilia crispa, Anguloa Clowesii, Miltonia cuneata, Cattleya Trianæ Backousiana, Chysis bractescens, Colax jugosus, Calanthe veratrifolia, C. pleiochroma, Lycaste gigantea, Trichopilia tortilis, the very rare and curious Pleurothallis scaphocepha, &c. Some of the plants display a wonderful profusion of bloom in small pots, such as Odontoglossum Roezli, twenty flowers; O. Phalænopsis, in 4-inch pots, twenty; O. Oerstedii, eighteen; O. Rossii majus, in 5-inch pot, nineteen; on either side of Ludgate Hill, close to the railway bridge, are no doubt well known to most of our readers, not so, probably, the factory where those neat and artistic mats and mattings are made. This factory is situated in Holland Street, close to the Surrey side of Blackfriars Bridge, and though in itself extensive and commodious, each department is pretty closely arranged one with the other, which serves two purposes, that of compactness and utilisation of space, land in such localities being a not inexpensive article. The first room into which I was taken after passing through the offices was the sorting-room, a spacious and airy apartment, at one end of which were bundles of cocoa-nut yarn of various sizes, shapes, and colour, or rather, I should say, tints, for all the yarns, as they are here imported, are of the natural shades of brown, none being dyed. Cocoa-nut yarn comes either in bales weighing 2¼ cwt. each, or in dholls, 600 or 700 of which go to the ton; these latter, however, are generally of a commoner kind of yarn; they are usually about 18 inches long. The best yarn is that known as Cochin, which is lighter in colour

and finer in texture than any others; the next quality is Singapore, and the darker Fiji. These differences are not the result of any accidental inferiority in the nuts themselves, but are simply due to the produce of the different countries producing the nuts. In its natural state cocoa-nut fibre is tough, elastic, and springy, very strong and durable both in dry and wet situations, but very much deteriorated by chemical bleaching, which practice, however, is sometimes resorted to by the cheaper mat makers. Dyeing, however, such as red and black, does not injure the strength, and the crimson coir matting, which has been laid down so long in the Albert Hall, and which is very extensively used in the Colonial and Indian Exhibition, is all dyed after arriving in this country.

But to return to the sorting-room. Numbers of women are busy here, who, from constant practice, have sharp eyes for discerning slight differences of shade, sorting and classifying the various skeins. It must be borne in mind that this yarn is to be converted whites. It will not be necessary to describe the different kinds of matting, and the various patterns being worked by the numerous looms, but we will pass on to the mat factory, where a similar din was being kept up by the constant motion of the looms. In mats there is perhaps a greater variety in quality, make, and design than in matting. A really good cocoa-nut mat is composed entirely of cocoa-nut fibre throughout, not only the pile on the upper surface, but the warp and weft will be seen at the back to be cocoa-nut yarn; but in the commoner sorts the pile alone is coir, and the warp is hemp or jute; then again there are mats for inner doors, in which the centre only is coir, and the coloured ornamental borders are wool. These are often made in the looms in continuous lengths, and afterwards cut out and the edges sewn over, but the best qualities are always made separately.

It seems scarcely possible that the even pile of a well made cocoa-nut mat should be produced as it is, simply by the skill and dexterity of the weaver who in the light coloured Cochin and the dark coloured Fiji fibres, the natural colours of the fibre, which blend so well with each other, producing a charmingly soft effect; various artistic designs are worked in these fibres, the outlines of the patterns being carefully and sharply defined by hand-clipping with shears.

Besides the mats made in this factory the proprietors utilise a good deal of prison labour, such, for instance, as at Holloway and Pentonville Prisons, where the commoner kinds of mats only are made—a quality, indeed, which it is said would not afford a living industry under the ordinary conditions of labour. The plan adopted is for Messrs. Treloar to supply both tools and materials to the prisons, and become purchasers of the labour of the prisoners at a specified rate.

The fibre after it is delivered at the works in Holland Street is combed or carded by a powerful machine with formidable teeth, which cleans the fibre and draws it into long, straight "roves," ready for the weaver. It is difficult to see this machine in full



Fig. 128.—Twisting the coir.

into mattings, not door-mats. The skeins, after being separated, are taken to the further end of the room "to be wound or reeled and spliced on gigantic bobbins till each bobbin contains a continuous thread or line of one colour, a mile or so in length. This is then 'warped' by the women.

"The next operation is that of beaming by the weaver, who spreads or beams the 'warp' on the roller of his loom. This consists of about 400 or 500 threads of 46 yards in length—that is to say, of the length to which a piece of woven matting will extend. The 'warp' is called a 'chain,' and when it is completed forms an enormous bundle of yarn, which is taken to one of the weaving shops, where in a loom of commensurate size to the vast bulk of the proposed web it is woven into plain matting, or with a pattern which, as it runs in lines only, can be effected in the same loom."

At the time of my visit one of these enormous bundles of yarn was being brought in for the loom. It was the material for a length of matting with a red border, and looked a hopeless jumble of red and white yarn. A very few minutes' manipulation, however, by one man soon brought the yarns parallel with each other, all the reds coming together, and all the has by his side a quantity of the loose fibre, a handful of which he takes from time to time and quickly inserts between the warp and weft, the whole being driven home tightly by the heavy frame which is brought to bear upon it. "When coloured patterns are to be made, the coloured fibre is introduced with remarkable skill in exactly the proper proportions, and in the right place, special patterns or letters being worked from a drawing which guides the operator in the performance of his task. When the weaving of the thick, deep pile mat is completed, it is taken to the shearing machine." This consists of a series of revolving knives placed diagonally exactly like those of a mowing-machine; the mat is carried through and its surface is literally mown, after which it is passed through a brushing-machine consisting of stiff circular brushes arranged in exactly a similar way to the shearing-machine and it is finally finished with hand shears to a beautifully fine, smooth and even surface. The small particles of fibre that are mown off and brushed out soon form a large heap somewhat like fine sawdust in appearance; this is not a waste product, but is used for stuffing cushions and mattresses.

At the time of my visit the workmen were engaged in making some very choice pattern mats worked working power, for the dust it creates is blinding and the noise it makes is deafening, fully justifying the name under which it is known—"the devil."

It is worthy of note that notwithstanding the large number of looms and other machinery constantly in motion no steam-power is used, the whole being worked by hydraulic power furnished by a company close by.

I cannot conclude without expressing my great obligation to Mr. W. P. Treloar for personally conducting me over the factory, and explaining to me all its details, as well as for the loan of the blocks (figs. 127, 128) which accompany this paper. *J. R. Jackson.*

NURSERY NOTES.

Cinerarias.—Messrs. J. Carter & Co., of Holborn, London, have a collection of these plants in flower just now at their Forest Hill Nursery. We should say that they were at their best when we saw them, and certainly they gave us great pleasure, both on account of their habit and of the variety of their colours. The habit deserves more than a mere mention, for this strain had not the fault of being too

close and heavy looking; on the contrary, almost every plant was of a free growth, and was more light and graceful than Cinerarias usually are: especially so was this the case with the white forms, which would be very useful for decorative purposes, as they did not make a gigantic lump of flower with no relief.

It would be difficult to say whether red or blue in various shades was the better represented; referring to blue we noticed some very fine shades varying from a rich deep colour to an azure or sky-blue, there was a great variety in the reds.

The plants which we saw (some 1000 or so) are all grown for seed, which is collected from all these various forms and mixed, it not being thought necessary to distinguish the various colours. All the flowers in this strain are of good substance and rich in colour, the plants consist mostly of selfs—much more so than in previous years, but there are some ringed and edged ones which are most attractive, especially the blue forms

Orchid Notes and Gleanings.

ORCHIDS IN FLOWER AT KEW.

Ada aurantiaca
Aerides Roebelini
Amblostoma tridactylon
Angraecum eburneum
Bletia Tyaeinthina
" purpurea
Calanthe brevicornu
Cattleya amethystoglossa
" citrina
" Trianæ
Chysis bractescens
Cirrhopetalum fimbriatum
Coelioda rosea
" sanguinea
Celia Baueriana
Cælogyne cristata
" var. Lemoniana
" elata
Cymbidium eburneum
" Devonianum
Cypripedium barbatum
" var. biflorum
" concolor
" Harrisianum
" Hayanum
" hirsutissimum
" Leeanum
" longifolium
" porphyreum
" pubescens
" Schlimii
" spectabile
" villosum
Dendrobium aggregatum
" aureum
" barbatum
" chrysotoxum
" crassinode
" crepidatum
" Dalhousieanum
" densiflorum
" fimbriatum oculatum
" Ruckerianum
" lituiflorum
" nobile
" parcum
" Pierardi
" pulchellum
" secundum
" sp. nov. Hong Kong
" superbum
" thyrsiflorum
" transparens
" Wardianum
Epidendrum bicornutum crassatum
" ellipticum
Eria excavata
" obesa
Eulophia Kirkii
Galeandra Devoniana
Goodyera procera
Isochilus linearis
Lælia cinnabarina harpophylla
" superbiens
Lycaste jugosa
" Skinneri
Masdevallia Chelsoni
" coriacea
" gibberosa
" Lindeni
" ochthodes
" psittacina
" Shuttleworthii
" xanthina
Maxillaria arachnites
" luteo-alba
" meleagris
" variabilis media
" " lutea
Nanodes sp.
Odontoglossum cariniferum
" Cervantesii
" citrosum
" crispum
" gloriosum
" luteo-purpureum
" marshallianum
" nebulosum
" Œrstedii
" Pescatorei
" pulchellum
" triumphans
Oncidium aureum
" Batemanianum
" cornutum
" cucullatum
" Papilio
Orchid sp. (Sobraliachlike flower), yellow
Ornithidium coccineum
Phalænopsis amabilis
" " rubrilabris
" Sanderiana
" Stuartiana
Phaius maculata
Physosiphon Loddigesii
Pleurothallis sp. aff.
Houglottis Lowii
Podochilus nana lata
Restrepia antennifera, and two other species
" cammata
Rodriguezia crispa
Sacc labium curvifolium
" cammatum
Saundersia mirabilis
Spiranthes colorata
" " var. maculata
Tainia latifolia
Vanda suavis
" tricolor

CYPRIPEDIUM HYEANUM.

Your readers will be glad to have some particulars about the Cypripedium Hyeanum which was awarded a First-class Certificate at the last meeting of the Royal Horticultural Society of London. This plant has flowered out of a batch of Cypripedium Lawrenceanum which was imported through Mr. Lowe, of Clapton. Mr. Jules Hye, of Ghent, who is probably the greatest Cypripedium amateur on the Continent, having seen this plant in the possession of the Compagnie Continentale d'Horticulture, had no rest until he had secured it for his collection, which, be it said *en passant*, includes almost every known species or hybrid of Cypripedium. I think there is only one gem which he has as yet not been able to obtain, and that is C. Stonei platytænium, but he hopes that one dayor other some English amateur will give him the chance of procuring it; he could, perhaps, also oblige that amateur by letting him have a young growth of one or more of his precious forms, as, for instance, C. Fraseri, a hybrid from hirsutissimum and barbatum, or C. tesselatum porphyreum, which has been figursd in the *Lindenia*, and is pronounced by all amateurs and other Orchid growers to be the finest Cypripedium extant. In your report about C. Hyeanum you say that this name was given by Lindley. I think it was Mr. Linden who, having sold it to Mr. Hye, gave it the name of his customer and friend. I am very anxious to know if the plant which Mr. White, of Earlsfield, exhibited, and which you allege to be the same thing as the one I speak of, had the same origin. A flower of Mr. Hye's plant has been sent to Professor Reichenbach. When Mr. Linden (Compagnie Continentale) exhibited this plant at the last Brussels flower exhibition Mr. Louis de Smet, of Ledeberg, exhibited a plant of C. Lawrenceanum which was just the opposite of this Hyeanum—it was the darkest lilac-coloured Lawrenceanum that has ever been met with. I heard a gentleman behind me—after having examined the extra pale C. Lawrenceanum? (Hyeanum?) and the extra dark Lawrenceanum of De Smet, and looked at some twenty to twenty-five ordinary forms of C. Lawrenceanum which Mr. De Smet had also exhibited—say that the extra pale and the extra dark forms were the parents of all those others. *Quien sabe! L. Masereel.*

RAISING GENTIANS FROM SEED.

IT is remarked that Gentians, and especially the alpine species, are among the most difficult plants to raise from seed. I thought so, too, for a long time, but my opinion has lately been entirely changed, and after having achieved great success I desire to tell readers of the *Gardeners' Chronicle* how they also may succeed.

Gentiana nivalis, L., is decidedly one of the most beautiful and one of the most characteristic of the alpine Gentians. Accustomed to the keen and fresh air of the glacial regions this plant has always been considered as one impossible to be acclimatised. It is an annual, and hence is one of the most remarkable exceptions to our alpine flora, nearly all the species of which are perennial. G. nivalis is met with on the grassy slopes of the Alps among the less vigorous and the finer grasses, almost always in sunny situations. It is found on the summits of Mont Tendre in the Jura. It must be known to those of my readers who may have visited the Alps, as its corolla, although small, is of so brilliant a blue colour that it effaces even the most beautiful of its neighbours. The flowers are, moreover, very numerous; I have counted thirty-seven on a single plant. If on poor soil, G. nivalis is dwarf and bears few flowers; it is quite the opposite in the grassy districts: thus in the valley of Fully in the Valais, where I have gathered very nice bouquets of this flower, which, in spite of the length and the consistence of its stem, always retains its distinctive marks of elegance and grace. I do not know whether this charming little alpine has been cultivated in England, but I can state with certainty that no one in Switzerland has yet succeeded in raising the plant from seeds. It is many years ago since I first tried to raise it, and I had given up all hope of success when, lately, I made the happy discovery that I had gained my point. In September, 1884, I collected a certain quantity of seeds of G. nivalis in the valley of Fully. These I sowed as soon as I returned to the Jardin Alpin. I made a mixture of turf, sphagnum, peat, and coke for the seeds, and awaited the result. Latterly as the seed-pans took up too much room in our little garden, I threw them away, thinking that after eighteen months the seeds would not come up. However, I preserved one pan. Within the last few days, greatly to my delight, I noticed that the soil was covered with young plants of G. nivalis, forming a carpet like moss. I hope to encourage, by this experience, those amateurs who are disheartened by their want of success.

G. Thomasii, *G. punctata*, *G. cruciata*, and *G. purpurea* are coming up *en masse* at the present time. They were sown in November in the open ground in a very light and porous soil, composed of one-third peat, one third leaf-mould, and one-third composed of a mixture of fine coke and a little sand. In this they grow up as thick as the grass on our lawns.

G. lutea has not yet shown itself, but it cannot be long now before it does so, as the seeds are already swollen. The same is the case with G. asclepiadea.

G. acaulis, sown last year, has not as yet given any sign of germination, although G. a. var. angustifolia came up at once, *i.e.*, a few weeks after having been sown. I must not omit to mention that the seeds of G. angustifolia were ripened here, whilst those of the type acaulis were gathered on the mountain. They were, however, quite ripe, as I can testify, as I gathered them myself. Why this difference? I cannot yet explain—I merely state the facts without comment.

G. verna, which was sown at the same time as G. acaulis, has not yet come up; however, I hope that if I wait as long as I did for G. nivalis I shall obtain some result.

A remarkable circumstance to be noted is that seeds of foreign species, such as G. affinis, G. gelida, G. macrophylla, G. Andrewsii, G. Walujewi, G. Fetisowi, G. Oliveri, &c., grow much more readily with me than the native species. I shall be glad to hear from any one who has information to impart or who may desire to ask any question on this subject. *H. Correvon, Director of the Jardin Alpin, Geneva.*

THE BULB GARDEN.

THE following extracts are taken from a communication of Professor Henriques sent to the Narcissus Committee, and read at the Scientific Committee on April 27. The paper was accompanied by dried specimens and coloured illustrations by the Professor and Mr. and Mrs. Tait of Oporto.

NARCISSUS MINOR.

This plant in Portugal, from its form and the size of its flower and from having a non-fistulose scape, seems to correspond to the Narcissus minor (Herbert, *Amaryllid.*, p. 299). Like the species described by Herbert, it is found at great altitudes (Estrella, 1300 metres—about 4000 feet—and at Rebordãos also 1300 metres).

If it is really this species it must be considered as simply a variety of N. Pseudo-Narcissus according to the opinion of Mr. Baker in *The Narcissus, its History and Culture*.

The bulb is whitish, the scape solid, terete, and not with two prominent edges, characteristics differing from those of Pseudo-Narcissus. Are they not sufficient to constitute a distinct species? In this species besides some slight variations in the form of the perianth there are flowers in which the style is as long as the stamens, others in which they are shorter.

NARCISSUS, *n. sp.*? [= N. CYCLAMINEUS, *Haworth, Mon.*, p 2; N. HENRIQUESI, *Hort.*]

This curious plant was gathered by my friends, Edwin J. Johnston and Alfred W. Tait.

It varies much in size; there are plants from 9 centimetres to 35; the same difference is found in the flowers and in the leaves. Mr. Tait informs me that Mr. C. Wolley Dod writes that perhaps this plant corresponds to one described by Parkinson and of which the *Gardeners' Chronicle* (December 19, 1885, p. 789), gives an engraving. Respecting this engraving Mr. Burbidge says, "I give a small tracing of a flower," which induced me to think that the original drawing represents a flower larger than that of the Portuguese plant. As in the Narcissus minor there are flowers with the style as long as the stamens and others with the style longer.

NARCISSUS, *n.* 3 [= N. PSEUDO-NARCISSUS. VAR. JOHNSTONI, *Baker*].

The scape with two slightly prominent edges, the position and form of the flower when the scape is single-flowered, leads me to suppose that this plant is a variety of N. Pseudo-Narcissus, but the form and structure of the leaves, the form of the tube, and especially the insertion and size of of the stamens when the scape is two-flowered, induce me to consider it a form of Narcissus calathinus. It is possible that it may be a hybrid of N. calathinus and Pseudo-Narcissus, showing the scape somewhat compressed (in some plants), the stamens all reaching about half-way up the corona, as in N. Pseudo-Narcissus, and having the insertion of the stamens and the structure of the leaves of the Narcissus calathinus.

Narcissus triandrus, &c.

In a third plate I give drawings of various forms of flowers of Narcissus calathinus, triandrus and triandrus var. concolor. In the classification of these plants I follow the opinion of Mr. Baker, and I present these drawings merely to show the great variations in these species as regards the colour, size, and form of the crown, size of the stamens and of the style. Comparing the figures, we see how difficult it is to distinguish N. calathinus from N. triandrus if we attend only to the characters of the flowers. The long-styled form and the short-styled form are the commonest, the mid-styled form is rarer. The only distinctive characteristics are the size and structure of the leaf, more or less thick in the middle than towards the edge, concave on the face, 3—4 striated, scarcely carminated in N. calathinus, and semi-cylindrical, 8—10 striated in N. triandrus.

Comparing the plants gathered in the Estrella Mountains, the leaves of which are generally fistulous (N. pallidulus, Graells) with the N. triandrus var. concolor found in the mountains of Louza, I cannot find sufficient difference to justify the species of Graells.

In all the species to which I have referred different forms are observed in the length of the stamens and style, especially in the N. calathinus and triandrus. In the N. Tazetta var. Panizzianus, cultivated in the botanical gardens, I have found the long, medium, and short-styled forms. It is natural that these forms may be observed in other species, and therefore the characteristics of this part of the flower are of little value.

The Orchid Houses.

THE EAST-INDIAN HOUSE.

The Phalænopsis will now be starting into growth, and must be well supplied with moisture. If no rain-water be available, either expose hard water in an open tank to the influence of the weather for a week before using, or procure some from a pond. I need hardly say that to use fresh spring-water to the roots and foliage of Phalænopsis (especially if there is chalk or lime in it) would be a serious mistake; in fact, all kinds of Orchids thrive much better when supplied with rain-water only. The very useful Odontoglossum Roezlii is now in full beauty; it will keep on flowering for a long time. We flower this Orchid in the Lælia-house, as, with the more air and a cooler temperature given there, it will keep in flower much longer than in the East Indian-house, where it is grown. This plant is often the victim of thrips, and should therefore be carefully examined.

Calanthes.

These grow slowly this year, so they are still being kept in this house fully exposed to the sun. Now that the sunshine is bright, a double shading will be necessary for all occupants of this house, except for Vanda Hookerii, V. teres, and Calanthes; either mats, canvas, or limewash under the ordinary blinds being used.

Dendrobiums.

Of these D. Wardianum and D. Devonianum are growing rapidly, but if allowed to get dry, a check will follow, which will disfigure the pseudo-bulbs. These Dendrobiums enjoy a hanging position near the glass, over an open water-tank in the Lælia-house. Late flowering Dendrobium thyrsiflorum and chrysotoxum will last much longer if kept in the cool houses. Odontoglossum citrosmum will now be pushing out its flower-spikes; these will require stakes if grown in pots. This Orchid enjoys a position on the south side of the Lælia-house, with plenty of light, about 2 or 3 feet from the glass, if it is too near the glass the air seems to be too dry for it.

Cattleya-houses.

Here the Pleiones require daily watering now that their pots are full of roots; weak liquid manure-water will help them to swell their bulbs, and the plants should still be kept close to the unshaded glass. We have grown Mormodes luxatum eburneum in the same place on the south side for two seasons, and it appears to be well suited to it. Cattleyas are now all in active growth, and must be well supplied with moisture, both in the air and at the roots. Any C. Trianæ that have not been potted ought to be done at once, as the superior flowers that follow good potting will well repay the trouble. Of course all other kinds of Cattleyas will be too far advanced in growth to be potted before flowering. *A. Braidshaw, Waddesdon, Aylesbury.*

The Flower Garden.

PLANTING OUT.

The clumps of Pampas grass may now have most of the dead leaves cut away, and the roots thoroughly soaked with water. Dactylis glomerata variegata may still be divided for lines or edgings. It likes a rich heavy soil, otherwise if the soil be poor it assumes a rusty hue in autumn. Campanula carpatica makes a charming edging plant for shrubbery beds, and this may be safely divided and planted. Nepeta violacea is also well adapted for the same purpose. Polemonium cœruleum variegatum may also be planted. Plants of Pyrethrum, which have been pricked out in cold pits, may now be safely planted out if the plants have attained any size. It is scarcely safe to plant out Dell's Black Beet from the pots in which it has been grown until all danger from frost is over, as a sudden check, from frost or drought is almost certain to cause it to run to flower, when its beauty is marred; but Gazania splendens, where the cuttings have been treated as Calceolarias, *i.e.*, struck in a cold pit, and wintered in the same structure, may be put out with safety. Remove the mulchings of straw and other materials from beds of Cannas, and give a good top-dressing of well-rotted manure and loam.

Roses.

Remove the suckers from Roses as soon as they appear, and take off all buds which appear on the stems. Newly budded Roses should be looked over carefully. It is best to allow the shoot on which the bud has been placed to push one or two eyes beyond the bud, in order to draw up the sap; as the new bud attains strength shorten back the shoots from the stock, and by degrees remove them altogether. A sharp look-out will be necessary for greenfly, as a sudden change in the weather from heat to cold causes them to develope rapidly. Use tobacco-water or powder on their first appearance, as previously recommended.

Bedding Plants.

Remove the sashes off bedding plants during fine days, but it is scarcely safe to trust them without protection during the night yet, as the thermometer gets dangerously near the freezing point; in fact, we had 5° of frost on April 30, with piercing cold winds.

Trees and Shrubs.

Frequently sprinkle newly transplanted trees and shrubs with the garden engine, and see they do not suffer for want of water at the roots. Cover the roots well over with 6 or 8 inches of short grass where practicable after watering, to prevent the escape of moisture.

Sowing.

If it is desired to grow biennials, sowing should be done about the middle of May, in order to have fine bushy plants. When the seedlings are large enough they should be pricked off into nursery lines. Thus treated they make robust stocky plants by the middle of October, when they can be transferred to the beds which have been vacated by the summer bedders. This refers to Wallflower, Campanula, Myosotis, Lunaria biennis, Sweet William, alpine Auricula, Polyanthus, Primrose, Pansies, &c.

Transplanting.

As the various sorts of spring bedding plants cease flowering, they should be lifted out of the beds and divided, planted in nursery lines in the reserve garden, and thus prepared for another season. The flower beds from which they are taken must receive a good dressing of manure and get well broken up, preparatory to receiving their summer occupants. This continuous filling of flower beds impoverishes the soil very much, and justice cannot be done to plants unless the beds receive frequent enrichment. Single Violets should now be transplanted; to do them well they require a good addition of fresh compost to the soil in which it is intended to grow them. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

THE GREENHOUSE.

All the earliest started Camellias will by this time have made their growths, and should be removed to a cool house or deep pits, and also all the early flowered varieties of Epacris and Ericas. The early flowered Azaleas will do in the vineries or Peach-houses. This is where I place them until I can spare the Rose-house, which, when all its present occupants are cleared out for a season of rest, makes a capital growing house for these plants, or almost anything else. When the above named plants are moved, it will give a great deal more room for the other plants. As a rule just at this time of year ever bit of space is required, and many things get drawn up and over-shaded by being crowded together, and it takes some time for them to regain their normal vigour. Pimeleas, Acrophyllums, and Dracophyllums should now be pushing up and fast developing their bloom, as well as Aphelexis in variety.

In the hardwooded section any plants that go out of bloom should be shifted on as they may require it. The compost should be the best hard fibrous peat with a liberal addition of sand; the pots should be well drained: future success depends a great deal on this. Do not fill the pots too full of soil but allow, plenty of room for water, so that when a plant requires watering it should hold sufficient to thoroughly soak the whole ball. A sharp eye must now be kept on all plants for the purpose of detecting fly and thrips, and the syringe should be kept well at work; a little tobacco-water may be occasionally used to destroy insects, as the young growths will not stand much fumigating. *A. Ewins, Lythe Hill, Haslemere.*

The Kitchen Garden.

VEGETABLE MARROWS.

Towards the middle of the month preparation should be made for the main summer planting, and instead of forming hillocks or ridges for these with fermenting material, I prefer the plan of selecting an open space of ground and throwing out holes, from 2 to 3 feet square and 1 foot deep, and which should be at least 12 feet apart, the soil thrown out being used to raise the sides. A layer of dry leaves or litter is then spread over the bottom, and afterwards a sufficient quantity of ordinary good soil, wherein a small portion of leaf soil and spent manure has been mixed, to refill with. The plants, which are duly hardened off, receive at the time of planting a good watering, and are afterwards shaded and protected as long as necessary. Planted in this manner they make firmer and shorter-jointed growth, are more prolific, require less water, and are not so liable to "go off" when in full bearing as often happens when grown under a more forcing treatment.

Ridge Cucumbers.

These can also be planted at the same time, and under the same conditions, only that the stations prepared to receive them will, as a matter of course, be proportionately smaller and much closer together.

Turnips.

The earliest sowings of Early Milan will soon be fit for use, and during dry, hot weather should be assisted by liberal waterings. The first crops of Turnips being naturally on warm early borders, soon become hard and stringy, and unfit for use, unless well attended to in this respect. Make future sowings in cool situations of Early Snowball, White Stone, and Veitch's Red Globe.

Radishes also, to be tender and of mild flavour, must, under the same conditions, be treated in a similar manner.

General Work.

The surface of the soil between all growing crops should be frequently moved with the Dutch hoe, and any such as Peas, Broad Beans, &c, afterwards earthed up and the former staked. Where it is intended to use artificial manure for these the opportunity should be taken to apply it before the earthing up takes place, and, if dry at the time, watered in. Take opportunities during favourable weather to transplant and prick off from the seed beds all seedlings required, and before they get drawn and weakly.

Rhubarb.

Where this has been forced in the open by means of fermenting material, the ground can now be cleared and the space between the plants forked over and cleaned. Any flower stems that make their appearance, should be at once removed, if not required for seed. Clumps intended for next winter's forcing, ought not to be pulled from this season, but allowed to grow and develope themselves. *T. Austen, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

Tuesday,	May 11	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
Wednesday,	May 12	Bath Spring Show. Orchid show at Birmingham. Sale of a Collection of Orchids in Flower and Bud, at Stevens' Rooms. Sale of Carnations, Picotees, &c., at Protheroe & Morris' Rooms.
Thursday,	May 13	Sale of Imported Orchids, from Mr. C. Patni; and 100 Lots of Established ditto, at Stevens' Rooms.
Friday,	May 14	Sale of Imported Orchids, at Protheroe & Morris' Rooms.

NEVER since the glorious days of May, 1851, has there been an Exhibition so calculated to touch the sympathies of the nation as the COLONIAL and INDIAN EXHIBITION, opened by HER MAJESTY on Tuesday last. Never has there been an Exhibition so calculated to excite the interest of botanists and plant growers of all descriptions. We do not even except the memorable International of 1866, for the scope of that was limited to decorative horticulture, and was altogether of a special character, while this one appeals to all who are in any way interested in plants, whether in a decorative or a utilitarian sense. We need say nothing here as to the patriotic side of the question, though it would be impossible to speak too highly of the moral effect of so fine a representation of British enterprise, pluck, art of government and general beneficence to the human race. Nor need we go out of our way in these columns to deal with the artistic side of the question. Our immediate concern is with plants and their products—plants and the share they take in the welfare of mankind, material, intellectual, and æsthetic. Setting aside music, fireworks, fountains, and open-air rereation for the legitimate delectation of the pleasure-seeker, and which, as the results of previous Exhibitions show, have met a proved want in the metropolis, we may say that, from an instructional point of view, the present Exhibition combines the characteristics of the India Museum, the Kew Museums and picture-galleries, with lessons in the geography, the art, the natural productions, and the commerce of the several provinces of the British Empire, of a character and attractiveness never before realised.

Adverting now to our own special department of botany, in its application to the wants of mankind, material, intellectual, and sensual, we cannot look upon the present gathering without a special feeling of pride at what our botanists and our cultivators have done and are doing. Names crowd in upon us as we call to mind the splendid services of the pioneers, such as ROXBURGH, WALLICH, WIGHT, ROYLE, LINDLEY, SCHOMBURGK, and the legion of zealous botanical collectors —the DOUGLASES, the FORTUNES, the LOBBS. Nor can we forget the immense services rendered by the Royal Gardens at Kew in this matter. It is not invidious to class with these the HOOKERS, Baron VON MUELLER, and the host of toilers in science and practice who have, and, as the results before us show, are still labouring so earnestly in making known the characteristics and resources of our dependencies and colonies. We feel a pardonable pride in thus alluding to the share which botanists, collectors, and cultivators of all degrees have taken in the civilisation of the world, and in the evidence so forcibly brought home to us of the immensity of the work still to be accomplished. All honour to the memory of those who are gone, all gratitude and encouragement to those still carrying on the good work.

We propose during the ensuing summer to devote as much space as we can consistently do to the details of this Exhibition so far as they concern our readers especially, and to allude to the vegetable products and resources of each one of the twenty-four colonies or dependencies represented on this occasion. India and Ceylon, of course, with their enormous area, their teeming population and their diversity of products, must occupy much attention. The timbers, the vegetable products, the shops, the bazaars are now brought before us in most attractive form, and reality is given to the scene, not only by excellent models and reproductions but by the native workmen themselves. Maps of a most instructive character, drawings, photographs, all lend their aid to a more complete understanding of the resources of this portion of the Empire than has ever before been realised. The same remarks apply, *mutatis mutandis*, to the magnificent efforts made by the Dominion of Canada and the several colonies of Australia and New Zealand. The display from the West India Islands and from the minor colonies and settlements is, of course, less in amount, but, in its way, equally interesting.

From one point of view, perhaps, the outlook is not satisfactory—we mean as to the future of English agriculture. What is the home-farmer to do? It is clear that the game is passing from his hands; he cannot hope to compete successfully under existing circumstances with the United States and with many European States, while the products of Canada, the wool, the corn, the fruits of the Cape and of the Australian continent show that farming on the old lines is no longer possible. We do not say that the home-farmer should throw up the sponge in despair—far from it; but he must learn how to adapt himself to altered conditions, and to do this he must, before all things, learn. A good deal has been said lately as to the advisability of the home-farmer, in this period of transition, turning his attention to fruit growing, and though we would not by any means wish to discourage him from so doing on a small scale under certain conditions, we have thought it right to utter a caution as to too exclusive reliance on this industry as a remedy for agricultural depression. No one who saw the Pears sent lately from the Cape, and at a season when they are peculiarly useful, no one who sees the magnificent specimens shown in the Canadian Courts, nor the marvellous samples of Apples now before us, sent by Mr. JAMES LANG from Castlemaine, Victoria, can doubt the wisdom of our caution. The Australian Apples before us were simply packed in soft paper with cotton-wool around them, and layers of cotton-wool between them, and they were kept on board ship at a uniform temperature of 40°. The Apples comprise excellent samples, in excellent condition, of Scarlet Nonpareil, Dumelow's Seedling, Stone's Pippin, Reinette du Canada, Gipsy Queen, Merritt's Pearmain, Worcester Pearmain, Blue Pearmain, Cleopatra, London Pippin, Sturmer Pippin, Newtown Pippin, besides sundry colonial sorts the names of which would not be familiar to our readers, but which have the merit, it is said, of not being liable to the attacks of blight. Indian and colonial timbers, the Bamboos, the Teak, the Eucalypts, including the famous Jarrah, the Greenheart of British Guiana, the Mahogany of Honduras, tropical products, Cinchonas, Teas, Coffees, spices, drugs of all kinds, are of course all well represented and in these matters the home cultivator is not directly concerned. Competition in such matters is of course out of the question.

A very interesting feature of the present Exhibition consists in the series of conservatories—eight or ten in number—destined to show, as far as space and other conditions will allow, the nature of the vegetation of the several colonies. In this way the Cape of Good Hope, New Zealand, Natal, Queensland, South Australia, Victoria, New South Wales, some of the West Indian Islands, and other colonies, contribute what will prove not only interesting but grateful places of relief to wearied sight-seers.

Messrs. VEITCH have supplied representatives of the New South Wales flora, Mr. BULL those of Queensland.

Of Messrs. E. G. HENDERSON'S efforts to represent the Cape Flora we speak in another column, and to others we shall refer from time to time. In the meantime we may at once suggest that means should be taken to indicate the "introduced" plants in contradistinction to those that are really native—else, to give one instance where we might cite many, people might fancy that Eucalypts were natives of the Cape colony. To the Royal Horticultural Society credit is due for harbouring many of these plants at Chiswick during the winter, and to Mr. BARRON is due great credit for the way in which he has endeavoured to represent the Fern flora of the Victorian and New Zealand courts.

Our readers may remember that this is no new idea, but one that has been carried out at Kew, especially in the Temperate-house, for many years; while in Copenhagen Mr. HANSEN successfully initiated flower shows expressly arranged to show the geographical distribution of plants.

In the Trinidad Court is a plant of the Cocoa (Theobroma Cacao), which must have been dug up from the plantation, as the leaves are still green, though rapidly withering, so that only those stay-at-home travellers who were present on the first days of the Exhibition will be able to say that they have seen a living Cocoa plant bearing fruits from its stem.

A very pretty and tasteful feature of the Exhibition consists in a substantially-built Orchid-house, erected by Mr. SANDER, of St. Alban's, in which the Orchids are tastefully arranged on the walls amid masses of cork, rough wood, &c., with Ferns intermixed, in imitation of natural conditions. This is one of the prettiest sights of the Exhibition, and we suppose that neither the British public nor the diplomatists will greatly concern themselves with the fact that, for his own purposes, Mr. SANDER includes Mexico, the United States of Columbia, and other countries not generally included in the British Empire. But this is a detail!

—— INTERNATIONAL EXHIBITION OF INDUSTRY, SCIENCE, AND ART, EDINBURGH, 1886.—Visitors to Scotland this year will find an additional attraction in the International Exhibition, open from May 6 to October 30, in the ancient and historic capital of the country. While the Exhibition is open to the products and industries of all nations, the most prominent features are naturally illustrations of the industrial, scientific, and artistic pursuits which occupy the time and energy of the Scottish people. Every industry throughout the length and breadth of the country is adequately represented, and there are many exhibits illustrative of the social life and habits of Scotsmen in their own homes. The Exhibition has the patronage as well as the active support of Her Majesty QUEEN VICTORIA and His Royal Highness the Prince of WALES, and selections from the treasures in the royal palaces are included in the Exhibition. The Exhibition grounds, which belong to the Municipality, are in the centre of the city, and extend to 29 acres. The buildings cover about 8 acres, and are divided into large courts, illuminated by electric light. Four principal divisions have been made in the arrangement of exhibits, namely, general, fine art, artizan, and women's industries. The first of these divisions include the manufactures and natural products of all nations, but especially of Scotland, England, and Ireland. The fine art section forms one of the most interesting collections of pictures, both home and foreign, ever brought together in Scotland.

—— AUSTRALIAN ACACIAS.—We are glad to hear that Baron VON MUELLER has in preparation a series of quarto illustrations of these beautiful and interesting plants.



FIG. 129.—BEAUMONTIA GRANDIFLORA: FLOWERS WHITE, FRAGRANT. (SEE P. 595.)

—— Canterbury and Reigate Rose Shows.—As the Rose shows at Canterbury and Reigate had been fixed for the same day, the committee of the former have decided to alter their day from Thursday, July 1, to Tuesday, June 29, the date for Reigate having had the priority of fixture.

—— The Knickerbocker Radish.—The large Radish, Knickerbocker, favourably thought of by the Royal Horticultural Society Committee, exhibited by Messrs. J. Carter & Co., of High Holborn, on the last occasion of the meeting of the Society at South Kensington, will be tried at Chiswick this summer, and duly reported on at a later date.

—— Forest Flora of Germany.—Dr. Moritz Willkomm is bringing out a second edition of his *Forstliche Flora von Deutschland*, a scientific account of the forest trees of Central Europe, comprising a full description of the several trees for botanical, cultural, and manufacturing purposes, and forming altogether a book to which we have nothing at all comparable in this country. We may say the same of seeds—of agricultural and of medicinal plants. One secret—an open one—of the increasing success of Germany is shown in the multiplication of such books as these.

—— The Weather in Scotland.—On April 29 and 30 the Pentland Hills were white with fresh-fallen snow, and on the latter date 4° of frost were registered at Inveresk a mile from the sea. This unusual cold will tend to keep vegetation in check, with probably good results as regards fruits trees.

—— Change of Address.—We are requested to state that all communications for J. B. Brown & Co. should now be addressed J. B. Brown *only*, 90, Cannon Street, E.C.

—— Saundersia mirabilis.—The flowers of this interesting little Orchid are not sufficiently large or conspicuous enough to attract the attention and gain the goodwill of horticulturists generally, but they are none the less pretty and becoming in their way. The plant must also be enumerated as a new generic type, as far as the Kew collection is concerned. It may be seen in the Orchid-house. A figure is given in Reichenbach's *Xenia Orchidacea*, t. 177. The habit and general appearance is not unlike that of a Burlingtonia or a Bulbophyllum, but of course the construction is entirely different from either. The specimen in question was, in fact, sent to Kew under the name of Cirrhopetalum, and a superficial examination might impress one that it was such. This arises from the long-clawed labellum, with a bilobed lamina resembling the two lateral sepals that form so conspicuous a feature in the flower of a Cirrhopetalum. In this instance it forms the most attractive organ, and greatly exceeds the sepals and petals in length. The latter are white, with pale brown, and stand erect, forming a cup around the curious two-eared column. The flowers are produced in dense clusters on a pendent scape, and are accompanied by the light green leathery foliage. The pseudobulbs are small, and scarcely thicker than the petiole, except at the very base, and each is surmounted by one leaf. The plant is a native of Brazil.

—— Ranunculus Lyalli.—Seldom is much attention paid to the flowering of a Crowfoot, but this New Zealand species is quite exceptional in this respect, and has been the subject of much interest for some years. Seeds were sown at Kew on October 14, 1882, and a few germinated in September the following year. Since then growth has proceeded slowly but steadily, and as yet the plant has given no evidence that it will ever lend itself to rapid propagation. There seems no reason to suppose it will be difficult to cultivate, provided it is kept cool and moist; but it is a matter of great speculation whether it may ever become widely disseminated in this country, owing to its slow rate of increase. The most universally popular plants are those that are so easily propagated that their distribution is facilitated. On the other hand the great white flowers are exceptionally fine, and offer inducements to the cultivator of no ordinary kind. The petals are comparatively narrow but numerous, there being over a dozen in the small specimen in flower; but those overlap or imbricate, and give to the flower a regular or rounded outline. The numerous yellow stamens form a small eye to the flower, and this, together with the numerous petals, presents the appearance of an Anemone rather than a Ranunculus. Of course the generic differences, on the other hand, are easily recognisable, and serve to distinguish it from Anemone as well as from the many-petalled North American Caltha leptosepala, the latter of which has smaller and yellowish-white instead of pure white flowers. The flowering specimen under notice may be seen along with the carnivorous plants in the cool porch of the Orchid-house.

—— Royal Horticultural Society of Aberdeen.—At a meeting of the acting directors of this Society held in Aberdeen on Monday evening (3d inst.)—Town Councillow Lyon presiding—it was resolved, in view of the Royal Northern Agricultural Society holding their show at Kittybrewster this year, and no other ground being available in the neighbourhood, that the summer flower show be held in the Music Hall Buildings, Aberdeen, on Thursday, July 22, and two following days.

—— Orchid Varieties.—We are requested to give immediate insertion to the following note from Professor Reichenbach, a request with which we most willingly comply, and earnestly trust that those concerned will take the hint. May we suggest, with all becoming deference, that the Professor's own amiability has, in a measure, led to the evil he denounces?:—

"Where are we going? The question of varieties has become dangerous even for the trade. I give evidence of this in the following statements. A fortnight ago I had a letter from the Continent, but not being authorised to publish it, I omit the name of the writer:—

"'Etant à Londres chez M. Veitch il y a quinze jours j'acheta une plante en fleur marquée Odontoglossum nevadense, parceque je voulais faire cadeau d'un Odontoglossum nevadense à M. ——, qui a vu arriver le seul Odontoglossum nevadense qui ait jamais été importé (peut-être). Quand M. —— a vu cette plante il a dit que ce n'était pas le nevadense, et comme nous attendions depuis tous les jours la visite du chef de la maison Veitch nous avons attendu de réclamer. Aujourd'hui ce Monsieur est venu et sur notre dire il a repris la plante, et m'a prié de vous faire parvenir la hampe, qui avait encore une fleur en bon état, et sur laquelle vous pourrez, espérons-nous, voir ce que c'est que cet Odontoglossum. Le fond des sépales et pétales est brun avec quelques stries jaunes.

"'Le labelle ressemble très-bien à celui du nevadense which is the distinguishing feature. H. G. Rchb. f.] mais d'après M. ——, sa ressemblance s'arrête là. Voudriez-vous être assez bon d'eclaircir ce mystère?'

"I answered April 10:—'C'est nevadense bel et bon, mais les sépales et pétales sont un peu plus striés et un peu plus pâles—voilà tout!'

"Now, this very same Odontoglossum nevadense of Messrs. J. Veitch & Sons is quite the same that I have mentioned (*Gardeners' Chronicle*, 1881, January 29, p. 136), saying that Odontoglossum nevadense had hitherto only appeared in Mr. Linden's establishment from plants sent by poor Wallis. I added this:—

"'Now I have at hand a fresh and good inflorescence of another variety, with more yellow tint on the sepals and petals, from Messrs. Veitch.'

"Where are we going? My herbarium shows a good number of inflorescences of Odontoglossum nevadense in spite of its variety, a glorious one coming from the celebrated medical Professor Boddaert von Cutjem, of Ghent. According to my usual practice I have kept the type apart and marked it as the type. I have good reason to believe Professor Boddaert's grand plant is the typical one itself. Well, its shape and colour of flowers are distinct from the first inflorescence, when the two are placed side by side. And I could describe three more varieties, at least, from these, as there are a few yellow lines more or less, and there are variations in the breadth of the lateral lobes of the lip. It would be, indeed, child's play for one who has a long practice in describing. Yet *post equitem sedet atra cura*. It would be a difficult task to name the individuals, which will probably appear later on. By-and-bye we shall have all the connecting links to make the series continuous.

"If anybody will take the trouble to consult a rich series of living or dried Odontoglossums of that affinity he will find endless varieties, the lines of demarcation between which cannot be fixed. Hence, I must confess, amateurs are in a very sad way if they insist on the distinction of such untenable varieties. To refuse to pay for a plant on account of a few more or a few less yellow stripes is more than poetry!

"I had the other day eight flowers of Cattleya Trianæ before me in a glass, all the same thing, all answering remarkably well to the representation of Cattleya Trianæ formosa, Williams (see *Album*, September, 1883, pl. 108). Now, one would have expected there could be no doubt left, as the *Album* is so widely spread. *Quod non!* Every possessor considers his flower as 'remarkably distinct, and deserving a name of its own.'

"Where are we going to? *H. G. Rchb. f., April* 25.'

—— The Metopolitan Boulevard Association.—Without any parade the above-named body is continuing its good and needful work of beautifying the dilapidated places of London in its more populous localities. In the summer of last year we had the pleasure of being at the opening of Wilmington Square as a place of rest and play for the inhabitants of Clerkenwell. Since that time Spafields, a spot that was once a burial place for many years, but from which most of the mementos of the dead are now removed or placed in close quarters against the walls, where, if needs be, the records they display can be seen, has been taken in hand. This area has been levelled, drained, and laid down with gravel. With this sort of preparation an excellent place will soon be available as a playground for children, as it has been quite recently used as a drill ground for the local volunteers. In Shadwell the small disused burial ground of St. Thomas' Church in the High Street has undergone transformation, and become a resting place from the dust and noise of the streets. The ground has been thrown into gentle slopes, and plots of grass with smooth gravel walks, specimen trees and a belt of shrubs to hide the objectionable boundary wall, have been added. As the geographers say, it is bounded on the north by the street, on the east by the church, on the west by the school buildings, which, unlike so many similar erections of late years, are handsome without pretentiousness, and on the south by the docks in which lay at the time of our visit a three-masted clipper so close under the churchyard wall, that had her yards been squared they would have stretched over it for several feet. This part of old London stands sadly in need of more extensive recreation grounds than it at present possesses; the new and old streets being narrow and uninviting, and fearfully uninteresting places in which to immure young children for long years. The large churchyard of Stepney parish church is at present undergoing a thorough metamorphosis by the Association. It has an area of about 7 acres, and has long been closed to interments; so that together with the general desire of the residents to put no obstacles in the way of its conversion to pleasanter uses, several great changes in the surface have been undertaken. By grouping headstones and tombs, and throwing up banks of earth of a few feet in height to be planted on the summit with dwarf shrubs, much that is undesirable is got out of sight of the pedestrian, both inside and outside the place. The banks have easy gradients, which will be turfed, and be allowed to run out into level plateaus on approaching the walks. Round the church the banks are steeper, and must be differently treated. Broad circles of gravelled space, bordered with trees and shrubs for shelter from wind and sun, will be made. A drinking fountain, many seats, and a rockery, will all find place, so that if the improvements being effected under the management of the clerk of theworks, Mr. Burr, are further supplemented by good keeping in the future, Stepney will have the best laid out church garden in the east of London.

—— Some High-priced Orchids.—That these plants continue to fetch large prices, and to be competed for by wealthy amateurs and nurserymen, is shown by the appended figures realised at sales by Messrs. Protheroe & Morris on April 19 and 28 and 29. At the earlier date a plant of Cattleya Lawrenceana, said to be the finest in existence in Europe, fetched 26 gs. It had forty pseudobulbs and five flower-sheaths. A hybrid Odontoglossum Pescatorei, named Knox's variety, 160 gs., a good specimen, with four blooms; Cypripedium Godefroyæ fetched from 15 gs. to 25 gs., the importation being in fine condition; Lælia elegans Turneri, a grand piece, brought 28 gs., and L. elegans 10 gs.; Vanda Sanderiana, a lovely specimen fully established, with twenty-eight leaves, fetched 40 gs.; a Cypripedium Faireanum brought 30 gs.; the rare Maxillaria Sanderiana, a fine specimen, brought 10 gs.; Cypripediums found near C. Godefroyæ, fetched 20 to 25 gs.; C. Morganianum, 65 gs.; C. Arthurianum, 28 gs. The total takings of this day's sale amounted to £1250. The sale of the Lovatt collection, which took place on the two latter days, brought likewise high prices, a few of which we will indicate briefly. Lælia purpurata, a specimen with extra broad petalled flowers and very dark lip, and with fifty leaves and eleven flower-sheaths, fetched 54 gs; Cattleya Mendelii, a fine piece, 42 gs.; this plant possessed thirty-four sheaths. A fine Masdevallia Harryana was sold for £10; an Oncidium macranthum for 17 gs.; Bras-

sia Lawrenceana for 10½ gs.; Cymbidium Lowianum for 70 gs.; a Chatsworth variety of Coelogyne cristata brought 19 gs.; Cattleya Warneri, one of, if not the finest existent variety, 75 gs.; a C. Mendelii, with sixty-one pseudobulbs, 30 gs.; another, 64 gs.; and one for 40 gs.; a C. labiata, 20 gs.; a grand plant of Lælia anceps Dawsoni with nine pseudobulbs, brought 30 gs.

—— The Fruit Trade with Nova Scotia.—Our contemporary, *The Colonies and India*, says:—"Very few consumers know that the nice rosy-looking Apples which they see in the fruiterers' shops come from Nova Scotia, or that there is exported from that province to this country something like 100,000 barrels out of an annual average production, say, of 200,000 barrels. It is only in late years that the people of the valley have awakened to the remarkable adaptability of their lands to Apple culture. Cheap railway and ocean communication and the opening of the English markets a few years ago inaugurated, however, a new era. In 1871 the acreage of the valley devoted to Apple culture was 5152; in 1881 it had increased to 8500. To-day it is over 10,000 acres. When the next census is taken there is reason to believe it will be 16,000 acres; while the acreage of the province, which to-day is about 25 000 acres, will then at least be 30,000 acres. Nova Scotia's great advantages as a fruit producing country are these:—1st, its nearness to Europe and consequent short land and ocean carriage and cheap freights; 2d, the generally acknowledged fact that her Apples, as a rule, have better keeping qualities than the same Apples grown on any other part of the continent, so that if properly handled the risk of loss from decay and over-ripeness is reduced to a minimum.

—— Gardening Appointments.—Mr. James Carr, lately Foreman at Henham Gardens, Lowestoft, has been appointed as Head Gardener to Lord Huntingfield, Heveningham Hall, Suffolk.—Mr. Angus MacLeod, late Foreman at Wemys Castle, Fifeshire, has been appointed Gardener to the Marquis of Headfort, Headfort House, Kells, Co. Meath.

BEAUMONTIA GRANDIFLORA.

This grand evergreen stove climber, belonging to the Apocynaceæ, has been in the country considerably over half a century, yet it seems never to have been so much grown as it deserves. It is occasionally met with in some out-of-the-way place, but oftener than otherwise in a state that does not admit of its showing its true character, for though it manages to exist under adverse treatment, still, like many others of our finest plants, it is only when the cultural conditions are such as it requires, that it rewards the grower with its flowers. The Panshanger plant from which our illustration is taken (see fig. 129, p. 593), is grown in the Banana-house, a lofty, span-roofed structure that faces the south, with a back wall on the opposite side, 11 or 12 feet high, at the foot of which there is a border 3 feet wide; in this the Beaumontia is grown. Mr. Ruffett obtained the plant nine years ago, and planted it in the new conservatory that stands near the mansion, which is kept somewhat warmer than an ordinary greenhouse. It grew here but did not flower; it was then moved to the house, already named; after it begun to grow in its new quarters the shoots were kept stopped with a view to its furnishing the wall, but it did not like being thus confined, and no flowers appeared, it was then allowed to run up with a single stem until it reached the roof, under which the shoots were trained right and left horizontally, and now it occupies a considerable space under the back portion of the span and along the western end of the house over the path that runs round the central bed where the Bananas are planted out. Each spring it is a splendid sight—laden for weeks with its large terminal corymbs of pure white Brugmansia-like flowers, which are banked up with plenty of healthy green leaves that are about 9 inches long. The plant is henceforth to be confined to one or two branches trained a little below the glass over the path all round the house, in which way it will look well, even when not in flower. The temperature kept up is from 55° to 60° in the night during winter, with proportionately more heat in summer; this, with the abundance of light and sun which the plant receives, enables the wood to get well ripened, causing it to bloom freely. A fine illustration of this plant is given, under the name Echites, in Roxburgh's *Coromandel Plants*, t. 281; that in Wallich's *Tentamen*, t. 7, represents a smaller form.

COLONIAL AND INDIAN EXHIBITION.

A fine display of hardy cut flowers was made by Mr. T. Ware, of Tottenham, on the occasion of the opening of the above on Tuesday last by Her Majesty. The collection comprised almost everything in season, and occupied the length of one side of the conservatory. Many rare subjects were observed on the tables.

South Africa.

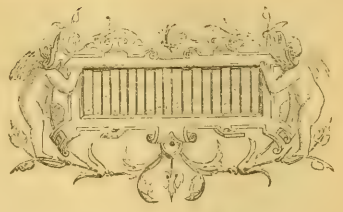
Messrs. E. G. Henderson & Son have been entrusted with the exhibit of illustrations of the flora of the Cape and Natal during the exhibition.

Among the beautiful and brilliant-coloured early flowers from the Cape will be represented several species of Ixia, and with them a splendid collection of new hybrids. A most beautiful-coloured group, and closely allied to these, are the lovely sections of Sparaxis, Tritonias, and Babianas, each consisting of the finest select collection known. The above are unrivalled among dwarf-flowering, bulbous-rooted plants, no other part of the world yielding such for the English flower gardens. Following their seasons of flower will be the many species of Gladiolus, beginning with the early flowering and dwarf-habited hybrids of blanda, and followed closely, in blooming season by the cardinalis hybrids of taller growth with very beautiful tints of colour in great variety; also those of still larger growth, known as the ramosus hybrids, which have fine large flowers of very rich colours and robust growth; and last in the season are the magnificent group of gandavensis and brenchleyensis hybrids, a most gorgeous group, 3 to 4 feet high, with colours of every shade, and continuing in flower till frosts set in in October.

Again from the Cape we enrich our gardens and houses with the beautiful hybrids of Pelargoniums, known in England as the show or exhibition, the zonals or scarlet sections, the Ivy-leaved, sweet-scented leaved, and others, all of which are derived from the Cape species. Then we have those lovely plants the Ericas (Heaths) which have been the favourites for the last fifty years in our gardens, no part of the globe yielding such beautiful species as those derived from the Cape. Again, we have the Oxalis, a family that delight in plenty of sunshine, and with them (also delighting in sunshine, are the Mesembryanthemums. Then there are the Agapanthus, white and blue varieties, both double and single flowered, the lovely sweet-scented "Water Violet" (Aponogeton distachyon), and the blue Water Lily, Nymphæa scutifolia. The Tritomas (named by Americans the "red-hot poker") are distinct plants that ornament our gardens; also Strelitzia Reginæ, the wonderful coloured flower of brilliant orange and metallic blue combined in one flower; the Hæmanthus, with flowers unique in their style, and unlike any flower from other parts of the world, including many species. Among Amaryllis will be the Vallotta purpurea, a beautiful and most useful decorative plant, and the Nerine (Guernsey Lily), a beautiful section of autumn and winter flowering Amaryllis. Then we have the wonderful Testudinaria elephantipes, a trunk root of which is represented at the conservatory, received direct from the Cape, the weight of which was 12 cwt. when delivered in a dormant state at the nursery. The Encephalartos horrida and caffra, representing the hard-foliaged, Palm-like plants, so distinct to any from other parts of the world; the beautiful Orchid, Disa grandiflora, and a collection of the curious Orchid Satyrium. Leonotis leonorus (the Lion's Tail), Leucodendron (silver-leaved tree), a plant unlike anything to be found in other parts of the globe. Myrsophyllum asparagoides, the elegant climber of 8 to 12 feet in length, that is used so largely in America for the decoration of the ball-room, the dress, and floral ornamentation.

The African Asparagus, a beautiful section now being cultivated and used for bouquet work and decoration of table flowers, &c., besides being an elegant plant for pot culture. The everlasting flowers, such as Phœnocoma, Aphelexis, and many others, also emanate from the Cape, and the pretty blue Forget-me-Not-like flower, Anchusa capense, a beautiful annual for the garden; Charicia (Agatha), the blue-flowered Marguerite, Crinum capense, and other fine species.

Among succulents are Aloe, Haworthia, Kleinia, Cotyledon, and Euphorbia, all distinct and unique in their way.



Notices of Books.

CASSELL'S POPULAR GARDENING.

For some two years past Messrs. Cassell have been issuing in monthly parts a veritable Encyclopædia of gardening knowledge. The whole work is now before us in four volumes, and is creditable to the Editor, Mr. D. T. Fish, and to the publishers alike. It embraces the whole field of practical gardening, together with elementary information on the physiology of plants and the nature and uses of manures. The contributors comprise some of the best known cultivators of the day, with a fair intermixture of the younger generation, who bring to bear on their work the knowledge acquired in these later times upon many points of natural history and physiology, and thus the present book is, if not wholly, at least to a large extent, free from the repetition of exploded fallacies which writers on gardening copy so religiously from their predecessors, as if knowledge had been standing still of late years, and which render so much of that portion of our garden literature which is not strictly confined to the details of practical routine a disgrace to the country.

It would be easy to pick holes in a publication of this kind, the work of many heads and many hands. The worst defect we have observed depends on this very circumstance—we mean the disproportionate amount of space allotted to certain subjects. This is, however, almost inevitable in a work of this character, and opinions will naturally differ as to the relative importance of particular subjects. The disproportion alluded to is very evident in the woodcut illustrations, some of which occupy space which might more advantageously have been filled by other matters. The publishers, too, are probably better judges than we are as to the value of the coloured plates prefixed to the volume. They are probably designed to attract the public, and if this is accomplished by their agency, the publishers' aim—a very legitimate one—is attained. To specialists they are valueless. An excellent index renders the work readily accessible, and completes a publication which no garden library can afford to dispense with.

Manual of the Botany of the Rocky Mountain Region, *from New Mexico to the British Boundary*. By John M. Coulter, Ph.D. 8vo, pp. 452.

This is a most valuable addition to botanical literature. It is framed on the model of Dr. Asa Gray's *Manual of the Botany of the Northern United States*. It includes a systematic enumeration and brief description of the plants of Colarado, Wyoming, Montana, Western Nebraska, and Western Kansas, the hundredth meridian forming the approximate eastern boundary. As numerous plants of coterminous States occur also within the area selected, the work may roughly be stated to comprise an account of the vegetation of the whole region between the Californian territory on the west and the prairies on the east, and from Oregon on the north to New Mexico in the south. The book professes only to be "a compilation, an orderly arrangement and sifting of scattered material." It could hardly be otherwise. If we had to wait till all the details were satisfactorily worked out by one mind and one pair of hands we fear our period of waiting would be long, and we should not after all secure much greater uniformity of treatment and adequate proportion than we do at present. The manner in which the editor has manipulated the details before him can only be fully adjudged after frequent use and consultation, but we can say at once that his method is so clear and concise and generally excellent as to beget the fullest confidence in the fidelity of the details. We are so grateful for a publication of such utility that we could

not find it in our heart to be very severe in our condemnation, even were such called for. As it is we are sure that we owe a debt of gratitude to the author, and we believe that the fuller knowledge of his book that will come from practical use will intensify that feeling, and confirm the favourable verdict that even now we feel is due to him.

A Monograph of the British Eocene Flora. By John Starkie Gardiner. Palæontographical Society.

The third part of the second volume of this important publication has recently been issued, comprising an account of the fossil species of Sequoia and other Coniferæ occurring in the London clay, the Thanet sands, and other tertiary beds overlying the chalk, or in the basaltic formations in Ireland and the Isle of Mull.

The evidence which the Coniferæ afford both in their outward conformation and their internal structure is more complete and less misleading than in the case of some other plants. Too much reliance has, for instance, been placed on the venation of the leaves, which is often identical in character in plants of widely different lineage, but the fossil remnants of the Conifers are often so complete and distinct, that no doubt at all can exist as to their generic identification. No one, for instance, could hesitate for a moment at the identification of the plant found in the Island of Mull as a Ginkgo (G. adiantoides), and it is very interesting to have proof of the existence within our own islands of this genus, now confined to Japan and China. A species of Podocarpus has also been found in the same island, and these, with Cryptomeria, Glyptostrobus, and other forms, indicate a great resemblance between the flora of our islands at one period, and that of Japan at the present day. Mr. Gardiner, to whose zeal we owe so large a share of our knowledge on these points, contributes an interesting "retrospect," comprising a history of the Gymnosperms, and a brief statement of the various progressive stages between the lowest cellular plants through mosses and Ferns to the existing Coniferæ. Many links have disappeared, or have not yet been discovered, and much evidence exists of types of growth among Cryptogams of higher and more complex organisation than any that now exist. The discoveries of our unwearied fellow-countryman, Professor Williamson, of Manchester, have very largely contributed to the establishment of these facts. Mr. Gardiner's review is very suggestive and interesting, and it is no detraction from its value under present circumstances to suggest the probability of future discoveries, both among recent and among fossil plants, necessitating in the future considerable modifications. Some statements may be alluded to as probable slips of the pen, such as the statement on p. 111, that "germination (of Cycads) takes place in the macrospore or seed while it is still attached to the plant, instead of after it has been shed." Exceptions may also be taken to the statement, copied from Saporta, that the scales of the Cembra, Pseudo-Strobus, Tæda, and Pinaster section of the genus Pinus are caducous.

It may be of interest to add that the following genera have been ascertained to exist in the Eocene beds of Great Britain and Ireland:—Callitris, Libocedrus, Cupressus, Taxodium, Sequoia, Athrotaxis, Cryptomeria, Ginkgo, Taxus, Podocarpus, Araucaria, Pinus, and Tsuga. None of these genera, except perhaps Taxus and Pinus, have any wild representatives in this country now, but almost all have species which may be and are cultivated in this country in the open air. A glance at the list will show the close relationship between the Coniferous flora of those early times, and presumably of the climate also, to those of California, Japan, and Tasmania.

Mr. Gardiner has done excellent work, and has shown that if in some vegetable fossils the material is quite inadequate to sustain the inferences that have been drawn from them, in others, and notably in the Coniferæ, the evidence is as important as it is trustworthy.

The Fern World.

Mr. F. G. Heath has issued a new and cheaper edition of his popular work or British Ferns (Sampson, Low & Co.). The woodcuts are pretty, and the text sufficiently explicit for the purpose. The coloured illustrations afford indications of the outline of the frond, but neither the venation nor the characters derived from the spore cases are shown.

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 468.*)

The Dwarf Mexican Section: O. Humeanum.—In this beautiful variety, which first flowered with W. B. Hume, Esq., of Winterton, Great Yarmouth, we have a plant intermediate between O. Rossii majus and O. cordatum. The scapes bear from two to seven flowers, sepals yellow, barred with brown; petals white, often tinged with sulphur, and having a few brown blotches at the base; lip shaped like that of O. Rossii, white, often crimped at the edge, and having a few reddish marks near the yellow callus.

O. aspersum is a supposed natural hybrid between O. cordatum and O. Rossii majus. Sepals pale yellow, blotched and clouded with brown; petals of the same tint, with brown blotches at base; lip yellowish-white, crest yellow.

O. cordatum.—A fine old plant, with oblong, compressed pseudobulbs of a pale green colour. The arching flower-spikes bear four to nine flowers, the



Fig. 130.—Odontoglossum nebulosum candidulum.

keeled pointed sepals being narrow, yellow, barred the whole length with brown; petals broader, also light yellow, with brown blotches at the base; lip heart-shaped and pointed, white, with brown blotches at the base.

O. c. aureum and O. c. sulphureum are handsome varieties, wholly of different shades of yellow, the darker taking the place of the brown in the common form.

O. maculatum has much the appearance of O. cordatum. Sepals brown almost entirely, or with the greenish ground showing through in bars; petals yellow, spotted with brown at the base; lip cordate, yellow, with brown blotches. A very fine strain of O. maculatum is known as O. Donianum in some gardens.

O. m. anceps is a grand form with larger flowers than the ordinary kind, the markings being rich brownish-crimson.

O. m. integrale.—Sepals pale brown, petals white with brown blotches at the base, lip white with yellow crest.

O. madrense (maxillare), said to be found growing on Oaks in Mexico, is a delightfully fragrant and pretty plant, with the habit of a slender O. cordatum. The gracefully curving scapes bear four to ten flowers each, over 3 inches across; the narrow, pointed sepals are white, with purplish blotch at the base; petals broader, white, with large purple mark on the lower half; lip rather short, and with orange calli and disc. Flowers in summer.

O. Warnerianum (fig. 132).—I fear this plant was never generally known, and the references we have are most perplexing. In 1845, C. B. Warner, Esq., had a plant in his collection with dull buff sepals and petals, and a yellow lip. In 1847, in the *Bot. Reg.*, a plant is figured as O. W. purpureum, from Messrs. Loddiges, which is said to be a fine variety of it. It appears to be an Oncidium with purplish sepals and petals, and a curious four-lobed yellow lip. The true O. Warnerianum, however, is supposed to be intermediate between O. Rossii majus and O. nebulosum. It has showy flowers with white sepals, having reddish bars near the colomn, petals also white with an ocellate basal mark, and surrounding blotches of brownish-red; lip cordate, wavy at the edge, white with a yellow callus. Generally in collections, O. Rossii or O. Cervantesi represent this variety; from them, however, it is distinct.

O. nebulosum (fig. 131) is larger in all its parts than the rest of this section, and a very handsome variety. The flowers, which are often 3 inches across, are borne from three to six on a scape; they are pure white, the sepals, petals, and labellum being profusely spotted towards the centre of the flower with irregular brown spots.

O. n. candidulum (fig. 130) is a variety in which the flowers are almost wholly white, the spotting being very slight. In showiness it is not equal to the old form, but it is nevertheless desirable as a white flower.

O. vexativum, flowered by Mr. Denning at Lord Londesborough's in 1876, connects O. maculatum and O. nebulosum. The sepals are brown edged with white, the petals and lip white with a few brown spots at their bases, the callus of the lip being trifid and yellow.

Several of the plants in this section are found in Guatemala as well as in Mexico. They all thrive well in a cool house, but require to be kept rather drier than the O. crispum, &c., when fully matured in the pseudobulbs; they require, however, when not actively growing, enough water to keep them plump. In a close or ill-ventilated house all this section soon perish. *J. O'Brien.*

TOBACCO.

The proposition that has recently been made in Parliament to cultivate the Tobacco plant in this country as an agricultural crop, has naturally drawn a considerable amount of attention to the subject of Tobacco generally. Notwithstanding the enormous consumption of Tobacco which is participated in by all classes from the highest to the very lowest, comparatively few people know anything of the preparation or manipulation of Tobacco for smoking purposes or even indeed of the way in which leaf Tobaccos are brought into this country or of the numerous varieties known in commerce. Though the question of the suitability or otherwise of the English soil and climate for the cultivation of the Tobacco plant on a large scale to compete with the foreign supply is most on the minds of people at the present time, such a matter cannot be satisfactorily dealt with except by actual experiment, therefore the result of this experiment will be anxiously watched by many both at home and in the countries from whence we draw our present supplies. The probabilities and improbabilities of its successful culture will be fully discussed by practical men who will take into consideration the question of soil, atmospherical conditions, and similar points. It must, however, be also borne in mind that for commercial purposes the Tobacco leaf has to be prepared or "cured" as it is termed, which consists of a careful system of drying after the leaf has been harvested. It is to the proper treatment of the leaf in this stage that much of its commercial value depends, and this curing can only be effected by practised hands.

In America the Tobacco plants begin to ripen about three months after planting, when the leaves change to a yellowish-green colour and have a somewhat mottled appearance. Tobacco leaves are gathered either singly or by cutting down the entire plant, but they should never be harvested except in dry weather or after the dew is off the plants. If the leaves are gathered singly, the most matured are taken first and the others left until they have ripened; more labour is, of course, entailed by this plan, but

the quality of the crop is superior. In the other process of cutting down the plants a long knife or chopper is used, and the plant is cut off near the ground. The plants are never exposed to sufficient sunlight to thoroughly dry the leaves, by which means they would become brittle and consequently lose in value, but they should be simply withered, after which they are removed to a temporary shed or shading, and hung—usually two leaves together—across thin rods, where they are left for one day, during which time they become flaccid. From this temporary shed the leaves are removed to the regular drying shed—an airy, well ventilated room—where they are again hung up and gradually dried, during which period they assume a yellow colour, and at the same time slightly ferment. They are frequently examined so as to prevent any change that would spoil either the quality or appearance of the leaves. The light yellow colour gradually changes into a dark golden-yellow or light brown. In about a week or ten days the Tobacco is sufficiently dried to admit of the midribs being removed, a process called stripping. After this is done, the Tobacco is carefully sorted into the various qualities, according to size, colour and perfection of the leaves. For exportation they should be made into "hands" or bundles containing from ten to twenty leaves tied together by twisting a leaf round the ends with strips of the leafy portion of Maize cobs, and are very neatly packed with the stalks towards the outside of the bales, which weigh about 1½ cwt. The sorts here mentioned are only a few of the very numerous kinds known in commerce, the bulk of which is supplied by Nicotiana Tabacum, or varieties of that species.

In the preparation of cut Tobaccos—that is, in preparing the leaf for smoking purposes—a good deal of care and discrimination is necessary in the selection of a good quality and a properly cured leaf. This knowledge can only be obtained by experience, and it is upon this experience, coupled with careful manipulation of the selected leaf, that the reputation of well-known brands of Tobacco is established.

On this branch of the subject, and on the manufacture of smoking Tobaccos and cigars, it will be best to describe what I saw on a visit made a week or two since to the extensive factories belonging to the well-known firm of Lambert & Butler in Drury Lane and Long Acre, and I desire here to thank the members of the firm for according me the privilege of inspecting the works, for personally conducting me over the extensive range of buildings, and for imparting a considerable amount of information, the result of an intelligent and practical experience.

When the Tobacco arrives in this country it is, of course, deposited in the bonded warehouses at the docks, and is removed to the factory as occasion requires. I was shown one large room fitted with bins and shelves, and known as the sample-room, where a large sample (some hundreds in number) from every hogshead, bale, or package, in the bonded warehouse, duly labelled, was arranged so that when a particular kind of Tobacco is required, it is only necessary to quote the marks or number, and get it out of bond. In another room were some opened hogsheads of Kentucky strips and bright Virginian of a fine golden-yellow colour and delicious aroma. It is from this Tobacco the "Prize Medal Bird's Eye" of the firm is made. Those kinds known as "May Blossom" and "Jessamine," both choice and fragrant Tobaccos, are also made from selected and light-coloured leaves.

The "hands" being packed in the hogsheads when moist, and submitted to much pressure, naturally retain their moisture for a considerable time, but the longer they remain in bond the drier they get, so that it is necessary to damp the leaf when it arrives at the factory; this is done by placing the hands upright in a trough and sprinkling them with water from a rough looking besom or brush, made of two or three bunches of the Butcher's Broom (Ruscus aculeatus). This plant, it seems, is always used for this purpose, the sharp points of the leaf-like branches distributing the water in a finer spray than could be obtained either from a brush or fine-rosed water-can. The need for damping is to overcome the brittleness, and admit of the leaves being manipulated without breaking. In England water alone is allowed by law, but in other countries various ingredients are applied. Most of the Tobaccos used for cutting are stripped of their midribs, except that for the manufacture of "bird's-eye," in which the midrib is left, and this being cut across forms the "eye," from which it derives its name. Large quantities of leaf Tobacco arrive in this country with their midribs already taken out, but some has to be so treated after arriving at the factory. At the time of my visit a number of girls were employed stripping, which is done by folding the leaf in half, when the midrib is cut through near the top and deftly ripped out without tearing the leaf itself, which is then placed in smooth and even piles. The leaves are cut into the thin threads in the form in which we see Tobacco in trade by a machine driven by steam-power; it is, however, fed with the leaves by a man who passes them on to an iron plate, from whence they are carried under the knife, which works up and down with great velocity. These knives can be regulated to cut the Tobacco in different degrees of fineness. Thus is produced fine and coarse cut Turkey and similar sorts. The finer cut Tobaccos draw better in the pipe; but the coarser are said to be cooler smoking. From the cutting machine the tobacco is transferred to a kind of a steam-bath, which consists of a large trough with a canvas bottom, through which steam is passed, and so it permeates the Tobacco, a wooden covering to the trough being brought down, and the whole enclosed for a short time; it is then passed over into an adjoining trough of similar size, the bottom of which, however, is formed by a hot iron plate; it is here turned over, and the threads of the Tobacco drawn carefully out by the workman until it is considered sufficiently dry for the third and last operation, namely, placing it in another trough with a canvas or perforated bottom, through which a current of cold air is forced. This partially dries and cools the Tobacco, which is then placed on shelves in racks to finally dry sufficiently for trade purposes, for Tobacco is never absolutely dry even when smoked.

A peculiar branch of the Tobacco manufacture is the preparation of roll or twisted Tobaccos, such as the solid hard coils of twisted leaf, looking like so much rope. For this purpose the leaf is twisted or spun into an absolute Tobacco rope by a very cleverly contrived machine, which is simply fed by two boys, the leaves being twisted between two rollers, and then carried forward and wound on a bobbin, so that a continuous rope is made until the bobbin is filled, when it is removed, and the operation again repeated, the coils being fastened together by strips of a Palm leaf, apparently that of Chamærops humilis. When the rolls or coils are tightly bound they are put into presses, where they are subjected to great pressure, and left for a considerable time. The effect of this pressure is to cause the natural juice of the Tobacco leaf to become absorbed throughout the whole mass, and so produce the black colour so characteristic of this kind of Tobacco. The consumption of roll or twist Tobaccos is, I was informed,



Fig. 131.—Odontoglossum nebulosum. (see p. 596.)



Fig. 132.—Odontoglossum warnerianum. (see p. 596.)

of the stalks. After being made into hands American Tobaccos are packed for export in hogsheads or barrels, the layers being at right angles to each other alternately, and the stalk ends being towards the outside. These hogsheads are usually about 4 feet 6 inches deep, and 3 feet 6 inches in diameter. The Tobacco is packed when moist and with a considerable amount of pressure. Kentucky strips come in hogsheads weighing about 11 cwt., and Virginia leaf, which is brighter in colour, in hogsheads weighing 5 or 6 cwt. Besides American Tobaccos, which, however, form the bulk of the Tobacco consumed in this country, the leaf is imported from various other countries, such, for instance, as Java—a dark coloured Tobacco which comes in bales covered with mats made of plaited Palm leaves, and weighing 1½ cwt. each. Latakia is also a dark coloured Tobacco, having a strong smoky smell and flavour, which is imparted to it by the process of drying it over the burning wood of the Oak. Latakia is distinct also from other Tobaccos in having the fruits and sometimes the flowers dried with the leaves, the upper ones of which are alone used, the "hands" are consequently very short. This Tobacco comes in bales weighing about 1 cwt.

Turkey is known under various qualities. The leaves are somewhat small and thin, of a light golden-yellow colour; it comes in bales weighing about 1½ cwt. each, bound up first with strips of twisted horsehair and enclosed in an outer covering of sacking. Trebizonde is also a light golden-yellow leaf of a thin texture; the leaves, however, are much larger than those of Turkey, they are tied together in hands

chiefly amongst miners in the North of England, and also in Ireland. One room at Messrs. Lambert & Butler's factory was entirely filled with presses as above described, and each press was groaning under the weight of Tobacco rolls, and the air of the place was of a decidedly narcotic character.

Leaving this part of the factory with its army of workmen and workwomen I was next taken to the building where the packing of the cut Tobaccos and the manufacture of cigarettes is carried on. In the first department a large number of men and boys were engaged weighing and putting into the well-known packets such Tobaccos as Prize Medal Bird's-eye, May Blossom, and Jessamine. In the cigarette making room I was surprised to find no machinery—all were busily engaged making cigarettes by hand. Upon asking whether this method was not a slow one I was informed that machine made cigarettes were not to be relied on, and that those made by hand were always the best; therefore the cigarettes made by the firm were always hand-made, but that the makers were all Russians and Poles, because an Englishman could not turn out a cigarette in such a satisfactory manner.

In the cigar making department, an immense building of three storeys, situated in Long Acre, about 150 hands are constantly employed. Here, likewise, no machinery is used, but every cigar is turned out separately by hand. Each workman has a certain space allotted to him, divided by partitions. The Tobacco used for "fillers" or the substance of the cigar is on his right, and the flat and selected strips of leaves on his left. The workman takes sufficient of the fillers to form the cigar, and gently rolls them on the board with the right hand. Then he takes one of the wrappers and commencing at one end of the cigar rolls it upwards. Another wrapper completes the operation, the point of the cigar being finished simply by rolling on the board under the fingers. The bottom or square end is cut off with a sharp knife. When so finished, the cigars from all the makers are sorted by experts, according to their colour, some of course being lighter or darker than others, and it is not desirable that the cigars contained in one box or bundle should be of various tints. As many as 2 cwt. of cigars are made in this factory every day. A good deal of skill is required to turn out a good shaped and even cigar; but practice alone enables the makers to work up a given quantity of Tobacco into a certain number of cigars, which must be done when so many and no more go to the pound weight. Havana cigars are, of course, imported in bundles and boxes of various sizes and brands.

In conclusion I may say a few words on some peculiarities of the wholesale Tobacco trade. Thus I was informed that no contagious disease had ever occurred amongst the workpeople, proving the disinfecting properties of Tobacco. To prevent the temptation to pilfer amongst the men sufficient Tobacco is distributed to every one of them for their own consumption each week. The works are always open to the Excise officers, who visit them every day, and sometimes twice a day; they have perfect liberty to go where they please, and to take any samples they please.

Since writing the foregoing I have had put into my hands a pamphlet on the *Cultivation and Curing of Fine Yellow and Shipping Tobacco*, in which the details of drying and curing, so as to fix the golden-yellow colour of the leaf, so much in demand at the present time, is fully described. The varieties known as "Yellow Oronoco" and "Silky Pryor" are said to be the best kinds adapted for producing the finest grades of commercial Tobacco. "Grey friable soils, fresh from the forest or long out of cultivation, with dry, porous subsoil, are best adapted to the growth and maturity of yellow Tobacco." It is recommended that the plants should not be cut until they are fully ripe and of uniform size, colour, and quality; they should go direct from the cutter into the barn or drying-house, and should not be allowed to lay about on the ground. Yellow Tobacco may be cured either with charcoal or by means of flues; the latter, however, is by far the best and cheapest. The principal agent in this curing is dry heat sufficient to expel the moisture from the leaves and fix the colour, which is the science of curing the yellow Tobacco. Charcoal gives out a dry heat, but its preparation is tedious, and produces much black dust; the use of flues is quicker and more cleanly, and, moreover, the Tobacco is of a sweeter flavour.

"The first process in curing is called steaming, or yellowing. Medium Tobacco will require from thirty to thirty-six hours' steaming, at about 90° Fahr., to yellow sufficiently, but Tobacco with more or less sap, larger or smaller, may require longer or shorter time to yellow. Here the judgment of the curer must be his guide. . . . . Theory alone, however good, and directions, however minute, will not do here, but it is practice that must qualify one to cure well."

The next step in curing yellow Tobacco is called "fixing the colour." When it is sufficiently yellowed at 90° Fahr. the best leaves of an uniform yellow, and the greener ones of a light pea-green, the heat may be gradually increased from 95° to 100°, and even to 120° in stages of about 5° every two hours. When the leaf appears curled advance 5° every hour up to 170°, until both leaf and stalk are cured. Care should be taken not to let the Tobacco sweat—too little heat produces a dull brown colour, while too much reddens the leaf. After being finally dried care must be taken not to let the Tobacco absorb again too much moisture, or it will lose its sweet mellow flavour. From these instructions it will be seen that the best commercial Tobaccos are harvested and cured on different principles from those laid down by Colonel Trevor Clarke. First the plants should not be allowed to lie on the ground or even wither; next that the rich brown colour, at one time a characteristic of fine quality Tobacco, has now given place to light-coloured leaf, except for cigar wrappers, and consequently that as little fermentation as possible is allowed. *John R. Jackson, Museum, Royal Gardens, Kew.*

PENDELL COURT, BLETCHINGLEY.

BLETCHINGLEY, it appears from Taylor's *Surrey Archæological Collections*, derives its name from the family of the Blæcings, once resident there. The manor at the time of the Conquest formed part of the possessions of one Richard de Tonbridge, who was one of the Norman warriors who aided William in the conquest of England. It will thus be seen that Bletchingley has played an important part in English history. But to return to Pendhill Court, as it is called in old records. It was built about the year 1624, and was originally in the possession of Sir John Holman, who is said to have been standard bearer to Richard Boswell, at the battle of Bosworth. In a window in the hall are the arms of Holman, viz., Vert a chevron between three pheons or; crest, on a chapeau az., turned up ermine, an ostrich head and neck argent. Subsequently the estate passed to the Perkins family, about the middle of the present century, from thence into the hands of the late Mr. J. H. Mangles' father, of Rhododendron fame. In *Murray's Handbook* for 1865, we find the following:—"The fine old mansion of Pendell Court is the residence of Fred. Mangles, Esq., under White Hill, on which is the camp called the Cardinal's Cap.

As is well known, Pendell is now the residence of Sir George Macleay, who has greatly enriched it with plants, the results of his extensive travels abroad. Since Sir George Macleay has been owner of Pendell Court the mansion, which is in the Elizabethan style of architecture, has been added to, but with the careful end in view that the additions should, as far as possible, harmonise with the original. Those fine hardy climbers, Fortune's Yellow Rose (Wang-jang Ve), Clematis montana, the blue-berried Vine, Vitis humulifolia, Choysia ternata, Buddleia Colvillei, all growing luxuriantly, are doing much to take off the newness of the additions.

It was too early in the year when we visited the estate to say much of the grounds surrounding Pendell Court, and yet even then they possessed a fascinating interest, for Pendell lies in a hollow, and may be said to represent the pit of a theatre, the gallery or balcony being the North Down hills, and these have been truly described as a "paradise of wild flowers." Special features in the gardens consist of colonies of Crocus, Snowdrops, and Daffodils, "naturalised," and planted *en masse* under stately Elms and other trees. The Daffodils, in their turn, present the picture of a veritable "Field of the Cloth of Gold."

Quitting the outside we take our way to the plant houses, and these contain no ordinary specimens of plants. Indeed, it is not too much to say that the collection, as a private one, is unsurpassed. Our space being limited we can only make very brief mention of a few of the more prominent and noteworthy subjects, beginning with Erythroxylon Coco This plant has been brought into notoriety from the fact of its producing the new alkaloid, which has lately been discovered as being valuable when used for diseases of the eye. Psidium Cattleyanum, which produces the famous Guava jelly. A fact regarding this plant is worth putting on record. It does well grown under Vines, as here, and is withal a vermin-proof plant, therefore valuable in this latter respect alone.

Pendell Court may be said to be the home of the beautiful Mackaya bella. Has it not whenever exhibited attracted the attention of those who always seek for a good thing? Hoya australis, a very free-flowering species. It is figured in *Botanical Magazine*, t. 5820. The specimen from which the drawing was made was supplied from this plant by Sir George Macleay. Acacia verticillata, a large plant producing numerous axillary pale yellow spikes of flowers, 2—3 inches long, which are very fragrant. We also noticed its near congener, A. Riceana, from Tasmania, named in honour of the Right Hon. T. Spring Rice, afterwards Lord Monteagle. Eurybia argophylla, the Tasmanian Muskwood, attractive with its white Aster-like flowers. One of the most characteristic features of what is called the tropical or Ceylon-house is Carica cauliflora (male), with a stem of about 2 feet in diameter; C. cundinamarcensis, noticed in these columns recently as being in fine condition at Kew; its reddish-yellow coloured fruits are very attractive. Bowiea volubilis—a climber—bulb, producing a greenish inflorescence, not particularly showy, but sufficiently interesting on account of its not producing any foliage. Hardenbergia monophylla, a useful greenhouse climber; its numerous blue flowers are arranged in stalked racemes. Stiffia Chrysantha, a showy Brazilian Composite, is a handsome species, with its terminal head of orange-coloured flowers; a good figure of the plant is given in the *Botanical Magazine*, t. 4438. The collection of Bromeliaceous plants—a unique one—demands more than passing notice. They are grand masses of plants. Bromelia macrodosa was very effective, with its drooping spikes of greenish flowers and bright red bracts—a fine specimen. Bilbergia mutans: flowers of a rosy-pink colour, boat-shaped bracts, completely clasping the stem, the inner segments of the perianth being large and reflexed, margin of a beautiful deep blue, with a broad greenish-yellow band running down the centre, which affords a striking contrast to the golden anthers. Æchynanthus, in variety, instead of growing in baskets, as is very often seen, are planted out, therefore grow under more natural conditions, and show great luxuriance of growth. Nidularium spectabile, apex of leaf being magenta-tipped, giving the plant a distinct appearance. Pothos (Marcgraavia) paradoxa, very curious in its habit of clinging to the virgin cork on which it grows. Philodendron melanochrysum, with its beautiful velvetty metallic foliage. Echinostachys Phrilliana, a grand mass, with its large hedgehog-like head of yellow flowers, bracts a beautiful light scarlet. Pitcairnea corallina, splendid, lately figured in the *Botanical Magazine*, t. 6600, from a plant which flowered here. Lamprococus Walbachi, the flower spikelets lying inside the beautiful boat-shaped red bracts; the segments of the perianth do not appear to expand in this particular variety, giving the inflorescence a berry-like appearance. The berries themselves form a charming combination of purple-rose and magenta. Nidularium Meyendorffi: this is interesting, as, instead of producing the usual showy bract leaves along the spike, as in other species, the whole inflorescence does not rise above the centre of the base of the leaves; but to make up for this apparent deficiency, the ordinary leaves are of a beautiful blood-red colour, thus attracting insects for the purposes of fertilisation—a remarkable adaptation of Nature. Pitcairnea rivalis, very rare, dull blue flowers, contrasting well with its pale red bracts; Encholirion Saundersii, under-surface of leaves beautifully spotted; Acanthostachys strobilacea, fine mass, very striking with its long grassy looking foliage and prickly cone-like clusters of inflorescence. We noticed a nice collection of Cycadaceous plants, particularly Macrozamia plumosa; M. Fraseri, gracefully arching foliage; M. corallipes, one of the most curious of the Australian Macrozamias: the rather swollen red base of the leaflets gives the rachis of the leaves a red coral-like appearance, hence its specific name. Encephalartos villosus, and Catikidozamia Macleayi, rare.

Gracefully suspended from the roof of the aquatic-house on a piece of cork, is probably one of the finest plants in Europe of Platycerium grande, brought direct from Queensland by Sir George Macleay. In this house we noted a grand lot of Dendrobes, the particular sorts being good masses of D. Farmeri, speciosum, Hilli, suavissimum, fimbriatum, thyrsiflorum, chrysotoxum, Parishii. They had not received any shading whatever, and to this mode of procedure Mr. F. Ross, the gardener, attributes their present plump and healthy appearance.

A fine specimen of Vanda Cathcarti was noted (figured in *Botanical Magazine*, t. 5845, where Sir Joseph Hooker mentions that in its native habitat—Northern India—it is found flourishing in the neighbourhood of waterfalls); it is growing, and succeeding well, under natural conditions, at Pendell, where it is located on a damp wall just over a water-tank.

Pendell must not be left without reference being made to the charming fernery. It is the *beau idéal* of what such an important adjunct to a garden should be. It might well be called a work of art, and yet it is so natural, as though the subjects grew there of their own will, and man had not been exerting his influence. Once inside you lose all idea of a plant-house, so-called, the orthodox staging being completely superseded. The walls are entirely covered with Selaginellas, Begonias of the rex type, and the gracefully pendent Ficus repens, and even the doors of the house are hid in this way, so that with the wealth of foliage, rocks, and the trickling of the water one might well imagine it to be some natural Fern gully. How at home in what may be called the "filmy corner" are those grand masses of Leptopteris (Todea) pellucida, Trichomanes radicans (Killarney Fern), Hymenophyllums of sorts in prime condition, and the beautiful Nephrolepis decomposita. Amongst the more important specimens in the main area of the gully may be mentioned Dicksonia antarctica, its stem being covered with moss; Cibotium princeps, Alsophila australis, Cyathea medullaris, C. dealbata, the latter with a Maxillaria growing upon it, giving therefore a tropical idea; Cibotium regale; Lomaria zamioides was noted here as being very rare. More could be said of the place, but sufficient has been related to show how fine an establishment is Pendell Court. *B.*

A NEW BLOOD PRODIGY.

Torula sporendonema, *B. and Br.*

Most persons who have read about microscopic fungi are more or less acquainted with the old tales of blood prodigies. In old books numerous tales are prevalent regarding showers of blood, of blood oozing from trees and from the ground, of bread being found blood-stained, and of a bleeding condition of the sacramental wafer of the Church of Rome—of the bread, in fact, being actually changed to real flesh and saturated with real blood. These blood prodigies are caused by more than one fungus; but the fungus of blood-stained bread and biscuits is Micrococcus prodigiosus, a name given by the famous Jewish botanist, Cohn. This fungus is frequently described as an Alga (a tribe of plants which in one direction closely approaches the fungi) under the name of Palmella prodigiosa, Mont.

During the meeting of the Cambrian Archæological Association in South Wales last autumn I was greatly interested in a paper read by Mr. C. O. S. Morgan, F.R.S., on the Church of St. Woollos (=St. Gwynllyw), Newport. Mr. Morgan gave some remarkable quotations from the MS. *Lives of the Cambro-British Saints*, a thirteenth or fourteenth century document now in the British Museum. Amongst the "historical facts" mentioned in this MS. is one to the following effect. In the time of the Anglo-Saxon king, Edward III. (the Confessor) merchants frequently came to England and exchanged merchandise in the harbour at the mouth of the river Usk, Newport, Monmouthshire. At this harbour they paid toll, but on one occasion they refused to make the usual payment, whereupon one Rigrit went to the harbour, cut an anchor from its rope, and placed the anchor in St. Woollos' Church. The merchants complained of the theft to Earl Harold, who came with a force and ravaged the country. The alarmed inhabitants fled for refuge to the church, where they took their valuables, garments, and provisions, including (as we shall immediately see) their cheese. About the year 1060 the followers of Harold broke the lock of the church and plundered it. The plunderers could not find the anchor, but they saw the cheeses. Now these cheeses when cut were found to be "bloody within." This "miracle," as it was then esteemed, so alarmed Harold and the other plunderers that everything was restored that had been taken. Harold was soon after killed at the battle of Hastings.

The fungus—for such it is—that causes cheese to appear "bloody within" is Torula sporendonema, B. and Br. It forms brilliant carmine and vermilion stains or blotches on cheese, and can spread on to other substances. In appearance it is not unlike blotches of bright arterial blood. In the eleventh century (as in the nineteenth) a superficial resemblance was often mistaken for positive identity.

The accompanying illustration (fig. 133), engraved from Nature, shows the appearance of the "blood prodigy" of cheese when magnified 500 diameters. The unshaded parts are colourless fungus cells, the shaded are the bright crimson nucleated spores, or conidia of the fungus. It is a curious fact that the spores of this fungus take the same form as blood discs from the human subject, and they are not only the same in form and colour, but they are the same in size. If, therefore, microscopes had been in vogue in the time of Harold, and this "Earl" had taken the

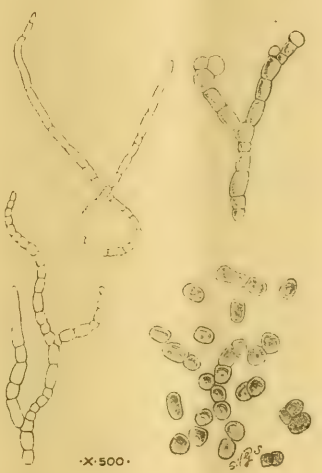


Fig. 133.—A BLOOD PRODIGY: TORULA SPORENDONEMA, B. AND BR.

trouble to microscopically examine the "blood" from the Newport cheeses, he would doubtlessly have been quite "confirmed" in his original idea of the miraculous nature of the prodigy. Moral:—"Never be too ready to believe in mere appearances, even if you use a microscope."

In the public room of the Department of Botany, British Museum, South Kensington, may be seen a coloured drawing, made by the writer of these lines, of three lumps of cheese, "bloody within," as caused by the presence of Torula sporendonema. The accompanying illustration of the microscopic appearance of the fungus is taken from the same drawing.

The more familiar blood prodigy of bread, Palmella prodigiosa, Cohn, is a much smaller plant. If magnified to the same scale as the blood prodigy of cheese each component cell would be about the size of a pin's point. *Worthington G. Smith, Dunstable.*

The Phylloxera. — The Phylloxera Committee appointed by the French Government have again had 161 plans for the destruction of the insect submitted to them, but they report that not one of them is sufficiently valuable to attain the reward of 300,000 francs (£1200). Submersion, irrigation, bisulphide of carbon, and sulfo-carbonate of potassium are the most successful means of combating the insect, while the use of American Vines as stocks has proved so successful that most of the former opponents have become ardent supporters of the plan.

Home Correspondence.

What is a Large-flowered Chrysanthemum? This somewhat important question for exhibitors of the Chrysanthemum and others interested in it, came up for discussion at the last meeting of the committee of the National Chrysanthemum Society. It was introduced this way: An exhibitor wrote for an authoritative opinion from the committee as to whether aught else but incurved Chrysanthemums could be shown in a class for large flowering varieties. It was a ticklish question, and one likely to draw out differences of opinion, which it undoubtedly did; but the committee, standing by its own practice, passed a resolution to the effect that at the exhibitions held at the Royal Aquarium, all flowers other than pompons are admitted as large-flowering varieties in all classes where there is no particular limitation. It is an undoubted fact that, historically speaking, large-flowered Chrysanthemums included not only incurved, but reflexed varieties also. Lists of large-flowered varieties given thirty years ago by those who were the leading cultivators of the day, included incurved and reflexed varieties. When the newer Japanese types were introduced, it became the practice to include these also among the large-flowering varieties, and this practice is carried out in many country shows. If the class states large-flowering incurved, or large-flowering reflexed, then it is certain that only flowers coming under these denominations can be included. It is equally obvious that under the heading of large-flowered varieties, all but pompons are admissible. The National Chrysanthemum Society is doing a good work by extending the culture of and popularising the "Queen of Autumn," but it needs to exercise care how it pronounces arbitrary opinions upon disputed points. If it sets itself up as the interpreter of disputed points in schedules of prizes, it will be in danger of involving itself in controversies of an embarrassing character. *K. D.*

An Unusual Disease of the Rose.—For the last two or three years I have noticed certain Roses in pots attacked by a peculiar complaint—one which I do not remember to have seen alluded to by any writers on Roses. The plants attacked are generally some which have been growing well and vigorously, when suddenly the young leaves commence hanging down, and curling slightly, and some of them show discoloured blotches, and in a few days they fall off with the slightest touch; the plant does not then die, but continues making spindly growth, but never regains its normal vigour throughout the season. Etoile de Lyon seems perhaps more subject to it than any other. Neither varied soils nor varying quantities of manure appear to affect this complaint. Nor is any difference apparent when rain or when pump-water are used for watering. Is it likely that there is anything wrong with the soft-soap? Weak Quassia and soft-soap water have been used occasionally of an evening, applied by syringe and washed off again early next morning by syringings of rain-water, or when that is scarce, with pump-water from a calcareous source. I should like to know whether any of your correspondents are acquainted with this peculiar disease in Roses, and to learn their experience if they will give it. *J. E. E.*

American Blackberries.—As I am the writer referred to by your correspondent, Mr. Richard Binns, in your issue for April 17, p. 499, as having complained unjustly of the value of American Blackberries for English cultivation, I must ask your permission to allow me to say a few words in reply, not only to the latter, but also to Messrs. Viccars Collyer & Co.'s article in a previous issue. I will deal with several points in the last-named firm's article first. In the first place I accept their explanation of the several causes which led to the late delivery of the plants, and of the unsatisfactory condition in which they arrived, and am very glad to find them not attempting to shirk their responsibility in the matter. I can assure them that until I saw the generous offer on their part to replace those plants that had died in the article now under notice, I had had no intimation whatever of their willingness to do so, therefore the intimation they refer to as having been made to purchasers was never made to me, or ever came under my notice. My employer expends a large sum every year in novelties, and when, as in the case of Wilson Junior, a fair price is paid for goods, he naturally expects fair value in return, and the latter certainly was wanting, as Messrs. Viccars Collyer & Co. candidly admit. After seeing a large engraving of a branch of Wilson Junior, and reading the glowing accounts of its merits &c., and then receiving such small plants, is it, I ask, any wonder that I, in common with many others whom I could name, should feel dissatisfied with what we honestly felt was not fair treatment? With all due courtesy to Messrs. Viccars Collyer & Co., I must say that I think the best course for them to have done was to have tried

Wilson Junior for a time in England, and have exhibited some of the branches of fruit as produced in this climate at some of our leading shows before sending it out; this course would have enabled them to send out satisfactory sized plants. I am glad to note that such an excellent authority on hardy fruit as Mr. Rivers is of the same opinion as myself and Mr. Culverwell as to the American Blackberries not having proved satisfactory in our climate. My employer tells me that several years ago he caused a quantity of strong plants of the Parsley-leaved Bramble, which he imported direct from America, to be planted in the woods and hedgerows of an estate he then held in Sussex. It would be curious and interesting to know how they have succeeded—a fact I hope at no distant date to be able to verify. I find, on reference to several books on the subject of fruit, that the Kittatinny is recommended as a superior variety; and this fact is substantiated by Mr. Rivers' extract from Downing's *Fruit Trees of America*, a book which is certainly considered to be a standard authority on American pomology. I fail to see that your correspondent, Mr. Richard Binns, has disproved the truth of my statements as to the value of Wilson Junior for English cultivation, and although he admits that Messrs. Viccars Collyer & Co. promptly replaced the unsatisfactory plants, he does not state that they are succeeding satisfactorily with him. He will at once find in the preceding notes an answer to his query, Why did I order the plants? This, I may repeat in brief, is the motive which prompts all lovers of novelties to order them, viz., to order in spite of prejudiced or previous experience anything claiming to be an advance on its predecessor. This I did in the case of Wilson Junior, and the disappointment experienced warrants the conclusions I and others have arrived at. In conclusion I shall only be too pleased to see satisfactory examples of English grown fruit of Wilson Junior exhibited at no distant date at one of the meetings of the Royal Horticultural Society at South Kensington, but until then my experience will not warrant me in being otherwise than a sceptic in the value of American Blackberries for English cultivation. *J. W. S.*

Salvias.—These, if not the choicest of greenhouse plants, are certainly among the most useful, as, besides being very brilliant and showy in their flowers, they come in at a time when there is little else in bloom, and last a long while in perfection. One of the most valuable is S. splendens Bruanti, which is a very decided improvement on the old S. splendens, as the habit of the plant is altogether dwarfer and better, and the spikes larger and longer, with brighter blossoms and calyx. This variety is also the first to come in, but is rather tender, and requires a temperature between 50° and 60° to have it do well, but when so favoured, and in a light dry house, it will continue good till quite late in the winter. To have large specimens the cuttings should be struck now or earlier, and the plants grown on under glass, in a cold frame, till the middle of June, when they may be plunged out in some light, non-conducting material, in a warm, sheltered spot, or have the lights left off till the autumn, as the exposure to full sun and air will make them sturdy and strong. By propagating a month or two hence nice little plants may be had in 32-sized pots, and these will be found of great service for furnishing. S. Pitcheri is likewise a very desirable kind, as it produces long tapering spikes of rich blue flowers, similar in shape to those of the Lobelia cardinalis, which show off in pleasing contrast with white Chrysanthemums or other plants of that colour. The habit of this Salvia is very spare and slender, and the leaves hard and narrow, the stems being firm and woody, which renders propagation rather difficult, unless the cuttings are taken off while the shoots are young. To have them in this desirable condition the best way is to start the old plants in gentle heat early in spring and slip the cuttings off with a heel, when if inserted under a bell-glass in sharp sandy soil and stood in a warm house or pit they will strike. S. Betheli is a remarkably fine kind, that produces long dense spikes of large satiny rose-coloured blooms, and has handsome pale green shining foliage, the habit of the plant being symmetrical, close, and compact. The next to succeed this is S. rutilans, the Pine-apple-scented Salvia, and this variety is one of the most desirable, as it branches out freely and flowers profusely, keeping up a long succession of bloom, which is of a bright magenta colour, and very light and pleasing worked up in bouquets. Mons. Issanchon is a most distinct kind, the flowers being pure white with creamy coloured bracts, flaked or marked with bright scarlet. A. gesneræflora is a late variety that comes into bloom in spring, the flowers being, as its specific name implies, Gesneria-like, and plants of it when well grown make a grand show, but they are very impatient of heat, and to have them really fine they must be allowed to come gently on in a cool house where they can have plenty of air. The same may be said of S. Heeri, which flowers about the same time, and branches out at almost every joint, so free is it in blooming, especially if the plants have been grown out well exposed to the sun, which hardens and ripens the wood. The soil that suits all the Salvias named is a good fibry loam, with which should be mixed a little rotten cow manure, and the plants kept rather tight in their pots. *J. S.*

Wasps.—In spite of the long and severe winter breeder wasps are unusually plentiful this year. I have seen and killed more already than I remember to have done in any previous spring, and from others have come similar information. When such is the case in a district where wasps' nests are comparatively few I fear that in rural localities there is reason to dread a plague of wasps in the autumn. Probably to obtain warmth and shelter during recent cold nights these pestilent insects have sought for such requirements in and about buildings, and specially in glass-houses. Thus trapped, as it were, the wasps have been easily destroyed. If each one of these spring breeders represents a possible nest in the autumn what good service is now done by destroying all that come within reach. It is worthy of note that the catching these insects in any place would be greatly facilitated by the use of a small hand net, and gardeners will do well to have a few such in convenient places about their gardens just now, for many wasps may be seen hovering about near walls and under the eaves of buildings. It is well also for those whose fruit always suffers when wasps are plentiful to make early provision for destroying nests as soon as they are discovered, and to that end some simple form of attack should be devised which would be efficacious without entailing upon the operators danger or inconvenience. Could not some simple arrangement of dynamite or gun-cutton—both very powerful explosives—be provided which could be thrust deeply into the nest-holes and discharged with ease and rapidity [bisulphide of carbon, a liquid, would be better. ED.], so as to secure the largest number of the depredating wasps? The work of destruction must take place at night. Would it not materially facilitate the finding the nests on an estate were farm or wood men, gardeners, or keepers instructed to place a stick holding a piece of paper prominently near to each nest found? A small reward might be given to all who thus marked and reported a nest. *A. D.*

Hardiness of Eucalyptus coccifera.—I would like to inform your readers that out of five plants of Eucalyptus coccifera inserted in the garden of the Atkinson Morley Hospital at Wimbledon during the last year, three have withstood the exceptionally prolonged winter remarkably well, and although planted in a bleak cold place are now strong and of vigorous growth. Baron Von Mueller in his great work on the *Australian Eucalyptus* remarks upon E. coccifera and E. amygdalina as the hardiest of the varieties. The healthy condition of E. coccifera at Wimbledon amply confirms the Baron's statement. E. globulus, which is the one most generally met with in gardens during the summer months, would certainly have succumbed if it had remained out-of-doors during the winter. The powerful disinfecting action, writes the Baron, of the oily volatile emanation of the Eucalyptus is mainly due to the evolution o fozone, so on sanitary conditions I shall hope either to plant myself or to see planted by others many more of the E. coccifera in the Hospital grounds at Wimbledon, as well as in other gardens in the country. *John Colebrooke.*

Forced Bulbs.—The numbers of these that are thrown away every year must be something enormous, and yet the greater part of them might, with great advantage, be used for planting out somewhere, as Narcissus, Tulips, and Crocuses come in splendidly for shrubbery borders, where all they require to give them a good start, if well away from roots of trees, is to have holes dug and the bottoms manured that the bulbs may have something to feed on. Hyacinths do well treated in the same way, and we have a lot now, that have been standing some years, with spikes of flowers almost, if not quite, equal to any on those that have been imported, the situation they occupy being a sheltered one, and the preparation made for them being the same as that referred to above. What injures bulbous plants perhaps more than anything else is hurrying the leaves off before they are ripe and dead, as when that is done a severe check is given, and the bulbs are unable to form and finish their bloom. As the foliage of those that have been forced or flowered under glass is somewat tender and easily injured by sudden exposure, the plant should be kept in a frame for a time till it gets hardened, and the planting out done when the weather is dull, or, if not, it is a good plan to afford a little break from the sun by sticking twigs of evergreens in and around. *J. S.*

Charcoal Stoves for Greenhouses.—I shall watch with some attention the replies you may receive to the question of Sir Charles Strickland on p. 570. Thoroughly consumed, charcoal should of course produce only carbonic acid, but if the combustion extends, as he says, to forty or sixty hours I think carbonic oxide must be given off until the mass is well alight. Whether that is hurtful to plants or not I do not know, and I have no record or note referring to it; but it seems clear that charcoal, as the heating agent, must mean a dry heat, probably to be remedied by placing saucers of water about. The so-called paraffin oil stoves, however, produce a certain amount of moisture, for they burn a hydrocarbon, and the combination of the hydrogen with oxygen yields water in the shape of aqueous vapour. Measured by the heat units given off, paraffin oil stoves are not economical, and if it can be shown that simple charcoal stoves will give off sufficient heat with little attention and without injury to the plants, they would be found useful in many places. Paraffin oil stoves, in my experience, require a good deal of attention, for unless the wicks are regulated at intervals of a few hours unconsumed carbon is given off in volumes to fall as light soot on the plants, which probably is more injurious than the dry heat produced byeth combustion of charcoal. Perhaps Sir Charles Strickland will favour you with details of his charcoal stoves, and some idea of the cost of working. *Sam. Ray.*

Florists' Flowers.

THE AURICULA.

As the specimen plants pass out of bloom, unless they are required to save seeds from, the pips should be picked off with thefingers, but the footstalks should be left. If the stem be broken, the portion remaining may rot, and the decay spread downwards, which will sometimes destroy the plant. We are now engaged repotting our best plants, at which operation all the offsets are removed and at once planted in thumb-pots. The Auricula aphis, a troublesome pest, has to be dealt with. At one time we used to carefully wash the roots, but unless the plants are very badly attacked we merely pull off the roots to which the woolly pest is attached, and pick out any from about the neck of the plants with a pointed stick. We would rather it was banished from the garden, but it does not now cause any anxiety. It seems to be in every garden, as we seldom get any Primulas or Auriculas but we find it on the roots. It appears to live on all hardy Primulas, but I have not seen it on the Chinese sorts. Has any one found it on this species or its varieties? We use rather more peat in the potting soil than heretofore. The loam, even if of a turfy nature, has a tendency to become close during a period of twelve months, and a little light fibrous peat keeps it open. The drainage of the pots ought to be good. The plants, if they have been in an Auricula-house should now be removed into frames on the north side of a wall or fence: and all that can be repotted should be done, as this is certainly the best time. We have potted off a lot of unbloomed seedlings, and as these advance in growth they must be potted on until they are placed, towards the end of the season, into 3 and 4-inch pots.

THE CARNATION.

We make a practice of sowing some seeds every year from choice varieties carefully crossed. The seeds were sown in the second week of April, and before the end of the month the whole of the seedlings were pricked out in boxes, and by the first week in June they will be planted out in the open ground, to form good specimens by the end of the season. The quantity of flowers produced on these plants is astonishing. I stated at p. 398 that the plants intended to be grown in pots had been repotted before they began to grow; with care used in watering they have not been at all injured, and since the weather became warmer they have started to grow freely. We have always taken them out of the frames about the first week in May, but this year they will probably remain in the frames until the middle of the month. May did not come in with genial weather, as some of us expected it would do; the wind had been east by north and north by east during the last days of April, but no frost until the morning of May 1, when the thermometer registered 8°; there was 5° at 10 o'clock the previous night. As the plants are placed out-of-doors sticks must also be put to each in order that none of them may get broken by high winds. The plants should be fumigated to destroy any greenfly that may be on them before they are placed out-of-doors.

Tree or Perpetual Carnations.

The flowering varieties of these should be potted on from the cutting pots. They may now be placed in cold frames, from which the lights can be removed in genial weather. Indeed, the whole collection may be placed in a favourable position out-of-doors early in June; the plants will be superior to any that could be grown under glass in summer. I use for potting a little light peat in the soil; it keeps the compost open, and the plants seem to root freely into it.

The Hollyhock.

The plants out in the open border, where they have been all through the winter, have suffered but little from the weather. It is a convenient way to treat these hardy plants, and saves trouble; but the plants will not produce such strong spikes as those grown in frames during the winter from cuttings struck during the previous summer and autumn. It is now quite time the plants were put out; we are not likely to have much more frost, at any rate none to injure Hollyhocks if they have been well inured to the open air before they are planted out. The spring propagated plants may not yet be quite ready; they will be later by a month or so in flowering than those propagated during the summer previous from eyes or cuttings. I place the sticks intended to support the plants in their place before planting out, and when the plants are put out they can at once be tied to the sticks. Being a gross feeder deeply cultivated and well manured soil is an essential. The plants will give gorgeous exhibition spikes, if well watered as soon as the dry weather sets in.

The Gladiolus.

By this time all the corms ought to be in the ground. Those planted earliest will now be well up and sufficiently developed to permit of the ground being moved with the Dutch hoe. I do not wait for the appearance of the weeds, but hoe the ground merely to break the impervious crust which in our soil forms on the surface. Like the Hollyhock, this fine autumn-flowering plant delights in deep and rich soil, but I have proved, again and again, that it is best to dig or trench in the manure six months or more before putting out the bulbs. Any manure in proximity to the corms will most likely cause some of them to decay.

Seedling Gladiolus.

I have often advocated the raising of seedlings, and given in detail the method of sowing and culture best adapted for small gardens. It may be enough to say, that if the seeds are not yet sown, it ought to be done without delay. Let some 6 or 7-inch pots be filled to within an inch of the rim with good light compost; make the surface level, and over it sow from thirty to fifty seeds; cover lightly with fine soil, plunge the pots in a hotbed in a good bottom-heat, and the young plants will be above the ground in less than two weeks; gradually give air until the plants are so inured to it that the lights may be removed altogether in fine weather, to be replaced again, if it is cold at night. It is best to sow the seeds early in April; by the end of May, if the frame is required for anything else, the pots containing the plants may be plunged to the rim out-of-doors. Plants produced from seeds last year may now be in beds out-of-doors with the named varieties they generally grow with more vigour, and will flower strongly in the autumn. *Jas. Douglas. Great Gearies, Ilford.*

Fruit Notes.

PEARS IN WEST MIDDLESEX.

Within half-a-mile of the Chiswick Gardens, but on the Middlesex side of the Kew Road, and in that part of the district known as South Acton, there is a fruit garden of considerable dimensions in the occupation of Mr. William Thomas Acton, an old inhabitant, and a member of a family which has resided in the parish many years. There are few open spaces in the garden; it is full of Pear, Apple, and Plum trees, with Gooseberries and Currants beneath, and between these one can see Pæonies, Sprouting Broccoli, Wallflowers, Forget-me-Nots, Poeticus and double white Narcissus; Parsley, Tulips, and other things that will grow under the shade of trees. In this garden there are 132 trees of Williams' Bon Chrétien Pear, old and young; some of their trunks very old and massive, but with heads of branches that have been renewed from time to time. Possibly these trees represent some of the earliest worked, for it will be remembered that one Williams, a nurseryman at Turnham Green, obtained this Pear towards the close of the eighteenth century, named it, and sent it out. It is said that one of the original trees still stands in Glendinning's old nursery at Turnham Green.

The oldest of the Williams Pears in Mr. Acton's garden appears to have been grafted on some baking variety. Here and there the stock has sent forth branches, and they occasionally blossom and fruit, and Mr. Acton finds them delicious for stewing purposes. It is believed that some of the trunks are 300 years old, having existed at the time of Queen Elizabeth, and there is an old map extant which proves that a portion of this garden was under water at high tides, though it is now quite half-a-mile away from the banks of the river Thames. Possibly the intermediate land was at that time very low and flat, with a much greater width of river; now it forms an important suburb of Greater London.

I asked Mr. Acton what he regarded as a good crop of Williams' Pears from his 132 trees; and he said 300 bushels, exclusive of windfalls; but he added, "It is very seldom indeed that I am rewarded with such a crop as this." There are a good many trees of the Hessle or Hazel Pear, some young and some old, which appears to be a convenient arrangement from a business point of view, for they appear to bear turn and turn about. Last year the young trees bore largely, while the old ones carried but scant crops; this season the order promises to be reversed, for it is certain that the old trees are well covered with blossom. Marie Louise is represented by several trees, but rarely gives anything like a crop. It is in all probability too tender, or it may be that it suffers from the smoky atmosphere which comes in this direction in clouds when the wind is in the east; but the trees are blooming finely. Beurré Bosc and Calebasse are well represented, and flowering freely. The former comes good on standards, and though the latter is regarded as a Pear of inferior quality, it finds a ready sale in the market.

The promise of a good fruit year, judging from the blossoming of the trees, is decidedly encouraging; but with the prevalence of northerly and easterly winds, combined with a low temperature at night, the grower almost hopes against hope. Some warm invigorating showers would be warmly welcomed. It is believed they greatly assist the fertilisation of the blossoms. Whether they do or not, they are infinitely to be preferred by all gardeners to the cold drying winds from the east. *R. D.*

Reports of Societies.

NATIONAL AURICULA (Northern Section).

The show of the above Society was held in the new Town Hall, Manchester, on Tuesday, April 27. The show of Auriculas was not so good as that of last year, either in point of numbers or quality of the exhibits. Many of the flowers were young and indifferent in smoothness, while others bore traces of the forcing to make them in time for the show. The collection of six staged by A. Potts, Esq., Hoole Hall, was notable for the size and brightness of the flowers.

In the collection of six A. Potts, Esq., Hoole Hall, near Chester, was 1st, with a well grown F. D. Horner, a fine Red Headley, Acme, very good; Lancashire Hero, Alexander Meiklejohn, and Mr. Douglas. Miss Woodhead, Halifax, was 2d, with G. Rudd, Acme, G. Lightbody, Black Bess, Prince of Greens, and Mrs. Dodwell; Wm. Brockbank, Esq., Didsbury, 3d, with Meiklejohn, Reliance, very poor; F. D. Horner, Negro, Red Headley, and Acme. E. Pohlman, Esq., Halifax, 4th, with Sapphire, Prince of Greens, J. Crossley, seedling self; Acme, and G. Lightbody. Mr. Bolton, Warrington, 5th, with Mrs. Douglas, Prince of Greens, seedling self, Reliance, Acme, and seedling grey edge. S. Barlow, Esq., Stakehill, 6th, with seedling self, Complete, seedling green, Violet, Ruby, a self of great purity; new green, Trail's Beauty. J. Buckley, Esq., Staleybridge, 7th, with Pizarro, G. Lightbody, Mrs. Douglas, Lovely Ann, Acme, and A. Meiklejohn.

In the class for four A. Potts, Esq., was 1st, with Acme, fine; Mrs. Douglas, A. Meiklejohn, and F. D. Horner, red; Lord Todmorden, 2d, with Blackbird, Acme, G. Lighbody, and R. Gorton, a green edge, very promising; Miss Woodhead 3d, with Smiling Beauty, Black Bess, G. Rudd, and Prince of Greens; Mr. J. Buckley 4th, Mr. H. Wilson 5th, Mr. E. Pohlman 6th, and Mr. W. Bolton 7th.

In the class for pairs Mr. Taylor, Middleton, was 1st, with Trail's Beauty and Prince of Greens; R. Gorton, Esq., Eccles, 2d, with Frank Simonite and F. D. Horner; C. Royds, Esq., Rochdale, 3d, with Conservative and Prince of Greens; Mr. G. Gordon 4th, with New Green and Trail's Beauty; Mr. Heys, Morden 5th; Mr. E. Shaw, Mostyn, 6th; Mr. J. Hilton 7th.

Prizes for maiden growers.—Mr. G. Gordon 1st, Mr. J. Hilton 2d, and Mr. H. W. Nixon 3d.

The premier Auricula was John Simonite, with five good pips, exhibited by A. Potts, Esq., Hoole Hall, near Chester.

Single Specimens.

The awards were as follows:—Single green-edged specimens: Mr. W. Brockbank with F. D. Horner, premium; Mr. Taylor was 1st, with Lovely Ann; Miss Woodhead 2d, with Prince of Greens; Mr. R. Gorton 3d, with Lancashire Hero; Mr. W. Brockbank, with seedling, 4th; Mr. R. Gorton 5th, with F. D. Horner; Mr. A. Potts 6th, with Talisman; Mr. S. Barlow 7th, with New Green; Mr. W. Bolton 8th, with Trail's Anna. Grey edges: Mr. A. Potts, premium, with G. Lightbody; R. Garton 1st, with G. Lightbody; 4th and 5th, with A. Meiklejohn and Lancashire Hero; Miss Woodhead 2d and 3d, with Rachel and Geo. Rudd; Mr. Taylor 6th, with Trail's Beauty; Mr. W. Brockbank 7th and 8th, with seedlings. White edges: Mr. Taylor premium, with Acme; Mr. A. Potts 1st and 3d, with John Simonite and Conservative; Mr. E. Pohlman 2d, with Acme; Miss Woodhead 4th, with Smiling Beauty; Mr. E. Shaw 5th, with Bright Venus; Mr. W. Bolton 6th and 8th, with Snowdrift and Frank Simonite; and Mr. C. Royds 7th, with Silvia.

Single selfs: Mr. W. Bolton premium, with Sapphire, and 4th and 6th with Sapphire and Black Bess; Mr. S. Barlow 1st, with Carbuncle; Mr. W. Taylor 2d and 3d, with Pizarro and Ellen Lancaster; Mr. W. Brockbank, 5th and 7th, with Lord of Lorne and Cymbeline; Mr. E. Pohlman 8th, with Topsy.

Alpine Auriculas.

In the class for four, Mr. R. Gorton was 1st, with Victoria, Miss Taplin, John Leech, and Elcho; Mr. S. Barlow 2d, with Diadem, Llewellyn, Dazzle, and Unique; Mr. E. Pohlman 3d, with four seedlings; Mr. W. Brockbank 4th, with Diadem, Mrs. Thompson, Beatrice, and conspicua; Mr. R. Heys 5th, with Diadem, Llewellyn, and two seedlings.

For single alpines, shaded, yellow centres, Mr. Buckly premium, with Diadem; Mr. E. Shaw 1st, with same; Mr. S. Barlow 2d and 3d, with Mrs. Meiklejohn and Llewellyn; Mr. G. Geggie 4th, with Unique; Mr. E. Pohlman 5th. Seedling alpines, single, shaded, white centres: Mr. R. Gorton, premium, with Victoria; Mr. Pohlman 1st, 3d, 4th, and 5th, with seedlings; Mr. R. Gorton 2d, with Goliath.

Polyanthus.

Three dissimilar, black grounds.—Mr. J. Hilton was 1st, with Lancashire Hero, Cheshire Favourite, and Exile; Mr. Taylor 2d, with Lancashire Hero, Cheshire Favourite, and Exile; Mr. Brockbank 3d, with Blackbird, Exile, and Cheshire Favourite; Mr. Walkden, Sale, 4th, with Favourite, Exile, and Seedling. For three red grounds.—In this class Mr. J. Hilton was 1st, with Lancer, Cox's Regent, and George IV.; 2d, Mr. Taylor, with similar; and Mr. Brockbank, 3d, with the same varieties. In single plants, red grounds, Mr. J. Hilton premium, with George IV.; 3d and 6th, with Cox's Regent and Sydney Smith; Mr. Brockbank 1st and 2d, with George IV. and Lord Derby; Mr. Taylor 4th, with Lancer. In black grounds, Mr. Walkden, premium, and 1st, with Cheshire Favourite; Mr. J. Hilton 2d, with Exile; Mr. Brockbank 3d and 4th, with Beauty of England and Lancashire Hero; Mr. Richard Heys 5th, with King.

Fancy Auriculas.

There were two fine collections staged; the 1st prize was awarded to S. Barlow, Esq., the 2d to Mr. W. Bolton. For twelve fancy Polyanthuses only one pan was staged. The 1st prize went to Mr. Barlow, who also took 1st prize for twelve Primroses; Mr. Walkden 2d, with a promising lot. Mr. Joseph Broome, of Didsbury, had a large and beautiful collection of miscellaneous plants.

Awards.

The following awards were made by the Botanical Society to the exhibitors of collections of plants:—Cultural Certificate to Mr. Joseph Broome, Didsbury, for Nepenthes bicalcarata and Attacia cristata. First-

class Commendations :—Mr. E. G. Wrigley, for Cattleya Lawrenceana ; Mr. B. S. Williams, ditto ; Mr. S. Barlow, for Primroses ; Mr. W. Walkden, for Polyanthus ; Mr. S. Hunter, for Mignonette ; Messrs. J. Dickson & Sons, for Narcissus ; and Mr. R. Hardwick, for Cineraria. *A Correspondent.*

LEEK AURICULA and SPRING FLOWER EXHIBITION.

THE first exhibition of Auriculas and spring flowers ever held in Leek took place at the Town Hall, on May 1, for the benefit of the Cottage Hospital. The show was arranged and energetically carried out by a few growers and admirers of the Auricula in Leek, to whom great credit is due. This favourite flower (so little known in Leek) was of course the centre of attraction, and considering the lateness of the spring, the specimens exhibited in all classes, more especially the self-coloured edged ones, would compare very favourably with other exhibitions held in different parts of the country, and augurs well for the culture of this charming flower in this district.

Green-edged class.—In this we missed F. D. Horner and Prince of Greens, these plants not being in bloom with us, Anna (Trail), 1st honour ; Lycurgus 2d honour.

Grey-edged class.—The veteran George Lightbody 1st, Frank Simonite 2d, Robert Trail 3d.

White-edged.—Acme (Red) 1st, Beauty (true) 2d, True Briton 3d.

The self-coloured class was the best of all, the 1st honour being deservedly awarded to Negro (Mellor), a splendid truss of eleven pips ; Mrs. Heap (Mellor) 2d, and Lord of Lorne 3d.

Stage alpines.—Diana 1st, Lavinia 2d, Mercury 3d. Mr. Mellor, nurseryman, Leek, was awarded a First-class Certificate for a splendid collection of garden varieties, alpines.

The competition for Daffodils (ten varieties) was certainly one of the features of the exhibition, the blooms being remarkably fine, and everything that could be desired. The prizes, which were given by Mr. M. Mellor, Leek Nurseries, were awarded as under :—Mr. H. W. Nixon 1st, Mr. J. Cheetham 2d, Mr. J. Garner 3d.

The room was suitably decorated with stove and greenhouse plants, kindly lent for the occasion, and Mr. H. W. Nixon, Leek, read a very interesting paper in the afternoon and evening upon the "History and Culture of the Auricula," for which he was accorded a hearty vote of thanks.

The committee are pleased to be able to hand over to the Cottage Hospital a nice little sum.

DAHLIAS FOR EXHIBITION.

YEARS ago, when there was a much greater rage for new Dahlias than there is at the present time, it was a custom with the Dahlia trade not to send out any plants until May 1. A strong effort was made, and all orders for plants were cleared off by the last day of April, so that there should be nothing to prevent an unrestricted transmission of Dahlias. Between 1850 and 1860 the traffic in Dahlias was at its height, and amateur growers as well as the trade looked anxiously for the 2d or 3d of May to come round to receive the new varieties, pot them, and grow them on into size ready for planting out the second week in June. During the ten years I have named some high-priced varieties were put into circulation—flowers that made a great reputation before they were sent out.

I have a lively recollection of the bustle and excitement that thirty years ago ensued at the Royal Nursery, Slough, as the 1st of May dawned. Thousands of young plants were obtained from cuttings, and gradually hardened off, so that they could occupy cold frames. Then during the last week in April, or as soon as convenient, the plants were all sorted, arranged in consecutive numbers (for every variety was numbered, not named), and so made ready for the execution of orders.

SHOW DAHLIAS.

Here is a selection of twenty-four varieties of show Dahlias that I am sure would please the most fastidious :—James Huntley, Mrs. Langtry, Constancy, Earl Radnor, Emily Edwards, Georgiana, Henry Walton, Herbert Turner, Hon. Mrs. P. Wyndham, Imperial, James Cocker, John Henshaw, Joseph Ashby, Joseph Green, Lord Chelmsford, Miss Cannell, Mrs. Gladstone, Prince Arthur, Prince Bismarck, Prince of Denmark, Royal Queen, Senator, William Rawlings, and Triumphant. Take from this list James Huntley, Earl Radnor, Emily Edwards, Prince Arthur, Royal Queen, and Senator, and then we have the best eighteen varieties for the exhibition table that can be named. The best twelve varieties are Mrs. Gladstone, William Rawlings, Prince Bismarck, Miss Cannell, Joseph Ashby, John Henshaw, James Cocker, Imperial, Henry Walton, Georgiana, Constancy, and Mrs. Langtry. But supposing any one is willing to have the very best six Dahlias he can grow, then I think he will find them in Mrs. Gladstone, William Rawlings, Miss Cannell, Joseph Ashby, John Henshaw, and Henry Walton. This selection of half-a-dozen, well grown, will be hard to beat.

FANCY DAHLIAS.

Let us treat the fancy varieties in the same way. The best twenty-four are undoubtedly Annie Pritchard, Charles Wyatt, Chorister, Edward Peck, Fanny Sturt, Flora Wyatt, Gaiety, George Barnes, Henry Glasscock, Hercules, Jessie Macintosh, John Forbes, Madame Soubeyre, Maid of Athens, Mandarin, Miss Annie Melsome, Mons. Chauvière, Mrs. Saunders, Professor Fawcett, Rebecca, Rev. J. B. M. Camm, General Gordon, James O'Brien, and Miss Lily Large. Take away Edward Peck, John Forbes, Maid of Athens, Miss Annie Melsome, James O'Brien, and Miss Lily Large, and we get the best eighteen fancies. A further process of reduction gives as the best twelve :—General Gordon, the Rev. J. B.M. Camm, Professor Fawcett, Mrs. Saunders, Mons. Chauvière, Mandarin, Jessie Macintosh, Hercules, George Barnes, Gaiety, Flora Wyatt, and Annie Pritchard. A peerless six will be found in General Gordon, Rev. J. B. M. Camm, Professor Fawcett, Mrs. Saunders, George Barnes and Gaiety.

SELFS.

There are some parts of the country where classes are made for self Dahlias only, consequently no tipped flowers are admissible. Here are twelve as fine as can well be grown :—Imperial, Georgiana, James Cocker, John Henshaw, Joseph Ashby, Mrs. Gladstone, Prince Arthur, Prince Bismarck, Senator, William Rawlings, Triumphant, and Joseph Green. An incomparable six taken from the foregoing, is Mrs. Gladstone, Imperial, Georgiana, John Henshaw, Joseph Ashby, and William Rawlings,

EDGED DAHLIAS.

The best twelve edged or tipped show Dahlias—not fancies—are Mrs. Langtry, Henry Walton, Hon. Mrs. P. Wyndham, Lady Gladys Herbert, Miss Cannell, Mrs. Harris, Picotee, Royal Queen, Delight, John Bennett, Mrs. Hodgson, and Mr. John Downie. The best six selected from these are Mrs. Langtry, Henry Walton, Hon. Mrs. P. Wyndham, Miss Cannell, Mrs. Harris, and Mrs. Hodgson.

TIPPED AND STRIPED FORMS.

The fancy flowers divide into two main sections—the tipped and the striped sections. Probably the tipped varieties are the most attractive, and they are placed first ; this, the best twelve, includes Fanny Sturt, Jessie Mackintosh, Maid of Athens, Miss Annie Melsome, Miss Rodwell, Mrs. N. Halls, Mrs. Saunders, Lady Antrobus, Miss Browning, Polly Sandell, Prospero, and Singularity. The best six of these are Fanny Stunt, Jessie Mackintosh, Maid of Athens, Miss Rodwell, Mrs. N. Halls, and Mrs. Saunders. The best twelve striped flowers are General Gordon, Annie Pritchard, George Barnes, Hercules, Henry Glasscock, James O'Brien, Mandarin, Professor Fawcett, Rev. J. B. M. Camm, Mons. Chauvière, Charles Wyatt, and Flora Wyatt. From these a perfect six may be taken as follows :—General Gordon, Hercules, Professor Fawcett, Rev. J. B. M. Camm, Henry Glasscock, and George Barnes. *R. D.*

TRITONIAS.—We have received from Mr. Maher, the gardener at Yattendon, Newbury, a pretty collection of these flowers, which are now getting to be more generally grown than formerly. As small furnishing plants for the greenhouse during this month there are few things that approach the Tritonias and Ixias for vivid, though soft and pleasing colours. All are easily grown in pots, or planted out on a warm border and covered with a frame. Some of them are evergreen and so do not require to be dried off as many bulbs do. Our correspondent calls his flowers varieties of T. crocata, which they may well be (although some of them resemble T. squamata), T. Elegant, and T. Prince Alfred.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MAY 5, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure from Mean of 30 years.	HYGROMETRICAL DEDUCTIONS from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
April	In.	In.	°	°	°	°	°	°			In.
29	29.76	—0.02	47.8	34.5	13.3	40.5	— 8.6	34.6	82	E. R. N.E.	0.35
30	29.99	+0.21	49.0	34.5	15.4	42.9	— 6.5	27.7	55	E. N.E.	0.00
May 1	30.10	+0.33	57.5	30.3	27.2	43.7	— 6.1	33.4	67	E.	0.00
2	30.24	+0.47	51.7	32.0	19.7	42.0	— 8.1	33.3	71	E.	0.00
3	30.24	+0.47	60.8	36.0	24.8	48.3	— 2.1	36.4	62	E.	0.00
4	30.27	+0.51	65.5	37.0	28.5	52.0	— 1.2	34.7	52	E. S.E. S.S.E	0.00
5	30.28	+0.53	63.0	42.6	18.6	54.0	+ 2.8	36.2	51	E	0.00
Mean	30.13	+0.36	57.3	34.0	22.4	46.2	— 4.3	33.8	63	E.	0.35

April 29.—Rain in early morning, very dull morning, finer from 1 P.M.
" 30.—Very fine day.
May 1.—Very fine day.
" 2.—Very fine day, cold wind.
" 3.—Very fine bright day.
" 4.—Very fine bright day.
" 5.—Very fine and bright.

LONDON : *Atmospheric Pressure.*—During the week ending May 1, the reading of the barometer at the level of the sea increased from 30.08 inches at the beginning of the week to 30 18 inches by 1 P.M. on the 25th, decreased to 29 63 inches by 1 P.M. on the 28ht, increased to 30.16 inches by 9 A.M. on April 30, decreased to 30.15 inches by 1 P.M. on the same day, and was 30.29 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.03 inches, being 0.07 inch higher than last week, and 0.08 inch higher than the average of the week.

Temperature.—The highest temperature in the shade in the week was 65°.5, on the 28th ; on the 29th the highest was 47°.8. The mean of the seven high day temperatures was 56°.5.

The lowest temperature was 30°.3, on May 1 ; on April 28 the lowest temperature was 43°.8. The mean of the seven low night temperatures was 38°.1.

The greatest range of temperature in one day was 27°.2, on May 1 ; the smallest, on April 29, was 13°.3. The mean of the seven daily ranges was 18°.4.

The mean temperatures were, on April 25, 50°.2 ; on the 26th, 48° ; on the 27th, 53°.1 ; on the 28th, 55°.3 ; on the 29th, 40°.5 ; on the 30th, 42°.9 ; and on May 1, 43°.7 ; of these the 25th, 27th, and 28th of April were above their averages by 1°.9, 4°.4, and 6°.1 respectively ; the rest were below by 0°.5, 8°.6, 6°.5, and 6°.1 respectively.

The mean temperature of the week was 47°.6, being 0°.3 higher than last week, and 1°.3 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 122° on the 27th. The mean of the seven readings was 110°.

The lowest reading of a minimum thermometer placed on grass was 18°.8 on May 1. The mean of the seven readings was 32°.8.

Rain fell on two days, to the amount of 0.38 inch.

ENGLAND : *Temperature.*—During the week ending May 1 the highest temperatures were 72°.8 at Cambridge, 70° at Bristol, 69°.9 at Liverpool ; the highest at Newcastle was 56°, at Hull 58°, at Sunderland 61°. The general mean was 66°.2.

The lowest temperatures were 23°.5 at Cambridge, 28° at Hull, 28°.2 at Wolverhampton ; the lowest at Newcastle was 36°, at Plymouth 35°.4 at Liverpool 33°.8. The general mean was 31°.2.

The greatest ranges were 49°.3 at Cambridge, 41°.4 at Wolverhampton, 39° at Bristol ; the least ranges were 20° at Newcastle, 30° at Hull, 31° at Sunderland. The general mean was 35°.

The mean of the seven high day temperatures was highest at Bristol, 61°.6, at Cambridge 61°.3, at Truro 60°.3; and was lowest at Newcastle, 49°.3, at Hull 49°.9, at Sunderland 52°.2. The general mean was 56°.4.

The mean of the seven low night temperatures was highest at Plymouth, 44°, at Truro 43°.4, at Brighton 40°.9; and was lowest at Cambridge, 33°.3, at Hull 33°.7, at Wolverhampton 34°.4. The general mean was 37°.9.

The mean daily range was greatest at Cambridge, 28°, at Wolverhampton 24°.5, at Bristol 23°.3; and was least at Newcastle, 10°.3, at Sunderland 15°.2, and at Plymouth 15°.7. The general mean was 18°.5.

The mean temperature was highest at Truro and Plymouth, 50°.2, at Bristol 48°.3; and was lowest at Hull 40°.2, at Sheffield 42°.8, at Sunderland 43°. The general mean was 45°.6.

Rain.—The largest falls were 0 87 inch at Truro, 0.77 inch at Plymouth, 0 50 inch at Wolverhampton; the smallest falls were 0 04 inch at Brighton, 0.10 inch at Newcastle. No rain fell at Sheffield. The general mean fall was 0.31 inch.

SCOTLAND: *Temperature.*—During the week ending May 1, the highest temperature was 70°.6, at Edinburgh; at Aberdeen the highest was 60°.2. The general mean was 66°.1.

The lowest temperature in the week was 29°, at Perth; at Leith the lowest temperature was 34°.7. The general mean was 31°.9.

The mean temperature was highest at Paisley, 49°.2, and lowest at Aberdeen, 42°.9. The general mean was 45°.8.

Rain.—The largest fall was 0.35 inch at Edinburgh; the smallest fall was 0.10 inch at Perth. The general mean fall was 0.20 inch.

JAMES GLAISHER, F.R.S.

Obituary.

MR. ANDREW TURNBULL.—It is with great regret that we have to record the death of Mr. Turnbull, the well-known Scotch gardener, on April 18 last, in his 82d year. Mr. Turnbull died at Bothwell Castle Gardens, where he had been gardener since 1828, and to which he was sent by the late Mr. McDonald from Dalkeith Gardens, where he had been for seven years. Previous to this Mr. Turnbull had been at the Garden at Haining, near Selkirk. Mr. Turnbull was a most successful cultivator of herbaceous as well as other plants. The herbaceous Calceolaria and the genus Erica gained much from his attention to them, and some of the best sorts of both these plants were produced by his art. Of the latter Mr. Turnbull considered his best variety to be E. Marnockiana. Orchids also received their share of attention, and his autumn-flowering Cattleya labiata needs only to be mentioned as an instance of his success in this branch of horticulture. A portrait of Mr. Turnbull, with a biographical sketch by himself, was given in our columns, September 12, 1874, and to which we refer our readers for further information.

With the death of this veteran of the gardening world we lose one of the last of the race of gardeners of rare practical experience, and one whose practice was not bounded by any section of horticulture, as so many are found to be now-a-days. He was equally good in all departments, if he had no especial excellence in any one.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that our Registered Telegraphic Address is* "GARDCHRON, LONDON." *Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

AMARYLLIS: *F. B.* The bulb is affected with the Eucharis mite. Destroy your bulbs, and use fresh soil for fresh bulbs.

BOOKS: *J. C. G. The Fern World*, F. G. Heath (Sampson Low & Co.).

INJURY TO VINE LEAVES: *W. S.* It is not mildew, but we suspect it is the work of a small caterpillar (Tinea), but will examine more fully when we get an opportunity.

NAMES OF PLANTS: *H. J. Ross.* From the withered scrap sent it is hardly possible to say of what species the Dendrobium is. Cattleya Forbesii; ordinary Odontoglossum Pescatorei. — *Hedgecroft.* Lathræa squamaria; not an Orchid, but a parasitic plant allied to the Broomrapes. It grows on the roots of Hazels.—*South'ton.* 1, Odontoglossum Andersonianum; 2, Masdevallia Veitchii coccinea; 3, Odontoglossum Halli.—*E. & Sons.* The plant is Sherardia arvensis, an annual, most likely introduced with the Clover seeds or with manure. It is a common cornfield weed.—*W. L.* 1, Saccolabium ampullaceum; 2, Dendrobium crystallinum.—*W. P. Hiern.* Dendrobium Pierardi.—*G. Payne.* Female flowers of Begonia nitida; Dendrobium Pierardi.—*D. G.* Ixia viridiflora, a most attractive flower, but not new, although but little known among gardeners.—*J. R., Menabilly.* A form of Rhododendron grande.

TWIN SPATHES IN ARUM: *S. H.* Not uncommon, but interesting.

WHOLESALE WIRE-WORKERS: *A Constant Reader* We cannot make any exception in your favour by giving the names of trading firms. Examine our advertising columns.

*** All communications intended for publication should be addressed to the "*Editor.*" Such communications should be *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

☞ FOREIGN SUBSCRIBERS sending Post-Office Orders are requested to send them to the Publisher of this journal, 41, Wellington Street, Covent Garden, and to make them payable to William Richards, at the Post-Office, Drury Lane, London, W.C.

CATALOGUE RECEIVED.

J. VEITCH & SONS, Royal Exotic Nursery, Chelsea, S.W.—Plants and Novelties for 1886, and also List of Soft-wooded and Bedding Plants.

COMMUNICATIONS RECEIVED:—H. P. (next week).—S. P.—J. S.—H. G. Rchb. f.—Carl Hansen, Copenhagen.—J. B.—R. T. C.—W. G. (next week)—J. W.—C. N.—W. W.—W. G. S.—W. B. Latham (many thanks).—J. F.—C. M.—W. S.—Fungi (next week).

Markets.

COVENT GARDEN, May 6.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

No recovery in prices; a somewhat better demand being met by increased supplies. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0- 4 0		Peaches, per dozen	8 0-12 0	
— Canadian, barrl.	8 0-21 0		Pears, per dozen	..12 0 15 0	
Grapes, new, per lb.	3 0- 7 0		Pine-apples, Eng., lb.	1 0- ..	
Kent Cobs, 100 lb.	..40 0- ..		— St. Michael, each	2 6- 8 0	
Lemons, per case	.. 8 0-10 0		Strawberries, per lb.	2 0- 6 0	

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	.. 4 0- ..		Mint, green, bunch	1 0- ..	
Asparagus, Eng., 100 to	0 0- ..		Mushrooms, punnet	1 0- 1 6	
— French natural, per bundle	.. 3 0- 8 0		Mustard and Cress, do.	0 4- ..	
— Spanish natural, per bundle	.. 4 0- ..		Onions, per bushel	.. 5 0- ..	
Beans, Kidney, lb.	3 0- ..		Parsley, dozen bunch	2 0- 3 0	
Beet, red, per dozen	1 0- 2 0		Parsnips, per dozen	1 0- ..	
Broccoli Sprts., bush.	5 0- ..		Potatos, per cwt.	.. 4 0- 5 0	
Carrots, per bunch	0 6- ..		,, kidney, per cwt	4 0- 5 0	
Cauliflowers, per doz.	3 0- 4 0		Salsafy, per bundle	0 9- ..	
Celeriac, per root	0 4- ..		Savoys, per dozen	3 0- 5 0	
Celery, per bundle	1 6- 2 0		Scorzonera, p. bundle	1 0- ..	
Coleworts, doz. bunch	8 0- ..		Seakale, punnet	.. 2 6- ..	
Cucumbers, each	0 9- 1 0		Shallots, per pound	0 3- 0 9	
Endive, per dozen	1 0- 2 0		Spinach, per bushel	4 0-6 0	
Herbs, per bunch	0 4- ..		Sprouts, per pound	0 9- ..	
Leeks, per bunch	0 0- ..		Sprue Asparagus, per bundle	.. 1 0- ..	
Lettuce, per dozen	1 0- 1 6		Tomatos, per lb.	1 6- 2 6	
			Turnips, bunch	.. 0 6- ..	

POTATOS:—Old: Magnums, 6*s.* to 8*s.*; Regents, 7*os.* to 90*s.* per ton. New: Jersey Kidneys, 6*d.* lb.; ditto, small, 3*d.* lb.; other samples lower; Malta Kidneys, 14*s.* to 20*s.*; ditto, Rounds, 12*s.* to 16*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, per dozen	.. 9 0-18 0		Evergreens, in var., per dozen	.. 6 0-24 0	
Arum Lilies, dozen	9 0-12 0		Ficus elastica, each	1 6- 7 0	
Azaleas, per doz.	..24 0-42 0		Ferns, in var., dozen	4 0-18 0	
Begonias, per dozen	6 0-12 0		Foliage Plants, various, each	.. 2 0-10 0	
Bouvardias, doz	..12 0-18 0		Genistas, per dozen	6 0-12 0	
Cinerarias, per doz.	5 0- 8 0		Lilies, per dozen	..12 0 24 0	
Cyperus, per dozen	4 0-12 0		Marguerite Daisy, per dozen	.. 8 0-12 0	
Dracæna terminalis, per dozen	..30 0-60 0		Myrtles, per dozen	6 0-12 0	
— viridis, per doz.	..12 0-24 0		Palms in var., each	2 6-21 0	
Ericas, various, per dozen	..12 0-24 0		Pelargoniums, doz.	9 0-18 0	
Euonymus, in var., per dozen	.. 6 0-18 0		— scarlet, per doz.	4 0- 8 0	
			Spiræa, per dozen	9 0-15 0	

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Anemone, 12 bun.	3 0- 6 0		Narcissus, various, 12 bunches	.. 2 0- 6 0	
Arum Lilies, 12 blms.	4 0- 6 0		Pelargoniums, per 12 trusses	.. .. 0 9- 1 0	
Azaleas, 12 sprays	0 6- 1 0		— scarlet, 12 trusses	0 4- 0 9	
Bouvardias, per bun.	0 6- 1 0		Primroses, 12 bun.	0 6- 1 0	
Camellias, 12 blms.	1 0- 4 0		Primulas, double, per bunch	.. .. 0 6- 1 0	
Carnations, 12 blms.	1 0- 3 0		Roses, Tea, per doz.	0 9- 2 0	
Daffodils, 12 bunches	1 6- 6 0		— red, per dozen	.. 2 0- 4 0	
Eucharis, per dozen	4 0- 8 0		Spiræas, 12 bunches	6 0- 9 0	
Gardenias, 12 blooms	1 0- 4 0		Tropæolums, 12 bun.	1 0- 2 0	
Hyacinths, per box	1 6- 5 0		Tuberoses, 12 blms.	1 0- 1 6	
Lapageria, red, 12 blooms	.. .. 1 0- 2 0		Tulips, doz. blooms	0 4- 0 6	
Lilac, French, bunch	2 0- 7 0		Violets, Parme, Fr., per bunch	.. 4 0- 6 0	
Lily-of-the-Valley, 12 sprays	.. 0 6- 1 6				
Marguerites, 12 bun.	3 0- 6 0				
Mignonette, 12 bun.	3 0- 9 0				

SEEDS.

LONDON: *May 5.*—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., state that there is still some sowing demand for Clover and other seeds—indeed the present season promises to be an exceedingly protracted one. Prices all round continue at an unusually low level—in fact nearly all varieties have fallen to a speculative point. Inferior qualities of homegrown Clover seed are for the moment practically unsaleable. Spring Tares realise former terms; stocks are in narrow compass. There is no change in birdseeds. Blue Peas and Haricot Beans keep steady, feeding Linseed dull. More money is asked for both Rape and Mustard. Canary seed is firmer. Of Hemp seed the arrivals are heavy.

CORN.

MARK LANE: *May 3.*—English red Wheat advanced 1*s.* as compared with the rates current a fortnight back, and white Wheats 6*d.* Country flour was 6*d.* to 9*d.* dearer, but foreign remained at previous value generally, and American was barely supported. Grinding Barley was steady in value, with a slow sale. Swedish Oats were 3*d.* dearer for the common grades, which are getting scarce. In other grain there was no quotable change.

May 5.—There has not been much passing in any kind of grain to affect quotations to-day, but there appears to be rather a firm tendency for Wheat. In the absence of any business of moment all spring corn remains nominally unaltered in value.

Average prices of corn for the week ending May 1:—Wheat, 31*s.* 1*d.*; Barley, 26*s.* 7*d.*; Oats, 29*s.* 7*d.* For the corresponding period last year:—Wheat, 37*s.* 7*d.*; Barley, 31*s.* 4*d.*; Oats, 22*s.* 7*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *May 5.*—Larger supplies of vegetables, with an improved demand. Prices lower. Quotations:—Cabbages, 3*s.* to 4*s.* per dozen; Cauliflowers, 2*s.* 6*d.* to 4*s.* do.; Spinach, 2*s.* 6*d.* to 3*s.* per sieve; Sprouting Broccoli, 3*s.* 6*d.* to 4*s.* 6*d.* do.; bunch Rhubarb, 1*s.* 6*d.* to 2*s.* 6*d.* per dozen bunches; do. Greens, 4*s.* to 6*s.* do.; Carrots, 2*s.* to 3*s.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* 6*d.* do.; Onions, 4*s.* 6*d.* to 6*s.* per cwt.; Carrots, 20*s.* to 40*s.* per ton; Apples, 3*s.* to 6*s.* per sieve.

STRATFORD: *May 5.*—There was a good supply of produce and a fair trade was done at the following prices:—Greens, 7*s.* 6d. to 8*s.* 6*d.* per dozen bunches; Cauliflowers, 8*s.* to 12*s.* per crate; Turnips, 40*s.* to 50*s.* per ton; Carrots, household, 30*s.* to 35*s.* do.; do. cattle feeding, 15*s.* to 20*s.* do.; Mangels, 20*s.* to 22*s.* do.; Swedes, 17*s.* to 20*s.* do.; Onions, 5*s.* to 7*s.* per cwt.; Rhubarb, 1*s.* 6*d.* to 2*s.* 6*d.* per dozen.

POTATOS.

BOROUGH AND SPITALFIELDS: *May 4.*—Good supplies and dull trade Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 95*s.*; and Champions, 55*s.* to 65*s.* per ton.

COLUMBIA (East London): *May 4.*—Trade not quite so brisk; large supplies on hand. Quotations:—Magnums, 50*s.* to 80*s.*; Regents, 50*s.* to 65*s.*; Victorias, 50*s.* to 60*s.*; and Champions, 40*s.* to 50*s.* per ton.

STRATFORD: *May 5.*—Quotations:—Magnums, best, 70*s.* to 80*s.*; do. seconds, 60*s.* to 70*s.*; do. inferior, 58*s.* to 60*s.*; Champions, 50*s.* to 60*s.*; and Heros, 50*s.* to 65*s.* per ton.

Imports.—The imports into London last week consisted of 6577 bags Hamburg, 3 Brussels, 195 Harlingen, 2002 sacks Stettin, 685 bags 6 casks 24 boxes 1496 cases Malta.

HAY.

WHITECHAPEL: *May 4.*—Supply small, with a good inquiry for hay of the best quality, and top quotations advanced 1*s.* per load. Quotations:—Clover, prime, 90*s.* to 108*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 95*s.*; inferior, 50*s.* to 65*s.*; and straw, 27*s.* to 36*s.* per load.

May 6.—A rather short supply was on sale, and there was a very dull trade at previous prices.

CUMBERLAND (Regent's Park): *May 4.*—A large supply, with dull trade at lower prices. Quotations:—Clover, best, 90*s.* to 105*s.*; seconds, 75*s.* to 85*s.*; hay, best, 84*s.* to 90*s.*; seconds, 70*s.* to 80*s.*; and straw, 30*s.* to 36*s.* per load.

STRATFORD: *May 5.*—Hay, 84*s.* to 86*s.*; Clover, 95*s.* to 100*s.*; and straw, 30*s.* to 33*s.* per load.

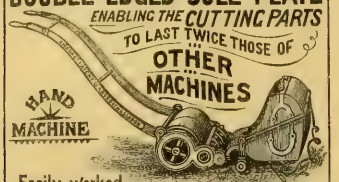
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To CUT 10 INCHES WIDE,	£3 10 0	To CUT 19 INCHES WIDE,	£8 0 0
To CUT 12 INCHES WIDE,	4 10 0	To CUT 22 INCHES WIDE,	8 10 0
To CUT 14 INCHES WIDE,	5 10 0		
To CUT 16 INCHES WIDE,	6 10 0	To CUT 24 INCHES WIDE.	9 0 0

HORSE AND PONY MACHINES
ILLUSTRATED LISTS OF
THESE UNRIVALLED MACHINES POST FREE

GARDEN ROLLERS
OF ALL SIZES

ALEX. SHANKS & SON
DENS IRON WORKS ARBROATH
& 27 LEADENHALL STREET, LONDON, E.C.

A large Stock of Machines of all sizes always kept
— AT 27 LEADENHALL STREET —
— WHERE REPAIRS CAN ALSO BE EXECUTED —
SMALL LAWN MOWERS
6 INCH 25/- ; 7 INCH 35/- ; 8 INCH 45/-

BOULTON & PAUL, MANUFACTURERS, NORWICH.



Garden Engine and Water Barrow combined.—This implement is specially suited for Amateur Gardeners, as it can be used for a variety of purposes. CASH PRICES (carriage paid)—
15 gal. size, £3 15s.
20 ,, ,, £4 5s.
25 ,, ,, £4 15s.
A very requisite for the Garden and Pleasure Grounds manufactured by ourselves. New General Catalogue sent free.

Imperishable and Cheap—The New
WINDOW FLOWER BOX



MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
W. M. PRYOR, IRONMONGER,
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A Liberal Discount to the Trade.

HORTICULTURAL GLASS

14×12	20×15
16×12	20×16
18×12	22×16
20×12	24×16
16×14	20×18
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21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.
A large stock of similar current sizes of 15-oz. glass in 200 feet boxes.
Propagating and Cucumber Glasses, and all Miscellaneous Glass Articles, can be obtained from
GEORGE FARMILOE & SONS,
GLASS, LEAD, OIL and COLOUR MERCHANTS.
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Stock List and Prices on application. Quote *Chronicle.*

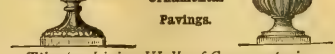
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LAWN MOWERS.

£5 Great Reduction in Prices for 1886!!!
NEW "TENNIS" LAWN MOWER.
NEW "MANCHESTER" LAWN MOWER.
PATENT "ANGLO-AMERICAN" LAWN MOWER.
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PATENT HORSE and PONY LAWN MOWERS.
Good Lancashire-made Machines, far superior to American and other imitations. They have been awarded many Silver Medals and Prizes at International Exhibitions. A month's trial allowed, and if not approved, can be returned unconditionally.
Prices from One Guinea each, carriage paid.
FOLLOWS & BATE (Lim.), Manchester.
Machines of any make repaired and made equal to new.

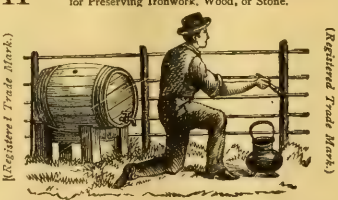
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LAMBETH POTTERY, LONDON, S.E.
VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,
IN
IMPERISHABLE TERRA COTTA.



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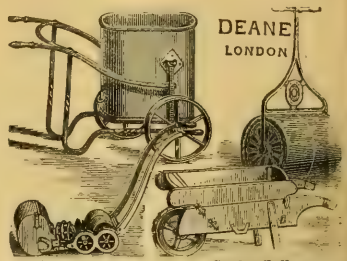
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ART POTTERY, including JARDINIERES
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Show Rooms, Albert Embankment, S.E.

Oil Paint no Longer Necessary.
HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.



This VARNISH is an excellent substitute for oil paint or any outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of forty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of most of the Nobility and Gentry, from whom the most flattering testimonials have been received.
Sold in Casks of about 30 gallons each, at 1s. 6d. per gallon, at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom

UNSOLICITED TESTIMONIAL
From ALFRED LOWE, Esq., *The Ryleys, Alderley Low.*
"Some twenty years ago I used your Black Varnish, and shall be glad if you will forward me a cask, as I consider it the best thing known for the preservation of all outdoor work, either wood or iron, that requires to be painted."
CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.
Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.
Large Illustrated CATALOGUE on Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to
HILL & SMITH,
Brierly Hill Ironworks, near Dudley;
118, Queen Victoria Street, London, E.C.; and
136, Stephen's Green, Dublin.



Lawn Mowers.
20 PER CENT. FOR CASH OFF MAKERS' PRICES. Carriage paid.
All the Best Makes in Stock.

Garden Rollers.

DOUBLE CYLINDER.	SINGLE.
20 by 18 in. 50s.	16 by 16 in. 32s.
22 by 20 in. 55s.	18 by 18 in. 35s.
24 by 22 in. 65s.	20 by 20 in. 45s.
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Swing Water-Barrows.
15 Gall... 30s. | 32 Gall... 46s.
20 Gall... 36s. | 40 Gall... 54s.

Wood Barrow.
Well made and cheap .. 24/6
With loose top, as shown.. 32/6

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DEANE & CO. have SPECIAL FACILITIES for Grinding and Repairing Lawn Mowers of all makes, a large staff of EXPERIENCED WORKMEN being employed for the purpose. THOROUGHNESS in REPAIR and MODERATE CHARGES guaranteed.
Estimates given in all cases before commencing the work.
DEANE & CO.'S ILLUSTRATED GARDEN CATALOGUE (the most complete published) free by post.

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THE GENERAL WOOD COMPANY, Swedish Wharf, High Street, Peckham, London, S.E., supply all descriptions of WOOD, at Wholesale Prices for Greenhouse FRAMES, Manufactured DOORS, FLOORING, MOULDINGS, SASH-BARS, RICK and SCAFFOLD POLES, SCANTLINGS, and BOARDS. Manufactured to exact sizes, and prepared ready for fixing.
Apply for quotations as above.

GARDEN REQUISITES.—Sticks, Labels, Virgin Cork, Raffia, Mats, Bamboo Canes, Rustic Work, Manures, &c. Cheapest prices of
WATSON AND SCULL, 90, Lower Thames St., London, E.C.

C. G. FRAZER & CO.,
Horticultural Builders, Norwich.



5 Span-roof Greenhouses fitted complete, made in lights, glazed with 21-ounce glass and painted three coats of good oil colour, Tenant's Fixtures, 12 feet by 8 feet, £23 19s. For brickwork, £16 17s.



Three-quarter Garden Frame, with registered set-open lights, 2 inches thick, glazed with 21-ounce glass, and painted four coats, 4 feet by 6 feet, £2 17s.; 8 feet by 6 feet, £4 10s.; 12 feet by 6 feet, £6 5s. 6d.; cases, 6s.

CUCUMBER FRAMES.
Lights 2 inches thick, glazed with 21-ounce glass, painted four coats.

	£	s.	d.
8 ft. by 6 ft.	3	4	6
12 ft. by 6 ft.	4	12	6

Cases 5s.





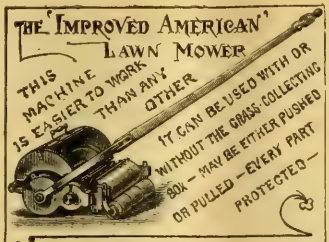
THE CHEAPEST LEAN-TO FRAMES IN THE MARKET.
Glazed with 21-ounce glass, and painted three coats, fitted with strong joints and (registered) set-opes, 8 feet by 4 feet, £2 2s.; 12 feet by 4 feet, £2 15s.; 16 feet by 4 feet, £3 10s. Cases, 6s.
Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, and Belfast.
Illustrated Catalogues, post-free, two penny stamps.
See Advertisement, alternate Weeks.

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HORTICULTURAL BUILDERS,
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W. H. LASCELLES AND CO. will give Estimates for every description of HORTICULTURAL WORK, free of charge, and send competent assistants when necessary.
LASCELLES' NEW ROCKWORK material in various colours. Samples can be seen and prices obtained at
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Illustrated Lists of Wooden Buildings, Greenhouses, and Conservatories, and Concrete Slabs for Walls, Paths, and Stages, sent post-free on application.

THE 'IMPROVED AMERICAN' LAWN MOWER



PRICES

10 INCH MACHINE,	£3.0.0.	14 INCH MACHINE,	£4.15.0.
12 INCH MACHINE,	4.0.0.	16 INCH MACHINE,	5.10.0.

GRASS BOXES EXTRA

ALEXANDER SHANKS & SON,
DENS IRON WORKS, ARBROATH.
& 27 LEADENHALL STREET, LONDON.

MAKERS ALSO OF SHANKS'S CELEBRATED LAWN MOWERS

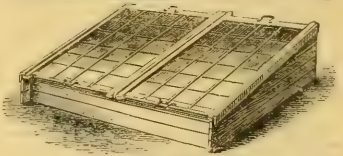
DAVID LOWE & SONS,
HORTICULTURAL BUILDERS
AND
HOT-WATER ENGINEERS,
GILMORE PARK, EDINBURGH; and CORNBROOK, CHESTER ROAD, MANCHESTER.
Plans and Estimates on application for every description of Horticultural Buildings in Wood or Iron.
Garden Frames and Sashes in Stock.

BOULTON & PAUL, NORWICH.
GREENHOUSES, GARDEN FRAMES.



SPECIAL PRICES on application.

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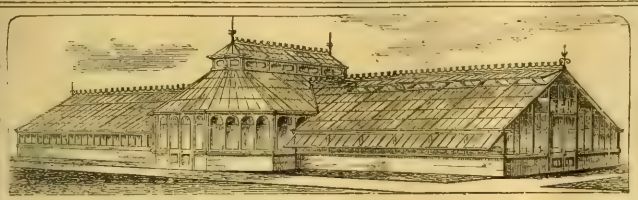
Cucumber Frames.

R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted They are made of the best materials, and can be put together and taken apart in a few minutes by any one.
Prices, delivered to any station in England:—

		£ s. d.
2-light frame, 8 feet by 6 feet	Packing	3 10 0
3-light frame, 12 feet by 6 feet	Cases free	5 5 0
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The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.
R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.

Five 1st Prize Medals recently awarded in open competition.



Five 1st Prize Medals recently awarded in open competition.

R. HALLIDAY & CO.,
HOTHOUSE BUILDERS AND HOT-WATER ENGINEERS,
ROYAL HORTICULTURAL WORKS, MIDDLETON, MANCHESTER.

Vineries, Stoves, Greenhouses, Peach Houses, Forcing Houses, &c., constructed on our improved plan, are the perfection of growing houses, and for practical utility, economy, and durability cannot be equalled. We only do one class of work, and that THE VERY BEST.
Conservatories and Winter Gardens designed architecturally correct without the assistance of any one out of our firm, from the smallest to the largest. **Hot-water Heating Apparatus,** with really reliable Boilers, erected, and success guaranteed in all cases. **Melon Frames, Sashes, Hotbed Boxes, &c.,** always in stock.
Plans, Estimates and Catalogues free. Customers waited on in any part of the Kingdom.
Our Maxim is and always has been—
MODERATE CHARGES FIRST-CLASS WORK. THE BEST MATERIALS.

Make your Wall Fruit Safe.

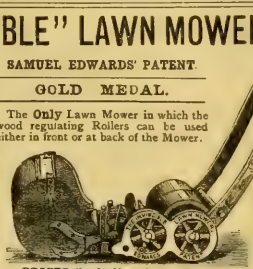


Twelve years' experience has proved that
PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it. A large Stock always on hand. Price, in painted Iron Framing, with 21-oz. Glass, and Rods for Front Curtains, 2 feet wide, 2s. 6d.; 3 feet wide, 3s. 6d. per foot run. Any carpenter can fix. References and Prospectus free. WM. PARHAM, Northgate Works, Bath, and 421, Oxford St., London, W. Specimens may be seen at either address. Parham's Illustrated Catalogue of Horticultural Buildings, post free.

The "INVINCIBLE" LAWN MOWER.

Is the BEST in the Market

SAMUEL EDWARDS' PATENT.
GOLD MEDAL.
The **Only** Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



AWARDED the First Prize at each of the 3 Great Contests BIRMINGHAM, MANCHESTER, and LONDON.

VIDE RESULTS OF CONTESTS.

GARDEN ROLLERS.
WHEEL BARROWS.
Horse-Power Lawn Mowers.
Side Delivery.

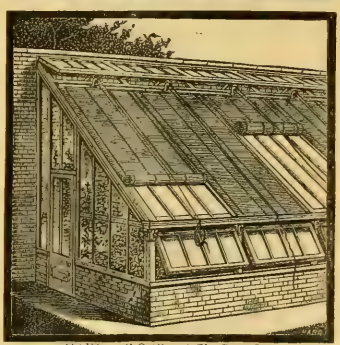
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6 in.	7 in.	8 in.	9 in.	10 in.	12 in.	14 in.	16 in.	18 in.	20 in.	24 in.	Side Delivery. 30 in.	36 in.	42 in.
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PARISIAN GREENHOUSE BLINDS



MADE of WOOD and ZINC ONLY.
AWARDED 40 PRIZE MEDALS
Sole Agents for Great Britain,
W. RICHARDSON & CO.,
North of England Horticultural Works, DARLINGTON.

BOULTON & PAUL, Norwich,
HORTICULTURAL BUILDERS and HEATING ENGINEERS,



Awarded the GOLD and SILVER MEDALS by the Royal Horticultural Society, for the General Excellence of their Exhibits—1881.
CONSERVATORIES, ORCHID-HOUSES, PEACH-HOUSES, VINERIES, GREENHOUSES,
&c., of the best Material and Workmanship, at Prices defying all Competition.
Ladies and Gentlemen waited upon in any part of the Country. Surveys made. Estimates and Lists post-free.
General CATALOGUE post-free.

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9 „ ...	0	5	6	20 „ ...	0	11	0
10 „ ...	0	6	0	21 „ ...	0	11	6
11 „ ...	0	6	6	22 „ ...	0	12	0
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GARDENERS, and OTHERS, WANTING SITUATIONS.

25 words 1s. 6d., and 6d. for every additional line (about 9 words) or part of a line.

THESE ADVERTISEMENTS MUST BE PREPAID.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to Initials at Post-offices, as all Letters so addressed are opened by the authorities and returned to the sender.

BIRTHS, DEATHS and MARRIAGES, 5s. each insertion.

Advertisements for the current week MUST *reach the Office by Thursday noon.*

All Subscriptions Payable in Advance.

THE UNITED KINGDOM: 12 Months, £1 3s. 10d.; 6 Months, 11s. 11d.; 3 Months, 6s.

FOREIGN (excepting India and China): including Postage, £1 6s. for 12 Months; India and China, £1 8s. 2d.

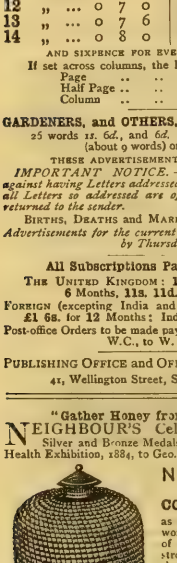
Post-office Orders to be made payable at 42, DRURY LANE, W.C., to W. RICHARDS.

PUBLISHING OFFICE and OFFICE for ADVERTISEMENTS, 41, Wellington Street, Strand, London, W.C.

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NEIGHBOUR'S Celebrated BEEHIVES.

Silver and Bronze Medals awarded at the International Health Exhibition, 1884, to Geo. Neighbour & Sons.



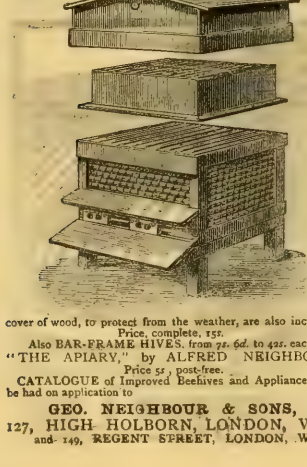
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Price £1 15 0

Stand for ditto 0 10 6

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This hive has been designed to supply a want long felt by those who desire a Hive at once tasteful in appearance and moderate in price. The walls are built of straw neatly bound with cane. Ample means for ventilation in summer, and sufficient warmth in winter are thus secured. Nine Frames, of the standard size, fitted with metal ends, and a dummy for reducing the Hive, are enclosed therein, a double quilt to place over the Frames, a case of American one-piece sections for supering, and a substantial



cover of wood, to protect from the weather, are also included. Price, complete, 15s.

Also BAR-FRAME HIVES, from 7s. 6d. to 42s. each.

"THE APIARY," by ALFRED NEIGHBOUR. Price 5s., post-free.

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GEO. NEIGHBOUR & SONS,

127, HIGH HOLBORN, LONDON, W.C.,

and 149, REGENT STREET, LONDON, W.

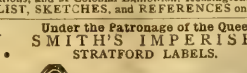
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THE BEST SHOW of RUSTIC PORTABLE SUMMER HOUSES, TABLES, SEATS, and VASES, ready for delivery, is at TROTMAN'S MANUFACTORY and DEPOT, 196, Holloway Road, between Highbury (North London) and Holloway (Great Northern) Railway Stations, and at Colonial Exhibition, Kensington.

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Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The Gardeners' Magazine says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

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GRATEFUL—COMFORTING.

C O C O A

Now Ready.

REICHENBACHIA: Orchids Illustrated and Described.

This work is issued in Monthly Parts, each containing four beautifully Coloured Plates by eminent Floral Artists.

The History and Culture is given in English, French, and German, with Latin Descriptions, &c., by Prof. Reichenbach.

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F. SANDER, St. Alban's.

THE

TROPICAL AGRICULTURIST,

A MONTHLY RECORD OF INFORMATION FOR PLANTERS

Of Tea, Cacoa, Cinchona, Coffee, Indiarubber, Sugar, Palms, Cotton, Cardamoms, Kola, Coca, Cinnamon, Nutmegs, Fibrous Plants, and other Products suited for Cultivation in the Tropics.

[Published at *Observer* Office, Colombo, Ceylon, on or about the 1st of each Month. Commenced in June, 1881.]

THE "TROPICAL AGRICULTURIST" has now an assured position in its large circulation in Ceylon, Southern and even Central and Northern India, the Straits Settlements, Sumatra, Java, Borneo, Northern Australia, Queensland, Central America, Natal, Mauritius, and the West Indies. From all sub-tropical planting settlements we have had cordial approval of the publication and an encouraging measure of support. The English, Indian, and Colonial Press have spoken in commendatory terms of the *T. A.*, as also Directors of Public Gardens from Sir Joseph Hooker, F.R.S., downwards, and so have all Planters. ☞ No Planter should be without it.

Rates of Subscription, including Postage, in advance:

£1 sterling. Rupees 12. Dollars 5.

Single Copies, 2s., or Re 1; Back Copies, 3s., or Re 1.50.

Any one of the Four Volumes completed (1881-2, 1882-3, 1883-4, 1884-5), bound in cloth, lettered, with Comprehensive Index, for £1 10s. (or Re 18), carriage prepaid.

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As a medium for English, American, and Australian ADVERTISEMENTS of goods suitable for the tropics, India as well as Ceylon, the Straits Settlements, Java, and West Indies (Central America being included in that term), or connected with agriculture, the *Tropical Agriculturist* stands unrivalled, the work being constantly in the hands of Native as well as European and American Agriculturists. Being a Monthly Periodical the *Tropical Agriculturist* lies on the table and is very often referred to during each month, a fact which Advertisers will know how to appreciate.

Mr. W. T. THISELTON DYER, F.L.S., C.M.G., Director of Kew Gardens, writing of the *T. A.*, refers to it as "an astonishing repertory of everything relating to the Economic Botany of the East."

☞ For the Sale of Plants, Seeds, Machinery, Implements, &c., used in Tropical (Tea, Sugar, Fibres, &c.) Agriculture, no better Advertising Medium exists.

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About Twelve Lines	„	8d. (7 annas)
Quarter Page (once) ..	17s.	Re 10 } 5 per Cent. off
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☞ For long contracts special reductions.

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J. HADDON AND CO., 3, Bouverie Street, London, E.C.
G. STREET AND CO., 30, Cornhill, London, E.C.
Or Agents in all parts of the World.

WANTED, a HEAD WORKING GARDENER. Must be thoroughly trustworthy and experienced in the Cultivation of Stove and Greenhouse Plants and Ferns; also Vines, Flowers, and Fruit In and Out-doors.—Address by letter, giving full particulars and references, to Mr. BELLISS, The Dell, King's Norton, near Birmingham.

WANTED, as SECOND GARDENER, one who understands Growing Vines and Peaches under Glass; also Melons and Cucumbers. Age not under 24 or 25, single. State wages required. Rooms found.—J. STONE, Sandrock, Ore, Hastings.

WANTED, an experienced, energetic, WORKING FOREMAN, who thoroughly understands General Nursery Work, to undertake the development of a Private Garden for trade purposes, and the practical training of a young gentleman, who is taking up horticulture as a profession. The highest references required.—Apply, in first instance, to Messrs. BARR AND SON, 12, King Street, Covent Garden, W.C.

WANTED, a young MAN, experienced in Growing Ferns and Stove Plants for Market.—J. WILLIAMS, 334, Turner Road, Lee, Blackheath, S.E.

WANTED, a young MAN for the Houses. Good Grape thinner, and used to the general routine of Indoor Work. Wages 18s. per week.—JOHN ARCHER, Manager, the Gardens, Polegate, Sussex.

WANTED, by a leading American Seed House, a young MAN, with a thorough knowledge of the Vegetable and Flower Seed branches. To a suitable person a permanent engagement will be offered. Only those whose character and abilities will bear the most rigid investigation need address.—S., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

WANTED, by a first-class MAN for the Vegetable Seed Department of a large Provincial Business. Apply, stating terms and all particulars to P. W., Messrs. Nutting & Sons, 106, Southwark Street, London, S.E.

WANTED, a YOUTH, in a Nursery, under Glass; one who has had some experience in a Market Nursery preferred. First-class references indispensable.—L. M., 26, Crown Court, Russell Street, Covent Garden, London, W.C.

WANTED, for a Large Garden, a HANDY-MAN, for Repairing Houses, Painting, Plumbing, Glazing, &c.—Address, with full particulars and wages required, Mr. A. STEDALL, 6, Addle Hill, London, E.C.

WANT PLACES.

Letters addressed "Poste Restante" to initials or to fictitious names are not forwarded, but are at once returned to the writers.

To Noblemen and Gentlemen requiring Land Agents STEWARDS, BAILIFFS or GARDENERS.

JAMES CARTER AND CO. have at all times upon their Register reliable and competent MEN, several of whom are personally well known to Messrs. Carter.—Enquiries should be made to 237 and 238, High Holborn, W.C.

SCOTCH GARDENERS.—JOHN DOWNIE, Seedsman, 144, Princes Street, Edinburgh, has at present on his List a number of SCOTCH GARDENERS, waiting re-engagements. He will be pleased to supply full particulars to any Lady, Nobleman, or Gentleman requiring a trustworthy and competent Gardener.

RICHARD SMITH AND CO. beg to announce that they are constantly receiving applications from Gardeners, seeking situations, and that they will be able to supply any Lady or Gentleman with particulars, &c.—St. John's Nurseries, Worcester.

TO LANDED PROPRIETORS, &c.—A. MCINTYRE (late of Victoria Park) is now at liberty to undertake Formation and Planting of New Garden and Park Grounds, and Remodelling existing Gardens. Plans prepared. 115, Listria Park, Stamford Hill, N.

Gardeners.

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GARAWAY AND CO. have many applications for Situations from Competent Gardeners, and will be pleased to furnish particulars to any Lady or Gentleman.—GARAWAY AND CO., Durdham Down, Clifton, Bristol.

GARDENER (HEAD); age 28.—T. COOMBER, The Hendre Gardens, Monmouth, can confidently recommend his Foreman to any Lady or Gentleman requiring the services of a thoroughly practical Gardener.—For further particulars address as above.

GARDENER (HEAD); married.—Captain CAMPBELL, Windsor Park, wishes to recommend his Head Gardener to a good place where several are kept. He is efficient and trustworthy. Twenty years' experience. Abstainer.—Please address, stating salary, &c., GARDENER, as above.

GARDENER (HEAD).—Mr. DOE, Gardener to A. Savile, Esq., Rufford Abbey, Ollerton, Notts, can with confidence recommend F. Chatworthy, who has been Foreman in these Gardens for the past three and a half years, to any Lady or Gentleman, as a thorough practical man.

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GARDENER (HEAD), where four or five men are kept—Age 28, single at present; understands Early and Late Forcing, also Stove and Greenhouse Plants, Flower and Kitchen Gardening. Five and a half years in present situation. Good character.—E. W., The Grove Park Gardens, near Watford, Herts.

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GARDENER (HEAD).—Age 30, single; knowledge gained in all branches of the profession in good places (Public and Private) in England and France. Can produce first-class testimonials as to ability and integrity from present and previous employers. No objection to go abroad.—MANAGER, Messrs. Giddy & Turner, Sunningdale, Berks

GARDENER (HEAD); age 27.—R. GILBERT will be happy to recommend his present principal Foreman. Henry Swift, to any Lady, Nobleman, or Gentleman. Steady, active, and truly trustworthy. Has a practical knowledge of all matters relative to Horticulture. Been at Burghley four years, always giving me entire satisfaction, so that I have every confidence in him; well knowing he will merit all I can say in his favour.—R. GILBERT, Burghley, Stamford.

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GARDENER (HEAD WORKING).—Age 39, married, two children, 9 and 13. Thoroughly experienced in Early and Late Forcing, &c. Highest references from late and former employer.—T. W., 93, Lesbourne Road, Reigate, Surrey.

GARDENER (HEAD WORKING), where two or more are kept.—Age 28; married when suited. Experienced in all branches. Churchman, and many years chorister. Well recommended.—J. TAYLOR, or Head Gardener, Ayot House, Welwyn.

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GARDENER (HEAD WORKING or SINGLE-HANDED).—Age 27, single; fourteen years' experience in all branches. Good testimonials as to character and abilities. —C. BURNELL, 8, Cochrane Street, St. John's Wood, N.W.

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GARDENER (HEAD, or SECOND); age 28, married when suited.—H. GILBERT, Foreman in these Gardens to the Honourable Lord Digby, is open to engage with any one in want of a good practical man as above.—Minterne Gardens, Cerne, Dorset.

GARDENER.—Lieut.-Col. YEATMAN BIGGS wishes to recommend a Gardener.—Stockton House, Codford, Bath.

GARDENER; married.—A GENTLEMAN can well recommend his Gardener as a thorough practical man in all branches of Gardening. Well up in Early and Late Forcing.—W. GALE, 36, Palmerston Road, Wimbledon, Surrey.

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GARDENER (SINGLE-HANDED, or where more are kept).—Age 26, single; three years' good character from present employer.—GEO. NEWELL, The Gardens, Ancote, Weybridge, Surrey.

GARDENER (SINGLE-HANDED, or SECOND where two or three are kept).—Age 25, single; three years' good character.—G. P., 11, Grove, Eltham, Kent.

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GARDENER (UNDER).—Young; willing to make himself generally useful.—J. H., 60, Prospect Road, Wells Road, Upper Sydenham, S.E.

GARDENER (UNDER).—Age 17; good reference, willing to make himself useful.—D. DEBNAM, 88, Rotherfield Street, Islington, N.

GARDENER (UNDER), in a good establishment.—Age 24, single; good personal character. Good reference.—H. B. FLAMBE, 8, Cochrane Street, St. John's Wood, N.W.

GARDENER (UNDER).—Age 21; four years' experience. Kitchen Garden preferred. Good character. Well recommended.—G. M., 5, Railway Cottages, Earl Street, Epsom, Surrey.

GARDENER (UNDER).—Age 25; Flower and Pleasure Ground preferred. Eighteen months' good character.—C. A. SPARROW, Ingram Road, Brentwood, Essex.

GARDENER (UNDER, or IMPROVER, in a good establishment.—Age 21; a small premium not objected to.—LEWIS HEMMING, Langton Green, Tunbridge Wells

FOREMAN (WORKING), or MANAGER, where choice Cut Flowers and Fruit are Grown extensively for Market. Has had twenty years' experience in Growing for Covent Garden Market, the Formation and Erection of Houses, and every branch of the profession. Good testimonials.—W. JOHNSON, 2, Clifton Hill, New Cross, S.E.

FOREMAN, Inside; age 25.—E. SMITH is open to an engagement as above. Ten years' experience. Can be well recommened.—E. SMITH, Lucombe, Pince & Co Exeter.

FOREMAN, in a good establishment.—Well versed in Stove and Greenhouse Plants, Fruits, &c., and is a good Orchid Grower. — WM. SHERWIN, The Gardens, Osmaston Manor, Ashbourne, Derby.

FOREMAN, in the Houses.—Twelve years' practical experience in the Propagating and Growing of Stove and Greenhouse Plants, Early and Late Forcing of Vines, Peaches, Melons, Cucumbers, &c. Good references.—W. L., 132, Boundary Road, St. John's Wood, London, N.W.

FOREMAN; age 25.—G. J. BARNES, Gardener, Stoodleigh Court, Tiverton, can with confidence recommend G. Hooker, his Foreman, who has been with him two and a half years, to any Gardener requiring a thorough hard-working, experienced young man.

FOREMAN; age 26.—Mr. HATHAWAY, Gardener to Right Hon. the Earl of Lathom, will be pleased to recommend a trustworthy man as above. Nine years' experience in all branches. Good reference.—The Gardens, Lathom House, Ormskirk, Lancashire

FOREMAN, or FIRST JOURNEYMAN in the Houses.—Age 22; eight years' experience in Stove, Orchids, and Greenhouse Plants, Early and Late Forcing of Vines, Peaches, Cucumbers, Melons, and Tomatos. Total abstainer. Can be highly recommended.—R. N., 41, Wellington Street, Strand W.C.

PROPAGATOR, or PROPAGATOR and GROWER for Market.—Age 30, single; seventeen years' experience chiefly in Growing for Covent Garden. Has thorough knowledge of the general routine of Cut Flower and Plant Trade.—A. B. C., Waterloo Nursery, Salisbury, Wilts.

To Nurserymen.

GROWER.—Age 37; good Grower of Tomatos, or Strawberries, Roses, Grapes, and Pot Plants. Twenty-three years' practical experience.—W. COMPTON, Shardlow, near Derby.

JOURNEYMAN (FIRST), Inside, in a good establishment; age 22.—J. BOWLER, Caldecote Gardens, Nuneaton, will be pleased to recommend C. Smart, who has been in present situation three and a half years. Also well recommended by previous employer.

JOURNEYMAN (FIRST) in the Houses.—Age 24; eight years' experience in good places; eighteen months in present situation, three years previously at Hawke's Yard Park.—G. L., The Gardens, Heathfield, Addington, Croydon, Surrey.

JOURNEYMAN (FIRST, or SECOND in a good establishment).—Age 22, single; three years' excellent character.—W. CUTLER, 3, Poltimore Terrace, Mill Hill Grove, Acton, W.

JOURNEYMAN, in the Houses.—Age 21; six years' experience in all departments. Leaving for change of situation.—G. F. C., Lynford Gardens, Mundford, Norfolk.

JOURNEYMAN, in the Houses next to Foreman.—Age 21; eight years' experience. Can be well recommended.—W. MASON, The Dales, Edgbaston, Birmingham.

JOURNEYMAN, in a Gentleman's establishment.—Age 22; seven years' experience. Two years at present place. Good references.—A. BEST, Manor Gardens, Worksop, Notts.

JOURNEYMAN, in the Houses, under a good Foreman.—Age 22; several years' experience. Good character.—J. KEEN, 11, Little Smith Street, King's Road, Chelsea, S.W.

JOURNEYMAN, in the Houses, in a good establishment.—J. HAY can with confidence recommend a young Man (age 20) as above, and will answer any inquiry.—The Gardens, South Hill Park, Bracknell, Berks.

JOURNEYMAN; age 21.—Mr. STAGG, Gardener to P. RAWSON, Esq., Woodhurst, Crawley, Sussex, would be pleased to recommend G. S., who has lived with him six years, to any Gardener requiring a trustworthy man.

To Head Gardeners.

JOURNEYMAN, in the Houses; age 21.—J. GODFREY, Brightwell Park, Tetsworth, Oxon, wishes to recommend an intelligent young man as above. Can make himself useful in the Kitchen Garden. Total abstainer.

JOURNEYMAN, in the Houses.—Age 20; one year and six months in present place; leaving for improvement. Good character from two previous places. Bothy preferred.—The GARDENER, Forest Farm, Windsor Forest.

JOURNEYMAN, in the Houses; age 22.—C. TEA, the Gardens, Haverbolme Priory, Sleaford, can recommend above, and would be pleased to secure a good situation. Was employed in these Gardens two years.—Address as above.

JOURNEYMAN, or SECOND HAND, in good place.—Age 22.—HEAD GARDENER, Westwick House, Norwich.

IMPROVER, in Kitchen and Flower Garden. Young; has had six years' experience. Can be well recommended.—B. BOWYER, Elwood Nursery, 54A, Elwood Street, Finsbury Park, N.

IMPROVER; age 21.—J. HOCKLEY, three years' experience; two years on Lawn and Flower Garden, and one under Glass. Total Abstainer. Bothy preferred. —Mr. H. W. PITCHER, Crix Park, Hatfield Peverel, Essex.

IMPROVER, under a good Gardener in a Gentleman's establishment.—Age 22; four years' good character. Willing to Improve.—J. KEMP, Welton, Brough, East Yorkshire.

IMPROVER; age 20.—A GENTLEMAN wishes to recommend a strong active young man desirous of Improving. Very good character for three years.—Capt. A. TORRENS, Barton Manor, Hayes, Beckenham, Kent.

STEWARD, or STEWARD and GARDENER.—Good Accountant. Thoroughly practical; lifetime's experience, twenty years in last situation.—R. T., Miss Gilbert, Summerhill Cottage, London Road, Tunbridge Wells.

TO GARDENERS.—R. ROBINS highly recommends a young man (age 21) who has been with him five years. Has worked in all the departments in a Gentleman's Garden. Is seeking a situation under a Foreman.—GEORGE BOSWORTH, Rhydd Court Gardens, Hanley Castle, Worcester.

TO GARDENERS.—Wanted by a young man (age 24) a situation under a good Foreman in a good establishment, where there are four or five in bothy. Four years in present situation.—HEAD GARDENER, Longton Hall, Stoke-upon-Trent.

TO NURSERYMEN.—A young man (age 27) desires re-engagement in a Nursery. Seven years' experience in good Nursery, Indoors and Out. Good references. JOHN KIRK, The Nurseries, Woodhall Spa, Horncastle.

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SHOPMAN (HEAD), or MANAGER.—Thorough knowledge of every detail connected with the Seed, Bulb, and Sundries Business, acquired during a twenty-seven years' experience in first-class houses; accustomed to extensive Counter Trade. Good Correspondent, and well versed in all kinds of Nursery Stock. References assuredly recommendatory.—G., 1, London Road, Yeovil.

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SEED and NURSERY TRADE.—Situation wanted by a thoroughly efficient ACCOUNTANT and BOOKKEEPER; fifteen years' experience in London and Provinces.—E. POOLEY, Ashmead House, St. John's, Deptford, S.E.

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TO FLORISTS.—Advertiser wishes to work for a few weeks in a good establishment to improve himself in Wreaths, &c. No pay required. Covent Garden preferred. —F., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, London, W.C.

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HOLLOWAY'S PILLS. — Enfeebled Existence. This medicine embraces every attribute required in a general and domestic remedy. It overturns the foundations of disease laid by defective food and impure air. In obstructions or congestions of the liver, lungs, bowels, or any other organs, these Pills are especially serviceable and eminently successful. They should be kept in readiness in every family, being a medicine of incomparable utility for young persons, especially those of feeble constitutions. They never cause pain or irritate the most sensitive nerves or most tender bowels. Holloway's Pills are the best known purifiers of the blood, the most active promoters of absorption and secretion, whereby all poisonous and obnoxious particles are removed from both solids and fluids.

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The Winners of every First and Highest Prize in all cases of competition.

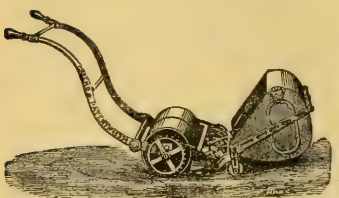
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HER MOST GRACIOUS MAJESTY THE QUEEN on many occasions,
HIS ROYAL HIGHNESS THE PRINCE OF WALES,
THE KING OF THE BELGIANS,
The Late EMPEROR OF THE FRENCH, The EMPEROR OF RUSSIA,
And most of the Nobility, Clergy, and Gentry of the United Kingdom.

Royal Horticultural Society's Show, South Kensington, London, June 3 to 7, 1881. The "*Journal of Horticulture*," of *June 9, says*:—"MOWING MACHINES.—After a critical examination the Silver Medal was granted to the old firm of world-wide fame, Messrs. T. Green & Son, of Leeds and London. As the Machines are known in all lands where good lawns are cherished, it is quite unnecessary to give any description of them."

Upwards of 130,000 of these Machines have been sold since they were first introduced in the year 1856,
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SINGLE-HANDED LAWN MOWER.

To cut 6 inches,	can be worked by a Lady Price	£1	15 0
To cut 8 inches,	do. do.	2	10 0
To cut 10 inches,	do. by a strong youth ..	3	10 0
To cut 12 inches,	do. by a man	4	10 0
To cut 14 inches,	do. do.	5	10 0

DOUBLE-HANDED LAWN MOWER.

To cut 16 inches,	do. one man on even lawn	£6	10 0
To cut 18 inches,	do. man and boy ..	7	10 0
To cut 20 inches,	do. do.	8	0 0
*To cut 22 inches,	do. two men	8	10 0
*To cut 24 inches,	do. do.	9	0 0

* If made stronger, suitable for Donkey, 30*s.* extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self Delivery Box, or Side Delivery, with Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

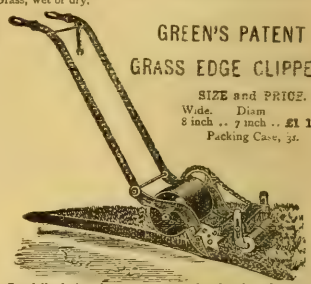
DONKEY and PONY MACHINES.

To cut 26 inches	£14	0	0
To cut 28 inches	16	0	0
To cut 30 inches	18	0	0
Leather Boots for Donkey	1	0	0
Leather Boots for Pony	1	4	0

HORSE MACHINES.

To cut 30 inches	£22	0	0
To cut 36 inches	26	0	0
To cut 42 inches	30	0	0
To cut 48 inches	34	0	0
Leather Boots for Horse	1	9	0

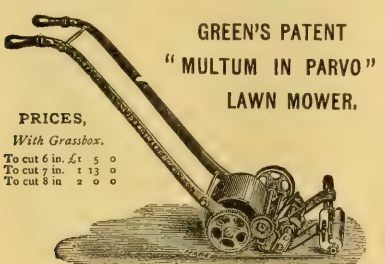
The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machine makes little noise in working, the most spirited animal can be employed without fear of it running away, or in any way damaging the machine. Packing Cases as per List, except when for export.



GREEN'S PATENT GRASS EDGE CLIPPER.

SIZE and PRICE.
Wide. Diam
8 inch .. 7 inch .. **£1 16s.**
Packing Case, 3*s.*

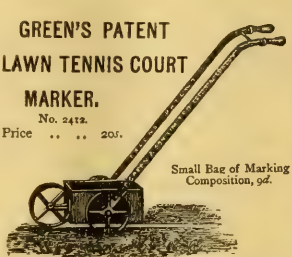
Specially designed to meet a want that has long been felt in cutting the overhanging grass on the edges of walks, borders, flower-beds, &c., and do away with the tedious operation of cutting with shears.



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PRICES,
With Grassbox.

To cut 6 in.	£1	5	0
To cut 7 in.	1	13	0
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GREEN'S PATENT LAWN TENNIS COURT MARKER.

No. 2412.
Price .. .. 20*s.*

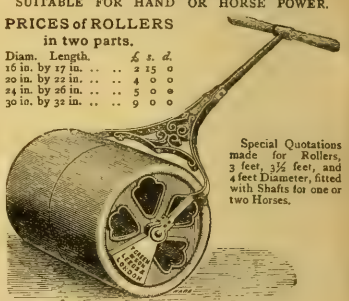
Small Bag of Marking Composition, 9*d.*

GREEN'S Patent ROLLERS,

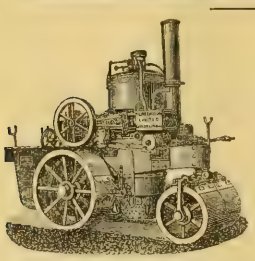
For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths, &c.
SUITABLE FOR HAND OR HORSE POWER.

PRICES of ROLLERS in two parts.

Diam. Length.	£	*s.*	*d.*
16 in. by 17 in.	2	15	0
20 in. by 22 in.	4	0	0
24 in. by 26 in.	5	0	0
30 in. by 32 in.	9	0	0



Special Quotations made for Rollers, 3 feet, 3½ feet, and 4 feet Diameter, fitted with Shafts for one or two Horses.



Weight Empty:—
6 TONS 7 TONS.
Weight in Working Trim, with Water and Fuel:—
7 TONS. 8 TONS.

Green's Patent Steam Road Rollers and Traction Engines combined.

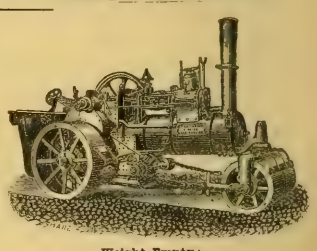
Which are made in sizes of 6, 10, 12½, 15, and 20 Tons weight, and both the Driving and Steering of them are under the easy control of ONE Man.

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THE

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ROYAL BOTANIC SOCIETY Gardens, Regent's Park, N.W.

WEDNESDAY NEXT, FIRST SUMMER EXHIBITION OF PLANTS AND FLOWERS.

Entries should be sent in as soon as possible.

CRYSTAL PALACE. GREAT FLOWER SHOW of the SEASON.

FRIDAY and SATURDAY, May 21 and 22. Admission:—Friday, 5s.; Saturday, 2s. 6d.; or by Season Ticket.

LINNEAN SOCIETY, Burlington House, Piccadilly, W.

The ANNIVERSARY MEETING of the SOCIETY will be held at the Society's Apartments on MONDAY, May 24, at 3 o'clock precisely, for the ELECTION of a COUNCIL and OFFICERS for the ensuing year, and other Business.

B. DAYDON JACKSON, Secretary.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.

A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of

PHILIP MAC MAHON, Curator, Hull Botanic Gardens.

The following, amongst other valuable Prizes, will be awarded:—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

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R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

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THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.

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NEW POTATO (Bird's Doctor Bob), 4s. per stone.

Trade prices on application.

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ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots 2s. 6d. per 100; extra strong do., two years old, 3s. 6d. per 100.

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SALES BY AUCTION.

This Day. Saturday and Monday Next.
Kingsbury House, Shortlands, near Bromley.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises, as above, by order of the Executors of the late E. K. Harrison, Esq., on SATURDAY and MONDAY, May 15 and 17, at half-past 12 o'Clock precisely each day, a fine COLLECTION of STOVE and GREENHOUSE PLANTS, comprising 200 Palms, Eucharis, Azaleas, Camellias, Ferns, &c., Established Orchids, Bedding Plants, Pot Roses, Rhododendrons, and other Plants; ORCHID and GREENHOUSES, with PIPING and STAGING, LAWN-MOWER, Garden ROLLER, Iron and Rustic GARDEN SEATS, CHAIRS, and TABLES, BOAT, BROUGHAM and PHAETON by Mills, of Goswell Road, &c.

On view the day prior and mornings of Sale, and Catalogues had on the premises; or, of Mr. J. C. STEVENS, 38, King Street, Covent Garden, W.C.

Wednesday Next.—(Sale No. 7162.)
Several cases of ODONTOGLOSSUMS (including many fine and distinct pieces) just received direct from the United States of Colombia.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 19.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7162)
VALUABLE IMPORTATIONS of ORCHIDS.
Some received direct.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, May 19, at half-past 12 o'Clock precisely, a fine lot of CATTLEYA MOSSIÆ, C. GIGAS, ODONTOGLOSSUM CRISPUM (best type), O. VEXILLARIUM, and ONCIDIUM KRAMERIANUM from Messrs. Shuttleworth, Carder & Co.; also C. MENDELII in fine variety, C. TRIANÆ (collected by Mr. E. Wallace), ODONTOGLOSSUM HASTILABIUM, EPIDENDRUMS, COMPARETTIA ROSEA, SARRACENIA PURPUREA (grand species), EUCHARIS, &c., from the New Plant and Bulb Co.; also seven cases of ORCHIDS, received direct, containing Odontoglossums, Cattleyas, Lælias, Oncidiums, and Zygopetalums from Brazil and United States of Colombia; about fifty lots of SOPHRONITES GRANDIFLORA, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7163.)
VALUABLE IMPORTED and ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 20, at half-past 12 o'Clock precisely, fine imported Plants of CYPRIPEDIUM SCHLIMII ALBUM, HOULLETIAS (three kinds), WARSCEWICZELLA DISCOLOR, a fine lot of a splendid new LÆLIA, a fine new yellow ODONTOGLOSSUM, O. BLUNTII, BOWRINGIANUM, B. LAUNDEI, BATEMANNIA BURTII, ANGULOA RUCKERI, and other ORCHIDS, collected by Mr. Charles Patin, of Antioquia, who has been resident in the United States of Colombia for some years, and has collected many of the above in flower; also about 100 lots of choice ESTABLISHED ORCHIDS, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7163.)
25 CASES of ORCHIDS just received direct from the United States of Colombia, comprising 12 cases of ODONTOGLOSSUM ALEXANDRÆ in varieties (including many fine pieces), also 13 cases of CATTLEYAS, amongst them many fine and distinct looking masses in fine order.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 20.

On view morning of Sale, and Catalogues had.

The Entire Collection of Orchids formed by the Rev. J. B. Norman, of Whitchurch Rectory, Edgeware.

MR. J. C. STEVENS has received instructions from the Rev. J. B. Norman, who is going abroad on account of ill-health, to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, MAY 27, at half past 12 o'Clock precisely. The first portion of his famous Collection of Orchids, consisting principally of varieties of Odontoglossum Alexandræ and others, Oncidiums, Masdevallias, &c.

Mr. Norman having placed his entire Collection of Orchids in Mr. Stevens' hands for unreserved Sale, nothing will be sold privately, and every Plant included in this and the forthcoming Sales.

On view morning of Sale, and Catalogues had.

Valuable Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, at half-past 12 o'Clock precisely, about 200 lots of Choice ESTABLISHED ORCHIDS, from the Collection of Charles Dorman, Esq., of Sydenham, including fine plants of:—

Dendrobium nobile nobilius	Cattleya Trianæ Backhousiana
,, ,, Cooksoni	,, ,, ,, Dodgsonii
Cypripedium vexillarium	Dendrobium Ainsworthii
,, ,, Druryii	Epidendrum Wallisi
Lælia anceps Dawsoni	Cymbidium Lowii
Vanda Sanderiana	,, Parishi (very rare)
Angræcum Kotschyi	Dendrobium Dominii
,, sesquipedale	Odontoglossum blandum (Dormannianum), &c.
Odontoglossum Hrubyanum	
Cattleya Wagneri	

On view morning of Sale, and Catalogues had.

The Park, Ealing, W.

MR. JAMES W. TIDY, is instructed by Mr. Holden to SELL by AUCTION on the Premises, on SATURDAY, May 29, at 2 o'Clock, the desirable and well situate LEASEHOLD NURSERY, containing an area of about 250 feet by 70 feet, with Three Greenhouses, measuring each, 40 feet by 12 feet—15 feet by 10 feet—30 feet by 14 feet, and about 40 feet of Frames all heated by one Boiler; Potting shed, &c. Held under a Lease of 49 years from March 25, 1878, at an annual rental of £45. There are two Cottages let at weekly rentals of 9s. and 5s. each respectively.

Particulars may be obtained of the Auctioneer, Ealing, W.

The STOCK of a NURSERYMAN will also be SOLD by AUCTION at the SAME TIME.

Tuesday Next.
CATTLEYA MENDELII, grand specimens.

MESSRS. PROTHEROE AND MORRIS beg to call special attention to the very fine lot of Established Plants of this ORCHID included in NEXT TUESDAY'S SALE. Amongst them are several exceptionally good specimens, one grand plant having over 62 Bulbs and 10 Flower Sheaths, others 150, 70, 50, and 40 Bulbs respectively, and almost all containing Flower Sheaths.

On view morning of Sale, and Catalogues had.

Tuesday Next.
ODONTOGLOSSUM ALEXANDRÆ.
CATTLEYA BOGOTENSIS.
,, SANDERIANA
,, MENDELII (Established).
ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, May 18, at half-past 12 o'Clock precisely, a splendid importation, received direct in excellent condition, comprising 150 CATTLEYA BOGOTENSIS, some of the masses having twenty-five bulbs; 100 C. SANDERIANA, including fine masses with thirty bulbs; and about 1000 ODONTOGLOSSUM ALEXANDRÆ, collected in the Pacho district. Also a fine lot of ESTABLISHED ORCHIDS, including many rare species; IMPORTED ORCHIDS in variety, together with a few splendid specimens CATTLEYA MENDELII, established plants, the property of a Gentleman.

On view morning of Sale, and Catalogues had.

Wednesday Next.
2500 Fine Bulbs of LILIUM AURATUM just received from Japan, 500 first-class CARNATIONS and PICOTEES, all named from a well-known Collection, PHLOX, PANSIES, PYRETHRUMS, and other HERBACEOUS PLANTS, Maidenhair FERNS, PELARGONIUMS, GERANIUMS, and other plants.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., in WEDNESDAY NEXT, May 12, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.
IMPORTED ORCHIDS in splendid condition, consisting of a specially fine lot of Odontoglossum crispum (Alexandræ) of the very best type, O. ramosissimum, O. vexillarium, the fine large-flowered Frontino varieties; Cattleya Mendelii, C. Mossiæ, C. gigas, and C. aurea, all in beautiful health; Oncidium Krameranum, Comparettia macroplectron, Cypripedium species, &c

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Shuttleworth, Carder & Co. to SELL the above very fine lot of IMPORTED ORCHIDS at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, May 21, at half-past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.
ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will include in their SALE on FRIDAY NEXT 150 lots of selected and well-grown ESTABLISHED ORCHIDS in very fine condition, including:—

Cattleya Lawrenceana	Cypripedium Druryii
,, Dowiana	,, seligerum
Lælia elegans	Odontoglossum Wassangeana

and many others.

On view morning of Sale, and Catalogues had.

Leytonstone, Essex, E.
IMPORTANT UNRESERVED SALE of 15 000 BEDDING and GREENHOUSE PLANTS, the whole of which are beautifully grown, viz., 5000 Geraniums of the leading varieties, thousands of Verbenas, Calceolarias, Lobelias, Fuchsias, Dahlias, Heliotropes, Petunias, and the usual assortment of Plants for Bedding; fine Pelargoniums, Fuchsias, Petunias, Calceolarias, Hydrangeas, &c., in flower; Carnations, Picotees, Pinks, Cloves, Intermediate Stock, Standard and Dwarf Roses, Rhododendrons, Hardy Shrubs, Vines, Hardy Climbing Plants, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, the above, on the Premises, American Nurseries, Leytonstone, E., three minutes' walk, from Railway Station, on SATURDAY, May 22, at 1 o'Clock precisely.

On view the day prior to Sale. Catalogues had at the Nursery; and at 67 and 68, Cheapside, E.C.

Flowering Plants—Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their NEXT SPECIAL SALE of ORCHIDS in FLOWER will take place on TUESDAY, May 25, for which they will be glad to RECEIVE NOTICE of ENTRIES as soon as possible.

Rare and Valuable Plants.
IMPORTANT SALE of the whole COLLECTION of RARE and VALUABLE PLANTS, selected with the greatest care and discretion by the Proprietor, Robert Ward, Esq., of Crosshill House, Baillieston, during the last twelve years, whose taste as a Horticulturist is so well known throughout the West of Scotland.

MESSRS. HUTCHISON AND DIXON have been favoured with instructions to offer the above, Without Reserve, on TUESDAY and WEDNESDAY, May 25 and 26, at Crosshill House, Baillieston, near Glasgow, commencing each day at 12 o'Clock noon, and they are confident that such a Collection, for variety and rarity, combined with a high state of cultivation, has not been offered for public competition in the West of Scotland for a considerable period.

The Collection being so well known, it is unnecessary to particularise the many Specimens described in Catalogues, to be had on application to the Auctioneers, 7, West Nile Street, Glasgow, ten days prior to Sale.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

FOR SALE, the LEASE and GOODWILL of the Old-established NURSERY, known as Waverley Nursery, Waverley Place, St. John's Wood, N.W., together with the Retail Shop, in good position close by, and Greenhouses in the rear, with a first-class Jobbing connection.

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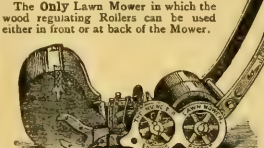
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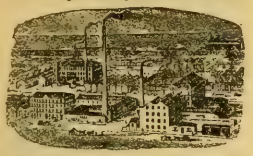
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THE

Gardeners' Chronicle.

SATURDAY, MAY 15, 1886.

KNEBWORTH.

THE happiness of home is keenly felt, even in an Irishman's cabin—"the hut to which his soul conforms"—on whose mud floor he rolled in childhood. A similar delight, based on the same sentiments and tender recollections, may be experienced in regard to homes of greater refinement; and the late Lord Lytton has confessed that amidst the active and varied labours of his life he knew no greater pleasure than a short return to Knebworth and his garden.

Lord Lytton's mother, the wife of General Bulwer, was the heiress of the long line of Lyttons, the lords of this old seat. Having changed her name, like other ladies, ancestral sentiment led her to resume it, and her distinguished son, the Bulwer of our boyhood, and the author of *Pelham*, and those earlier novels, became the Bulwer-Lytton who wrote the still better later novels, such as "The Caxtons," "My Novel," and "What will he do with it?"

Having come into possession in 1818, Mrs. Bulwer pulled down three ruinous sides of the vast quadrangle which her ancestors of Henry VII.'s and Elizabeth's reigns had erected in the handsome style of their period. The remaining side, improved by herself, her son, and the present Lord Lytton—the "Owen Meredith" of literature—forms one of the largest houses in Hertfordshire. Its site, on almost the highest ground in the county, is good. Three avenues slope from the house gently to the lower levels of the park, and, partly owing to the contour of the ground there, do not shut out the wide views in the distance. From the house, or still better from the Ivy arbour on the mound in the pleasure garden, the eye roams over a charming English landscape.

Seated on the artificial grass-covered mound in the garden, closely resembling the one at Boscobel House, where Charles II. spent a long Sunday making furtive observations in all directions, the spectator overtops the evergreen fences which surround him, and commands a perfect picture of the old domain and its surrounding scenery. Many acres of shrubbery and lawn, formed by the late lord, lie around in the lowest level, and all the mysteries of his skilful landscape gardening are fully exposed from this coign of vantage. The house stands upon the borders of a horticultural fairyland, which, to be prosaic, is more than 13 acres in extent, and the park environs the whole. At a little distance, on the brow of the hill, is the old church, and no doubt before the Conquest the village gathered round this spot, though its few houses are now scattered about the narrow lanes in the rear. The church is in the simplest architecture of the ecclesiastical Gothic, and its tower, seen from a distance, blends with the turrets of the hall. The family mausoleum lies apart further within the park, a plain octagonal building fenced from the deer and planted round about, within the iron railings, with shrubs and flowers amid which, and not on a shelf within, Lord Lytton would have found a bed, 14 feet deep, it

is said, at his own request, if his countrymen had not claimed his ashes for the Poet's Corner and the Abbey.

Looking across the country from this high point we gain a pleasing view of Hertfordshire, and of such spires and towers as those of Stevenage, Baldock, Buntingford, Ware, and the county town. Lord Salisbury's stately residence at Hatfield is hidden by the woods. The garden of Knebworth, as seen from the mound in its midst, is as inviting as a poet's garden should be; but before descending to inspect it we will visit, in imagination, the fishing cottage, which is often mentioned in Lord Lytton's pages. If you follow the Lime avenue, which descends gently from the house, you will reach the lake, and the cottage stands on its opposite shore. Lord Lytton himself described it as "Whitely peeping from a thick and gloomy copse of Firs and Oaks, through which shine, here and there, the red berries of the Mountain Ash." This was his favourite spot where he would while away whole holidays as a boy building castles in the air, and where (in the fishing cottage in later life) he wrote some of his most attractive volumes. The cottage appears both in *Kenelm Chillingley* and *My Novel;* and on his boat upon the lake, after all the successes of his busy career, still labouring and still taking holidays, Lord Lytton in his old age loved to pursue his favourite pastime of angling, still fishing like John Burly for "the one-eyed perch."

The shrubberies at Knebworth were formed by the late distinguished owner by several successive additions, and are hedged from the park with evergreens. We may call the ornamental grounds a garden of gardens, each added part being complete in itself, while each is divided from the other by a high fence of Yew or Laurel. The last-named shrub grows here with astonishing vigour, and is evidently the proper plant for a clay soil, the subsoil of the garden being a stiff yellow clay within a foot of the surface. The first of the several divisions of the pleasure-ground is the Italian garden before the west front, and seen from the mullioned window of that furthest room in the south-west corner, which one looks upon with wistful interest, since it was the favourite writing-room and study of one of the greatest workers and writers of his time. A small garden immediately in front of the window of this room, secluded like the rest by its own high fence, and planted in an old-fashioned style, forms the original garden of Knebworth Park. It covers a smaller area than the house itself!

The Oak is the characteristic tree of the woods and hedgerows here. The best trees of the Italian garden are a very handsome Cryptomeria japonica, with green and healthy foliage; a good Wellingtonia, and some fine specimens of Araucaria imbricata, one of which seems, however, to have discovered the objectionable subsoil, and is losing its perfect form. It produced cones ten years since, three years after the death of its planter. One notices, too, in this garden some Deodar Cedars, forty-five years planted, and some large Irish Yews, and then, having reached a thick fence at the end of this compartment, and a place of exit through a fernery, one looks back over the smooth lawn of the Italian garden to the house where fame, genius, statesmanship, and an ex-Viceroy of India have found their home these many years past. It should be noticed here in prosaic fashion that the Italian garden covers 1½ acre, the house and offices half an acre, and the gravel approach on the east side, fenced as it is from the park by a balustrade, another half acre.

Passing through the fernery we enter the Temple Garden, named from a small Roman temple, where perhaps genius may have smoked its hookah, a habit which Lord Lytton, like Dr. Riccabocci, was addicted to. A fine Conifer on the left hand on entering this garden reminds us how very noble so common a tree as the Austrian Pine may be when well grown. There is no tree humbler than another, and the boy Bulwer, mixing much with the poor folk in his mother's village, storming their cottages, he and his dogs, and sitting by their ingles, must have learned early that—

> "The rank is but the guinea stamp,
> The man 's the gowd for a' that."

The sight of a beautiful but "common" tree reminded me of his touching story of old Newman Hagar and his partner, in a sketch of Knebworth. He says of the good old dame, "I never saw a countenance in which not the intellect but the feeling of our divine nature had left a more pleasant and touching trace." Bulwer, as a philosopher and gardener, knew well that real gentlemen, without the gilt, are often found among village folk, and that trees of all kinds, British or exotic, like the various members of the human race, are equal in the eye of Heaven, and one may be as handsome as another. I looked in the churchyard for old Newman Hagar's grave. He died first, and his widow with the sweet face lived on, like clockwork, past feeling, waiting for the last rest by his side. Their names and ages are inscribed above them on a wooden rail.

The Temple Garden is not entirely shut in, as the Laurels next the park have been removed, so that you may look through the partial screen of a trellised Wistaria and a row of the Thuia orientalis to the lake and the great wood beyond it.

Another garden of evergreens in succession is planted with clipped and formal Portugal Laurels, interspersed with various specimens of other shrubs, with a row of great Ivy baskets—Ivy trained on a basket-shaped frame—filled with such flowers as blossom here in April, including the Polyanthus.

We must abandon details in the rest of this narrative and walk without remark through the adjoining maze, whose Yew walls an imprisoned guest broke through and damaged to some extent when the dinner-bell rang. In the middle of the maze is a rosery with a stone Mercury in the centre in the usual attitude, winged foot on a globe placed upon a pedestal.

The "Garden of Horace" comes next, and its elaborate classical details must have occupied delightfully the time and thought of the accomplished author, who himself translated Horace's *Odes* and took that lover of the country for a model. A small sheet of water fills the centre of this garden, Oaks leaning over it and a gravel walk running round its irregular margin. The whole space is jealously hedged and curiously ornamented with grottos, urns, and busts, all the details having been reproduced from the frescoes of Pompeii, and all designed to represent a Roman garden of the time of Horace. No plants of modern introduction have been admitted here. Ancient Yew, thick and clipped, forms a background for the busts of Horace, of the Emperor Augustus, Virgil, and Mæcenas. There was a Temple of Diana here, and some relics remain; but this delightful and amusing mimicry by a scholar was formed of frail materials, and has now served its purpose.



FIG. 134.—SECTION OF MOREL. (SEE P. 617.)

Some of the roofs have fallen in, the cloisters have lost their supports, and Ivy, which covers so many ruins, trails over these.

A rosery follows, open to the park and leading on the opposite side back to the house. Amid the Roses rises a beautiful granite column dedicated to the memory of Mrs. Bulwer-Lytton by her son. On a lawn near it is an Ivy-covered tree, with stairs admitting to a balcony above. Mr. Kipling, the gardener, also showed me his capital kitchen garden, his bees, and the vineries and plant-houses where every inch of space is utilised with skill. These notes, slight as they are, will perhaps have some interest, assuring the reader that Lord Lytton of world-wide fame was fond of his garden. *H. E.*

very obscure yellow band on the dorsal sepal. Column, as stated, very long, sulphur-coloured, with brown-purple wings. I never saw anything like it but Mr. Bull's Oncidium caloglossum, but that has a short column, different calli, and distinct colours. I had it from an excellent Orchidist, Mr. T. Day. *H. G. Rchb. f.*

LÆLIA PILCHERIANA (*Dominy*) VAR. LILACINA, *n. hyb. nat.*?

The flower is smaller than that of Lælia Pilcheriana, the type of which is at my side. The midlobe of lip is blunter, the side lobes are a little less blunt. Excepting this it fully agrees with the well-known and fine Lælia Pilcheriana, so that I believe it must be regarded as a variety of that mighty beauty.

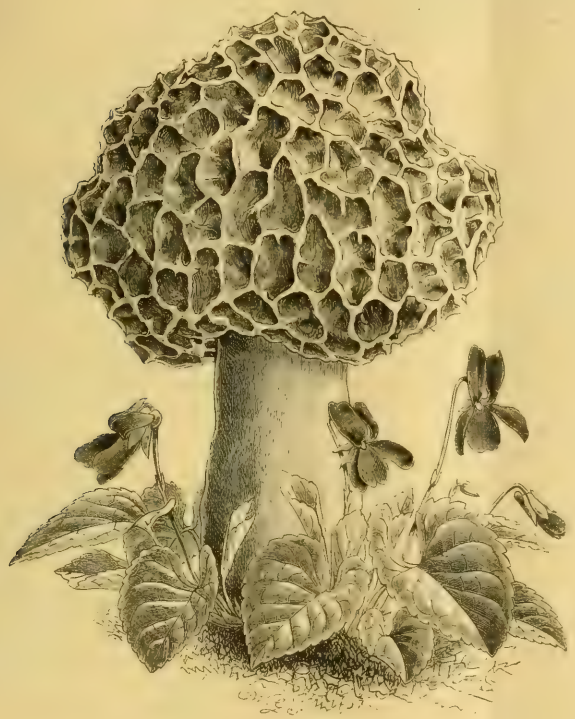


FIG 135.—MOREL: MORCHELLA ESCULENTA.

New Garden Plants.

ONCIDIUM PARDOGLOSSUM, *n. sp.**

A VERY interesting Oncidium, reminding one of Oncidium amictum, but immediately distinguished by its long column. Its narrow flowers are Horse Chestnut coloured, with much yellow on the lip, and

* *Oncidium pardoglossum*, n. sp.—Affine Oncidio caloglosso, Rchb. f. Pseudobulbo ancipiti dem.m rugoso diphyllo; foliis ligulatis acutis undulatis; racemo pluriflore; sepalo impari cuneato oblongo acuto, sepalis lateralibus connatis apice bifidis lacinuis acutis; tepalis a basi brevissima unguiculata oblongis undulatis; labello angusto a basi late cuneato utrinque angulata dein ab isthmo angustato obtusangulo rhombeo emarginato; callo ancipiti triangulo de basi lineari in disco, papula triangula utrinque supraposita papulorum minorum serie; columna gracili, tabula prosiliente, alis semiovatis acutis.—Sepala castanea. Sepalum impar fasciis paucis obscuris flavis. S pala lat.ralia flavido-castanea. Labellum flavum dilutissime castaneo maculatum ut antice cinctum. Columna sulphurea et atropurpurea. *H. G. Rchb. f.*

It has been mentioned in *Gardeners' Chronicle* (1886, March 13, p. 342) under Lælia lilacina, as exhibited by Mr. F. A. Philbrick, of Oldfield, grown by Mr. Haines. I had it from Mr. Philbrick through the kindness of Mr. Harry Veitch, who informed me it had been bought for Lælia crispa at one of the sales, aad supposed to be a natural hybrid between Lælia crispa and L. Perrinii,[1] This is well indicated by the arched column. Were it not for this then the flower might be well compared with those of the fine Lælia caloglossa and the proud Lælia exoniensis itself. I found recently at two places printed wrong authorities. At one place Lælia Pilcheriana, Rchb. f.; at another, Lælia Pilcheriana, Dominy and Rchb. f.; at two places simply Lælia Pilcheri. As the *Gardeners' Chronicle* (1868, p. 815) gives evidence, I described the plant under "Lælia Pilcheriana, Dominy" (Mr. Dominy, our excellent veteran, alone was the author). No one has the least right to change the name. That undiplomatical system, so much used by a high ranking English botanist, who is no more, is an arbitrary liberty that must be condemned. *H. G. Rchb. f.*

CYPRIPEDIUM APICULATUM, *n. hybr. Angl.* (CYPRIPEDIUM BARBATUM × BOXALLI).

I obtained this from my excellent correspondent, Mr. Harry Veitch, as a cross raised between Cypripedium barbatum and Boxalli; by Mr. D. O. Drewett, Riding, Mill-on-Tyne, Northumberland. Leaves remarkably broad in the middle, general shape of those of Cypripedium barbatum, very light green, with obscure reticulate markings. The height of the peduncle is intermediate between that of those of the parents. It is dark purple, hairy, but not as in Cypripedium Boxalli, where the hairs remind one of those of a goat. Bract much shorter than the green ovary, whose ribs are reddish. Sepals and petals as if varnished inside. Dorsal sepal cuneate oblong-acute, with light ochre-coloured margin, and very dark black-purple veins, between which is a lighter reddish-brown tinge. Connate sepals narrower, oblong-acute, green, with reddish-brown veins. Petals ligulate, oblong, blunt, acute, somewhat spatulate, a little ciliate on the inner margin, light brown-purple, inferior half yellowish from the middle to base, where there are numerous small purple blackish spots. The lip has nearly the shape of that of Cypripedium Boxalli, with well-formed, lateral, horn-like anguli of the sac, greenish-ochre-coloured at base, with some light small brown spots, brown in front. Staminode transversely oblong, apiculate in front, yellow, with a deep green knob in front. *H. G. Rchb. f.*

THE MOREL.

MORCHELLA ESCULENTA, L.

THERE are few prettier objects to be seen in our spring hedgesides than the edible Morel, Morchella esculenta, L. This fungus first appears in the showery weather of April, it may be met with all through the month of May, and it finally disappears in the early part of June. The time of its appearance is regulated by the spring rains. Its habitats are shady hedgerows, open places in woods, and shady places in gardens and orchards. Like a limited number of other fungi, this truly beautiful plant does not generally stray far from the habitations of man. It grows amongst Violets, Primroses, and spring flowers, and it excites curiosity and admiration wherever seen. It is a not uncommon though perhaps a somewhat local plant, possibly preferring calcareous or argillaceous soils and burnt places in woods. It grows to best advantage when the spring is warm and showery.

The illustration (fig. 135) shows the general appearance of a typical example of the edible Morel; the colour is generally very pale buff. The Morel, however, varies greatly in size and colour. Sometimes it is a little larger than the illustration, at other times about one-third smaller. The colour of the upper part also varies from very pale buff to pale olivaceous or pale cinereous. The cap varies a little in form, sometimes it is more irregular, sometimes more regular than shown; at times it is more conical, sometimes the cap is spherical. The cap or pileus is always honeycombed, the cells vary in shape and size, but are generally irregular in form.

There are several species of Morel allied to the plant here illustrated, some or all of which are edible: "they are all good to eat," says Dr. Badham. The different species are distinguished by their size, form, and colour, but more especially by the general structure as seen in a vertical section. Coloured drawings and sections of all the British species may be studied in the Department of Botany, British Musuem, South Kensington. A longitudinal section of the edible Morel is given in fig. 134, and the chief character belonging to the section is found in the walls of the stem being distinctly confluent with the wall which backs up the honeycomb work of the top. In some species of Morchella, the stem is inserted within the cap, and the upper part of the cap or pileus hangs over the stem in the style of a half-closed umbrella. There is a very large but rare British species named M. gigas, Persoon, and a second, commoner Morel, a grand species a foot or more high, named M. Smithiana, Cooke. The latter plant often occurs in gardens, and in open and moist places in woods; its spores differ from allied species. It is esculent and delicious. It was first found and illustrated by the writer of these lines. Dr. Cooke obligingly christened it for me Smithiana. Morels are widely distributed. Dr. Cooke has described some

*

species from Kashmir; one of these is M. deliciosa, Fr., another M. gigaspora, Cke., but various other species also grow in Northern India, where they are esteemed by the natives as tasty esculents.

The spores of the Morel are borne in long transparent bladders, or asci, as shown, enlarged 500 diameters, on the left-hand side of the section; eight sporidia are carried in each ascus. The asci grow all over the exposed surface of the honeycomb work of pileus.

Dr. Badham says the Morel is "that expensive luxury which the rich are content to procure at great cost from our Italian warehouses, and the poor are fain to do without." He also says that examples "occasionally find their way into Covent Garden Market." I have never seen them in Covent Garden Market, but they appear in other European markets.

Morels are well known to housewives in various parts of England. They are gathered in the spring, and dried upon strings for use till the next year's crop appears. The fungi should not touch each other on the strings, as contact induces mildew, and they should be kept through the summer and winter in a dry airy place. Morels are chiefly used for flavouring soups, sauces, and gravies. In some places they are known by the erroneous and misleading name of "Jews' ears," the popular name belonging to a totally different ear-like fungus which grows upon old Elm and Elder trunks, Hirneola auricula-Judæ, B.

The following modes of cooking the Morel are given by Persoon:—

"Having washed and cleansed them from the earth which is apt to collect between the plaits, dry thoroughly in a napkin, and put them into a saucepan with pepper, salt and parsley, adding or not a piece of ham; stew for an hour, pouring in occasionally a little broth to prevent burning; when sufficiently done, bind with the yolks of two or three eggs, and serve on buttered toast.

"*Morelles à l'Italienne.*—Having washed and dried, divide them across, put them on the fire with some parsley, scallion, chervil, burnet, tarragon, chives, a little salt, and two spoonfuls of fine oil. Stew till the juice runs out, then thicken with a little flour; serve with bread crumbs and a squeeze of lemon.

"*Stuffed Morels.*—Choose the whitest and freshest Morels, open the stalk at the bottom, wash and wipe them well, fill with veal stuffing, anchovy, or any rich stuffing you please, securing the ends, and dressing between thin slices of bacon; serve with a sauce like the last."

It is almost needless to say that perfectly sound examples must be gathered whether for cooking in the fresh state or for drying. Specimens saturated with rain are not suitable for either purpose. Carefully dried examples may be put into stews of all sorts, to impart a pleasant Mushroom, or, rather, Morel flavour.

Apart from its gastronomic value, the Morel is a truly beautiful and very curious plant. As seen growing near here, as it often does, on the calcareous hedgesides in the pleasant showery weather of spring, it is a remarkable ornament amongst the first flowers of the year.

An allied and highly ornamental esculent ally, the black-brown Gyromytra esculenta, grows in April. This delicious and ornate fungus may possibly be illustrated another year. *Worthington G. Smith, Dunstable.*

CURING OF TOBACCO.

At the close of Mr. Jackson's very interesting article on this subject he takes exception to my recommendation as to allowing the plants to lie a short time on the ground before removal to the drying-shed. He also appears to deny the necessity of any fermentative action at all.

In my own practice I found it useful to let the plants lie for an hour or two, for this reason—that the leaves, especially the lower ones, which stand out from the stem, are succulent and brittle to handle when freshly cut, and so liable to become bruised or broken when placed on the cart or wheelbarrow. When slightly wilted this does not occur. In one of the notices which I have read this is carried to excess, as the crop is directed to be laid in heaps at once, under cover, and kept there for some time; this is there called "the first sweating." I made some experiments in this direction, but found the process did not suit our climate.

From the various accounts I have read it is evident that there are "more ways than one" in "killing the cat." The artificial heating process for producing the fashionable yellow colour is new to me; but, in fact, the same thing is effected in my simple way under the ripening Vine leaves in a warm September.

In none of the descriptions I have read can I find anything like perfect information as to the physical changes which take place in the plant between the cutting of the crop at the beginning, and the "perfect cure" at the end. I have watched these closely, and will try to describe them.

There are, in fact, two yellows concerned, which seem to be confused together in the description. A plant in proper condition for harvesting will have the lower leaf perhaps quite yellow, and the next ones, counting upwards, more or less tinged, the topmost ones remaining without apparent change. When such a plant is hung up as I have directed the whole plant will turn yellow in a few days—sometimes in forty-eight hours. Now this is yellow No. 1, and is, in fact, the "sere and yellow leaf" of normal, seasonal decadence, in which life still faintly lingers. After this, and extending over a much longer interval, comes the next grand change—the change from life to death.

Then appears yellow No. 2, that is the tint of tobacco-paper, minus the ripening or ferment, which is the result of any tight packing. I use the term "yellow" here, but, in fact, you can never tell what colour, differing somewhat in each individual plant, will turn up. I am familiar with every gradation, from true yellow, through varying shades of chestnut-brown to nearly black.

Another example of yellow Tobacco making was described a year or two since in an admirable article in the *Times* by Mr. Hamilton Lang. Here the changes I have described seem to have been effected in the full sun. I tried this system also, but found it impracticable in our uncertain climate. I believe, however, that the colour of the ultimate product is due to soil and conditions of cultivation. This would appear from Mr. Jackson's quoted pamphlet to be either virgin or unmanured soil, and in my remarks on this subject I deprecated the use of manure as likely to encourage a rank vegetation antagonistic to the development of the aromatic and other organic products peculiar to the plant.

The phenomenon of colour is a very curious and interesting subject, and well worth investigation. I have seen a beautiful bale of yellow from China, and the Japanese I am told will produce any colour to order, from plain black shag to imperial Lebanon. Why is Turkish yellow as gold, and Latakia as black as your hat? In all the processes I have read of, and they are many, a fermentative process is indicated, notably so in Mr. H. Lang's article, where it is described as going on for several months. Doubtless the treatment varies in different countries, and according to the purpose to which the article is destined, whether for cigars or cut Tobacco for instance. In the former instance I believe the material takes a heat after its formation into cigars. I think if Mr. Jackson were to take a pipe before and after a ripening or fermentative process he would find the difference very remarkable indeed.

Finally, the subject is new to us here in England, and we should be cautious in criticising each other's work. I have only had it in hand four or five years, and I begin to suspect that neither I nor anybody else "knows everything." *R. T. Clarke.*

Orchid Notes and Gleanings.

LÆLIA PURPURATA.

A remarkable variety of this plant is now flowering in our nurseries. It is extremely dwarf in habit; the blooming stems being only as long as the flower-sheaths, *i.e.*, 4½ or 5 inches high! Yet these small and very slender stems each bear a spike of three flowers. The sepals, petals, and throat are all pure white. The lip is intensely deep purple with white tip and margin. It is the only instance we have noticed where no tint of yellow or orange exists in any part of the flower. Two out of the three blooming stems are only 9 to 10 inches high, including the leaves. *James Backhouse & Son, York Nurseries, May 6.*

CALANTHE BREVICORNU.

The flowers of this species are of medium size and rather pretty, but in presence of finer cultivated species this must rank as of secondary value from a decorative point of view. The scape stands erect without support, as it does in C. natalensis and C. veratrifolia, bearing a raceme of flowers. The sepals and petals are brownish-purple with white veins, while the deeply three-lobed labellum partakes more of a rosy-purple on a white ground. The whole flower in this variety is darker than that introduced in 1838, which was described as rose and white. It is a native of Northern India, and was originally introduced from Nepaul. There is a striking resemblance between this and C. discolor, which comes from Japan, and is not only a congener, but evidently a near ally. The great distinguishing feature lies in the spur, which is exceedingly short in the species under notice, as the specific name implies. The spur of C. discolor, on the other hand, is half an inch in length or more; the structure and ridges of the labellum, however, are similar in both cases. C. brevicornu is strictly terrestrial, with the foliage appearing to spring directly from the soil. The outer leaves are reduced to bract-like sheaths that surround the inner, that are long, lanceolate, and longitudinally crumpled or plaited, accompanying the flowers. This variety is flowering in the cool Orchid-house at Kew. *J. F.*

FINE CATTLEYA MOSSIÆ.

In the gardens of E. A. Leatham, Esq., M.P., at Misarden Park, a superb specimen of a fine variety of Cattleya Mossiæ is now in bloom, having over ninety flowers, each 8 inches across, the large labellums exquisitely marked and fringed. As a single specimen not made up this has perhaps never been beaten. Under Mr. Excell's care many fine specimens in grand health and well worthy to be associated with the plant in question are to found at Misarden.

LÆLIA FLAVA.

Very different from L. purpurata or anceps, this species has deep yellow flowers of the colour of the yolk of an egg. Mr. Williams grows it in the Cattleya-house with a moderate supply of water. It is a native of Brazil, and is figured in the *Orchid Album*, t. 226.

"LINDENIA."

The following plants are figured in the last number of this periodical:—

Æranthus Leonis, t. 37; *Catasetum discolor*, t. 38. *Cattleya Percivaliana var. Reichenbachi*, t. 39.—A form of C. labiata with sepals and petals of the most beautiful reddish-purple; the central lobe of the lip is of a fine clear red, with a paler toothed margin. Towards the base are two deep yellow triangular spots marked with reddish hieroglyphic-like markings in irregular lines. It seems we are to call this Cattleya labiata var. Percivaliana var. Reichenbachi. Well may the Professor ask where we are going? Surely it would suffice to call it Cattleya labiata, Reichenbach's variety.

Vanda Sanderiana, t. 40.—The variety figured, flowered by M. Peeters, of Brussels, differs from the type in the possession of a green lip.

DOUBLING OF DENDROBIUM DALHOUSIANUM.

In the cool division, as well as in the East Indian or warm compartment of the Orchid-house at Kew, is a considerable quantity of D. Dalhousianum, all flowering freely. A number of pseudobulbs exhibit flowers with a tendency to duplication of parts. The labellum, looked upon by Darwin as a compound organ consisting of a petal and two stamens combined, is frequently replaced by two smaller ones, although if the above theory is correct we should expect to find three lips, at least occasionally. Here, however, where two occur one is much smaller than the other, and frequently deformed. In other cases two small lips are produced of equal size and appearance, lying alongside of one another and occupying about the same space as a lip of the normal form and size. The petals offer an entirely different case, and where doubling occurs the ordinary ones are in the usual position and apparently quite normal in every respect, surmounted by other two that are closely similar. In all probability, then, the secondary petals are merely a repetition of the first, as we have in Narcissus Eystettensis. In some of these flowers three extra pieces occur, one labellum and two petals, making in all

nine pieces to the perianth. An opposite tendency is shown by D. crystallinum, also flowering at present. The petals are absent or coalesce to form one piece, which takes the position of the upper sepal. The number of parts in this instance is reduced to four. D. Dalhousieanum is figured in Paxton's *Magazine of Botany*, xi., 145. *J. F.*

Cattleya Mendelii var. bella.

The sepals and petals of this variety are blush-white, and the lip in its posterior part is of a fine golden-yellow veined with paler streaks of the same colour, and in its anterior part of a dark mauve-lilac veined with white. It flowers in May—June and requires abundance of light, a position near the glass, rough fibrous peat and sphagnum, and careful attention to watering, small supplies being given in the resting season. These are the requirements which Mr. Hill, the gardener to G. Hardy, Esq., of Timperley, fulfills so well, as is evident by the admirably-grown specimens under his charge. The plant is described in the *Gardeners' Chronicle*, vol. xvii., p. 700, and a coloured figure is given in the *Orchid Album*, t. 225.

ORCHID NAMES.

Where are we going? I am truly glad Dr. Reichenbach has asked this question, as it affords English Orchid growers an opportunity to say something on the subject. It seems that the Royal Horticultural Society is at last about to move in the matter. The date, June 29, is not the best time of the year to get material together for the purpose, although that date may do as well as any other to start from. It is generally admitted by all English Orchid growers that the one man in the world who knows most about Orchids is Dr. Reichenbach, and no committee could do so well without as it could with him. The Floral Committee made a good beginning on April 27 in altering the nomenclature of Ferns. (See *Gardeners' Chronicle*, p. 568.) At p. 554 Dr. Reichenbach gives the name of a new variety of Cattleya labiata as C. labiata Luddemanniana Schroderiana, and that is a new name for C. speciosissima Schroderiana. Where are we going indeed! It seems to me we had better stop, review the situation, and make a fresh start.

The best Orchid authorities in England do not go together on this subject. I have before me the *Orchid Growers' Manual* (B. S. Williams, 1885), and the *Illustrated Dictionary of Gardening*, edited by Mr. G. Nicholson, of the Royal Botanic Gardens, Kew, vol. ii., 1886. Mr. Williams places no less than eleven species and varieties of Odontoglossum under the head of that genus, which Mr. Nicholson gives under the genus, Miltonia. I believe Mr. Nicholson is right; but at the same time he has been placed in an uncomfortable position by the too frequent use of complimentary names. There is, or used to be, a Miltonia Warscewiczii, and also an Odontoglossum Warscewiczii, and the last named must undoubtedly be placed under Miltonia, it O. Phalænopsis, O. vexillarium, and O. Roezlii are to be placed there. He retains M. Warscewiczii syn. Oncidium Weltoni, O. fuscatum, and Odontoglossum Weltoni, but the rare and remarkable Odontoglossum Warscewiczii is not given by Mr. Nicholson at all. It is figured in *Bot. Mag.*, tab. 6163, and there described by Dr. Hooker as "this lovely plant with its gorgeous congeners O. vexillarium and O. Phalænopsis." Its specific name must be altered, if it is placed under Miltonia, and there it must go, as it is undoubtedly of the same group as O. Roezlii. The difficulty cannot be overcome by omitting such a plant altogether from a work of the character of the new *Dictionary of Gardening*. Again, Odontoglossum luteo-purpureum and varieties of it have become so intermixed, that the best growers are in a fog about them. O. lyroglossum, for instance, is described as a species by Mr. Williams, but by Mr. Nicholson as a variety only; and both give O. hystrix and O. radiatum as syns. of O. luteo-purpureum. Another plant raised to the dignity of a species is O. mulus by some authorities; but some of them are not to be separated from O. luteo-purpureum. Orchid forms originate in their native wilds by the aid of insect agency, and the continual crossing and recrossing of varieties by insects cannot exactly be termed natural selection. The insects do for the Orchids what the Lancashire operatives had done for the Auricula. There is no difficulty about the naming of florists' flowers, and when the whole family of Orchids has been re-arranged by competent authorities, we shall know where we are. We may then enquire "Where are we going?" No private individual ought to give Orchids specific names; it has already led to undesirable results, and if any varieties vary so much from the species that a varietal name is necessary, it ought to be an English name. Not to go any further than the last list of Orchid names published in the *Gardeners' Chronicle* from Kew, p. 390, I find Lælia cinnabarina harpophylla; but the most recent authorities, including Mr. Nicholson of Kew, make this a distinct species, as to all appearance it is, the habit of the plant and formation of the flowers are so distinct from L. cinnabarina. It would be easy enough to allude to many more instances, but the above is enough at present. *J. Douglas.*



Florists' Flowers.

THE AMARYLLIS.

Since writing about these at p. 244 the plants have entered upon quite another stage of their existence. They were on February 20 coming into flower, and the rapidity with which the flower-scapes are developed is conclusive evidence that the plants have been a long time making preparation for such a stupendous effort; and by the time the flowers open the bulbs are shrunken and shrivelled, but a well-grown plant has plenty of healthy leaves, and, what is of more importance still, healthy active rootlets. The object of the cultivator now is to keep the leaves green and healthy, by encouragiug healthy root-action. The plants are plunged just over the rims in a tan bed, and they receive a good watering once in a week, which, under the circumstances, is quite sufficient. Gradually the shrunken bulbs plump up, and as two months were required to bring them down to the lowest point of exhaustion, so two months will, with good treatment, bring them up to their former size and plumpness. Our plants are in a bottom-heat of about 80°, and the leaves are kept free from red-spider and thrips. The young seedlings from seeds sown last year in August are now three plants in a 5 or 6-inch pot, according to their strength, and under the same conditions as the large specimens are growing with great vigour. The offsets taken from the old bulbs and planted in pots early in the year are also doing well in the same house. We hybridised many flowers this year of the very best varieties, expecting to save seeds, but have lost all but one pod. The bees were more successful, and by their efforts we have some good pods, but we cannot depend on their selections of varieties.

Cinerarias.

We have even yet a splendid display of these from propagated plants and seedlings; they have given us plenty of flowers since early in the year. Many gardeners and others do not trouble to save and propagate good named varieties or selections from their seedlings, but this can be done easily enough if only it is set about in the right way. Offsets with some portion of roots attached should be taken off any time during the months of May, June, and July. The earliest will, of course, produce the largest specimens. Those taken off now will produce large flowering plants in 8-inch pots, with a head of bloom 2 feet across, in March and April. The best place for the offsets is in a hand-glass behind a north wall. If there is any danger of frosts throw some protection over them at night.

Azaleas.

At this time of the year when work is pressing there is much danger of Azaleas being neglected, as they go out of bloom. The best possible place for the plants is in a heated house and a moist atmosphere, shading them from the sun. Any plants requiring to be repotted should be seen to; those not requiring this may be treated to some artificial manure placed on the surface. The best I think is some bone-meal mixed with five times its bulk of peat, and and some finely pounded charcoal. Place a little of this over the surface, and in a week or ten days, it will be well traversed with the hair-like roots of the Azaleas. The plants should be fumigated if there are thrips upon them, and well syringed twice a day to keep them free from red-spider. The plants will soon show by their deep green leaves and vigorous young growths how well they like this treatment. Many persons cannot afford space in warm houses for Azaleas; in that case it is better to place them in the warmest end of the greenhouse all together, and syringe them well every morning.

Chrysanthemums.

Here again it may be as well to say that our plants are treated, not as we would like, but in the way we can. The whole of them were propagated from cuttings inserted in 60-sized pots in January. They were rooted by being plunged in a gentle hotbed. The plants ought to have been potted into 5 and 6-inch pots in March or early in April, but when 500 are grown it takes much space in frames to accommodate them. They were, therefore, potted last week into their flowering pots from the 60's, and no doubt they will now do well if some care is taken not to give too much water at first, and until they have fairly well rooted into the rich potting soil. We have always potted the Carnations (much more difficult plants to manage) into their flowering pots from large and small 60's; I can see no good reason why the more hardy Chrysanthemum should not be grown in the same way. Specimen plants that may be expected to win 1st prizes at an exhibition must be treated well. Large-flowered varieties are usually exhibited in 11-inch pots, pompons in 8-inch. It is now quite time they were potted into the pots in which they are to flower, and for this purpose use a compost of three parts good turfy loam, one of decayed manure, one of leaf-mould, and an 8-inch potful of crushed bones to each barrowload. We are using this year Jensen's fish manure instead of crushed bones as being more easily assimilated by the plants. These specimen plants ought to be pinched back, and also tied out as they increase in growth.

Roses in Pots.

It is a good time to sound a note of warning about these. The plants are too often very badly treated. In the first place they are forced into bloom in unsuitable houses, which causes the young wood and leaves to be weakly and easily injured. When the flowers begin to open they are placed in a crowd of greenhouse plants without room to breathe, and when the flowers are over out they go into the open air, where growth is checked, and the young wood becomes a prey to greenfly and mildew. It is not thus that good rosarians treat their plants. We may not be able to give them the best treatment when we force them into active growth before their time, but let us avoid any sudden or serious checks. When they have flowered keep them under glass for some time longer in a pit or frame, and gradually inure them to the open air by drawing off the lights altogether, and before placing them outside see that the leaves are free from insect pests and parasites. *J. Douglas, Ilford.*

VINE MILDEW.

Oidium Tuckeri, *Berk.*

Vine mildew was unknown in Britain before 1845. It first appeared at Margate, and Mr. E. Tucker, an admirable gardener of that place (whose death is recorded in the *Gardeners' Chronicle* for March 21, 1868), was the first to observe it, and one of the first to apply sulphur as a remedy; on that account the Vine mildew was called by the Rev. M. J. Berkeley, in commemoration of Mr. E. Tucker, Oidium Tuckeri. This fungus, like the dreaded Peronospora of the Vine, P. viticola, Berk., and the fungus of the Potato disease, and of Hollyhocks, was first noticed in America.

The Oidium of the Vine and the Peronospora of Potatos reached Britain at about the same time. The Oidium was first described in 1847 in the *Gardeners' Journal*, and with an illustration in the *Gardeners' Chronicle* for November 27, 1847, p. 779; a description was also given in the *Annals of Natural History*, 544, where it is said the new fungus grew upon the leaves, branches, and fruit of Vines. The following extracts from the original account as published in the *Gardeners' Chronicle* for November 27, 1847, p. 779, are now of historic interest:—

"The Grapes in the neighbourhood of Margate have for the two last years been attacked by a peculiar mildew of the most destructive character. We do not recollect that this has been observed elsewhere. As far as we have been able to discover there is no intimation of it in the pages of our journal. A short notice will be found from the pen of an intelligent cultivator at Margate (Mr. E. Tucker, gardener to J. Slater, Esq.) at p. 212 of the *Gardeners' Journal* for 1847, who has paid much attention to its progress and development, and after becoming thoroughly acquainted with its nature, with the assistance of a powerful microscope, which was at his disposal, at last succeeded in materially arresting its ravages. . . . . Every Vine, whether in the open border or in houses, was more or less attacked. The disease appeared on the young shoots and leaves in the form of white meal, which spread upon the racemes and ultimately on the Grapes themselves, causing them to crack and swell, and accompanied by a strong unpleasant smell, and ending in the total decay of the fruit. . . . . A mixture of sulphur and lime was carefully applied to the whole surface affected, by means of a brush and sponge, and in some instances simple friction with the hands which were first dipped in plain water, and in both cases with great success. There are, in consequence good Grapes in the houses where the disease was studied, while in the next garden the destruction was more or less complete, not a single bunch of Grapes or even a leaf was to be seen. The fungus is a species of Oidium which has not been previously observed. It is well known the species of a particular section of this genus have long been supposed to be the mycelium of several species of Erysiphe. In the present instance no Erysiphe has been observed." Mr. Berkeley at this distant time refers to "alternation of generations" in fungi, and points out the probability of Uredo and Puccinia being two forms of one fungus. In describing the Oidium he says:—"The spores from their larger size fall off sooner than in the other species, and consequently do not form moniliform threads." I shall show further on that under certain conditions the spores of Oidium Tuckeri do really form very distinct moniliform, or necklace-like threads. During the following year, 1848, renewed attention was directed to the mildew of Vines in the *Gardeners' Chronicle*. In the number for July 22, p. 493, we read:—"This disease is becoming virulent in this neighbourhood (Leyton, Essex), so much so, that some have lost all their Grapes, and the wood for another year's crop. One house was so bad with mildew, that when we thinned the berries the dust flew from them in the operation." In the number for August 5, 1848, the following occurs:—"Within the last few years a mildew fungus has been committing unexampled ravages in our vineries. In the form of a white powder it seizes upon the leaves, thence spreads to the young Grapes, and in the course of a few weeks so overruns the plants as to give them the appearance of having been powdered with lime or flour. During the present year it has been worse than ever, and we have been repeatedly consulted as to the mode of arresting its progress. Some vineries at Clapham belonging to Mr. Allnutt have been thus attacked; others have been spoken of near Margate; and in the *Kentish Gazette* it is stated that of nineteen within a space of 4 miles thirteen have been attacked and lost their crops. The neighbourhood of Leyton has been visited in the same manner, and at Isleworth Mr. Wilmot's Vines have been mildewed to such an extent that in twelve houses he has not a single bunch sound: his loss is estimated, for this year alone, at 600 lb. in weight. We hear, too, that the magnificent Vines at Bishops Stortford are in the same condition. The outdoor Grapes with Mr. Wilmot are also extensively attacked."

"One effect of this disease is to cause the Grapes, even when quite young, to burst; a circumstance evidently owing to the mildew stopping the growth of the skin, which in consequence becomes unable to distend as the juice accumulates beneath it. We have now before us Grapes that have burst in all stages, from the size of Peas to three-quarters ripeness. The smell emitted by plants thus attacked is of the same musty nature as invariably accompanies dry rot.

"Like all the mildew plants, we know nothing of the origin of this, of the causes which bring it, or of the circumstances which drive it away. Beneath the microscope it appears like a delicate web of white glossy threads, here and there collected into tufts, and producing myriads of little oval bodies resembling minute eggs, whence its botanical name of Oidium, or egg mildew. By these eggs it is propagated with wonderful rapidity."

Although Vine mildew was common and destructive in Britain from 1845 to 1848, it did not reach France till 1850. After this time it soon spread all over Europe. In France it is recorded that the Oidium first attacked the Grape called Frankenthal, next the different varieties of Chasselas fell, then the Muscats, but especially the white; the Malvoisies, the late white Grapes, the Tressaux, most of the Hungarian Grapes and the Hermitage. It is a remarkable fact that the American Vines, such as brought the pest first to this country, are never so badly attacked by the Oidium as European varieties. When the disease first appeared in Europe the following Grapes resisted infection:—The Teinturiers, the Cots of Touraine, the Gamays, the Servoniens, the Melons and the Pinaux of Burgundy. The fungus was first seen in Queensland, Australia, in 1866 and 1867, and in Victoria and South Australia in 1869 to 1875. Mr. Darwin states in his *Variation of Animals and Plants under Domestication*, vol. ii., p. 228, that, "near Malaga, during the early period of the Vine disease, the green sorts suffered most, and red and black Grapes, even when interwoven with sick plants, suffered not at all."

The fungus invades Grapes growing in the open air in this country as well as the grapes of vineries. On the Continent it attacks the Vines in the vineyards and frequently invades the inflorescence covering the different parts of the little flowers with the destructive white fungus bloom. When the flowers are attacked, it is obvious that the harvest of Grapes is ruined, and the whole vintage is sometimes annihilated; at times the Vines themselves are killed by the fungus. Sometimes the fungus attacks the young ovaries and by causing them to become greatly distended, gives them a spurious appearance of robust growth. When the fungus attacks the bark of the young shoots, it does not penetrate deeply or produce putrescence after the manner of Peronospora, but confines itself to the more superficial cells which during the winter are cast off.

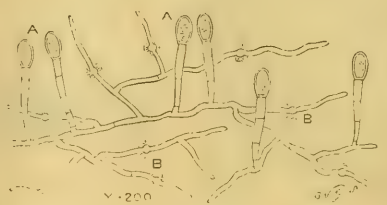


FIG. 136.—VERY YOUNG CONDITION OF THE FUNGUS OF VINE MILDEW, OIDIUM TUCKERI: ENLARGED 200 DIAM. A, THE CONIDIA; B, THE SUCKERS.

The fungus never appears on weakly or injured places on Vines, but invariably starts from perfectly sound and healthy places. It is said to commonly start from the lower internodes of the branches. The most vigorous Vines are generally the worst affected. It is, however, notorious that the worst attacks are made on the thin-skinned Grapes and the soft-leaved varieties. A hard cuticle is evidently able to offer some resistance to the Oidium.

In badly affected and neglected vineries the Vines are sometimes so badly mildewed that they appear to have been whitewashed, but if we wish to make out the true nature of the fungus or fungi of Vine mildew we must make our observations at the very earliest period of the disease; viz., at that very early stage so anxiously looked after by good gardeners when the young leaves, fruits, and tendrils, began to show the faintest possible indication of the deadly white bloom which is the certain forerunner of the more advanced condition of the fungus. The hard upper cuticle of a leaf, upon which the fungus is usually most pronounced, is generally too firm and close for the proper observation of the earliest state of mildew, so it is preferable to take a very young infected fruit or young infected tendril with so little fungus upon it that it has to be sought for with a lens. If a small fragment of such an example is magnified 200 diameters, it will be seen much as represented in fig. 136. The mycelium is seen branching in all directions; from certain spots young Oidium clubs are springing up, as at A, A, and at other points little brown discoloured spots may be seen on the epidermis of the fruit or tendril, as at B, B; these spots are caused by the insertion of minute processes from the lower surface of the mycelial threads of the



FIG. 137.—RIPE CONDITION OF THE FUNGUS OF VINE MILDEW, OIDIUM TUCKERI.

A, shows the attachment of the conidia to each other, × 1000; B, shows a conidium germinating; C, a pycnidium emitting stylospores; D, stylospore germinating.

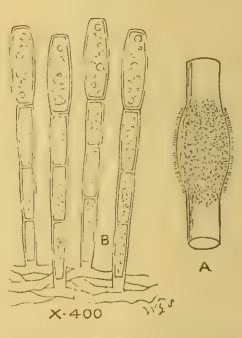


FIG. 138.—THE OIDIUM AND PYCNIDIUM OF ERYSIPHE COMMUNIS, SCH.: ENLARGED 400 DIAM.

Oidium. The injury to the membrane of the leaf or fruit of course sets up decay, and it will be understood that when the mycelium thickly covers the fruit-surface the brown specks of decay are correspondingly more in number, till in bad cases the entire surface, of the fruit is arrested; it commonly happens, however, that growth of the interior of the fruit goes on as usual, and the consequence is the berries burst and dry up. In burst examples the Oidium is never seen on the exuded material. Dr. Zanardini was the discoverer in 1851 of the processes, or fulcra, as he termed them, on the mycelium of Oidium Tuckeri (fig. 136 B). It is not quite certain whether these fulcra really pierce the epidermal tissue or not, although it is in the highest degree probable that they do. Visiani asserts that they do, whilst Van Mohl affirms that they do not; whether the tissue is really pierced or not, it is undoubted that the injuries arise at the spots where the fulcra or "suckers" are developed. It is, however, probable that the cells are really pierced, and that the processes are true suckers for imbibing the vital juices of the Vine necessary for the life of the fungus.

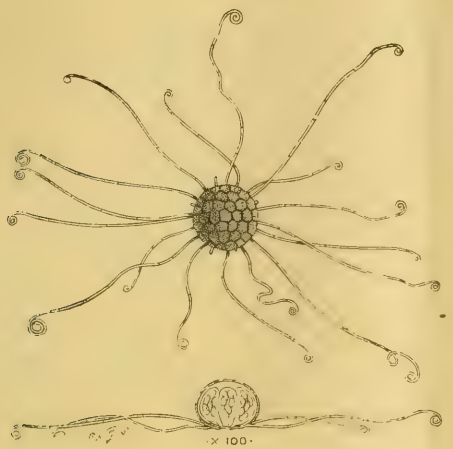


FIG. 139.—UNCINULA SPIRALIS, A PARASITE OF VINES IN AMERICA: ENLARGED 100 DIAM.

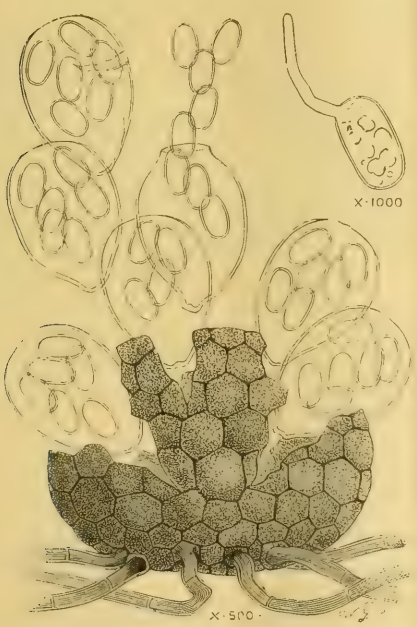


FIG. 140.—PERITHECIUM OF UNCINULA SPIRALIS, IN THE ACT OF DISCHARGING ASCI AND SPORES: ENLARGED 500 DIAM.: ONE SPORE GERMINATING, ENLARGED 1000 DIAM.

or such part of it as is covered by the Oidium, hardens and perishes. The organs of transpiration on the underside of the leaves are also necessarily covered over by the web of mycelium, and in some instances the mycelium actually enters these organs. Every Vine grower knows that when the Oidium attacks the young berries the external growth

The general appearance of a tuft of clubs belonging to Oidium Tuckeri is shown enlarged 400 diameters in fig. 137. It frequently happens that each club is capped by a solitary oval cell, spore, or bud only, but it is now by no means uncommon to see the Oidium as a kind of necklace consisting of from one or two to six oval cells, as illustrated in fig. 137. The cells are so slightly connected together that the least breath of air or the slightest possible film of moisture breaks them apart. The delicacy with which they are attached together is almost inconceivable. The little fragile band of attachment is illustrated, enlarged 1000 diameters, at A, fig. 137. The spores are filled with granular protoplasm; at the time of germination the other membrane opens, and the germinal thread emerges as shown at fig. 137, B. The spores often germinate whilst still *in situ*, and whilst growing in necklace fashion, as shown. It sometimes happens that other bodies, named pycnidia, are borne on the Oidium threads; one of these pycnidia (or as given by Dr. Montagne in the *Journal of the Royal Horticultural Society* for 1855, p. 120, "pyxidia") is shown at fig. 137 C. The pycnidia are generally seen somewhat late in the season. Each pycnidium is densely filled with reproductive bodies, termed stylospores, and when the yellow-brown pycnidium is ripe it bursts at the side, as shown, and the spores sail out. The spores (stylospores) are mixed with a gummy substance which remains unchanged in alcohol, it is, however, dissolved in water, which, too, sets the individual stylospores free. Sometimes the spores germinate whilst still inside the pycnidium, and push their germ-tubes through its walls. These secondary spores, or stylospores, readily germinate, as shown at fig. 137 D, and the germinal thread, like the thread B (fig. 137), on falling upon Vine leaves soon gives rise to the ordinary club growth of Oidium Tuckeri (fig. 137). The secondary spores are so small, that it would take about 27,000,000 of them to cover a square inch.

Pycnidia were first discovered on Oidium mycelium in 1850 by an Englishman named Dr. Plomley; this gentleman exhibited a large drawing of them attached to the mycelium of the fungus of Hop mildew in the Great Exhibition held in Hyde Park in 1851. The drawing, which was an excellent one, was reproduced in the *Journal of the Royal Horticultural Society* for 1855, fig. 2, p. 68. Dr. Plomley also discovered the Erysiphe growing from the same mycelium In 1852 Professor Amici reported a similar discovery of pycnidia on the mycelium of the fungus of Vine mildew to the Royal Academy of Georgofili of Florence. Professor Amici also detected similar bodies on the mycelial threads on mildews found on Convolvulus, Gourd, Plantago and Trifolium. Pycnidia have been described as distinct fungi under four or five different names—Ampelomyces quisqualis, Ces.; Circinobolus florentinus, Ehren.; Leucostroma infestans, Cast.; and Byssocystis textilis, Riess; ithas also been termed Endogenium. Dr. Montagne records in the *Journal of the Royal Horticultural Society* for 1885, p. 122, that a certain botanist, unnamed, had advanced the opinion that four other fungi belonging to different tribes, viz., Penicillium candidum, Fr.; Trichothecium roseum, Fr.; Alternaria tenuis, and Cladosporium fumago were only forms of it!

It is necessary to stop here, so that one fact and its meaning may be clearly understood. The Oidium grows in the fashion of vertical necklaces, as shown in fig. 138 B; each bead of the necklace is a spore capable of reproducing the fungus. From the same mycelial threads, which bear the Oidia, other bodies, viz., large Lemon-shaped flasks, termed pycnidia, arise. The small spores which rest within the pycnidia, also reproduce the Oidium when they are set free. The Oidium and the pycnidium are so different in appearance that no one would believe they belonged to the same fungus unless actually seen growing upon the same threads.

When a similar state of growth can be observed and illustrated in the fungi of Berberry blight and corn mildew, the supposed genetic connection of the two latter fungi may be more generally accepted as proven. Mr. Plowright, in meeting a criticism of this class, evades reply by merely saying the suggestion is

"amusing" (*Gardeners' Chronicle* April 3, 1886, p. 438).

I have stopped to emphasise what I consider the good proof of the genetic connection of the Oidium and its pycnidia, because Dr. Saccardo (who is one of the upholders of the Berberry blight and corn mildew idea) has, in one of his most recent publications, absurdly dubbed the pycnidium of Oidium "a parasite" (!) on the Oidium mycelium. Had he been even moderately well acquainted with the pycnidia he would have often seen the Oidium continuous with and actually on the top of the pycnidium. It would be more reasonable to consider the Oidium a "parasite" on the pycnidia. But as the two reproductive bodies can be easily made to reproduce each other from their spores, it is obviously a mere waste of time and space to discuss the matter. Dr. Saccardo (*Syll.*, iii., 216), has also used the name Cicinnobulus in preference to the familiar Circinobolus.

The Oidium fungus of the Vine is well known to be a mere early condition of some other and more perfect fungus. The Oidium never gets beyond its infant state, and seldom or never perfects itself on the Vine. The fact of the Oidium of the Vine being an imperfect condition of some other fungus is known, because there are several other fungi almost identical with it, fungi which send up almost identical pycnidia from the mycelium, and which afterwards perfect themselves as fungi found under Erysiphe. There is every reason to believe that the perfect state of the fungus of Vine mildew is one of the Erysiphes, and no reason to suppose it is not. We have almost identical fungi on Peas, Hops, Roses, grass, Buttercups, &c. But as the Oidium and pycnidium states of all these fungi are very much alike, and as they more or less agree with the fungus on Vines, it is no easy matter (as the latter never perfects itself on the Vine here) to decide whether it is the Oidium of either of these plants or of some unknown or exotic Erysiphe. Mr. Thomas Taylor, microscopist of the United States Department of Agriculture, Washington, has published an illustrated account of the discovery of the Erysiphe of the Vine, and this paper was reproduced with its illustrations in England in the *Monthly Microscopical Journal* for March 1, 1875, but the evidence was disputed by Mr. C. B. Plowright, of Kings' Lynn, in the same volume, p. 209. Dr. M. C. Cooke has also rejected the evidence. Some of the actual examples on infested Vine leaves were ultimately sent to this country and examined by Messrs. Berkeley and Broome. In the *Gardeners' Chronicle* for January 5, 1884, p. 22, a brief illustrated report is given from the pen of Mr. Berkeley. The report says that two Erysiphes were found on the leaves sent—one Uncinula spiralis, B. and C.; the other Erysiphe communis, Sch. Mr. Berkeley wrote that Erysiphe communis, Sch., being a widely distributed species, might "after all be the true result of Oidium Tuckeri" (fig. 137). I entirely agree with Mr. Berkeley in this idea. The Oidium and pycnidium of Vine mildew, and the same growths belonging to Erysiphe communis, Sch., appear to be identical—that is, they appear identical as far as these fungoid growths, constantly varying within certain limits, can be identical.

In fig. 138 I have engraved the Oidium and pycnidium of Erysiphe communis, Sch., to the same scale as the Oidium and pycnidium of the fungus of Vine mildew, enlarged 400 diameters. I have purposely taken the most divergent examples for illustration, to show the range of form. In fig. 138 two conjoined spores of the Oidium are seen on the top of the pycnidium. The pycnidia are no more "parasites" of Oidium than are zoospores parasites of Peronospora infestans, Mont.

It happens that in the *American Monthly Microscopical Journal* for January, 1884, Mr. Thomas Taylor, who formerly referred the perfect form of Oidium Tuckeri, B., to Erysiphe, altered his idea and claimed Uncinula spiralis (fig. 139), Berkeley and Cooke, as the true Erysiphe or perfect state of Vine mildew. In Mr. Taylor's paper a quotation is given from Mr. Berkeley, who wrote:—"We cannot suppose that it (Uncinula spiralis, B. and C.), arises from the historical Oidium Tuckeri." Dr. Cooke also wrote that there was not the slightest evidence to prove the identity. Uncinula spiralis, B. and C., was first described by Mr. Berkeley in *Grevillea*, vol. iv., 1875, p. 159, as a parasite of Vitis Labrusca in Pennsylvania.

An important fact, then, seems to be proved, that the American form of mildew on Vines is caused by Uncinula spiralis, and its Oidium. A second species of Uncinula, named, U. americana, Howe, invades North American Vines; and a third species, named U. subfusca, B. and C. (which is the same with U. ampelopsidis) attacks Ampelopsis quinquefolia. I am inclined to look on all these three species as mere forms of one plant, viz, Uncinula spiralis. A second fact of still greater importance is, that Erysiphe communis and its Oidium also grows on mildewed Vines in America.

It is very desirable to prove, if possible, how the mildew of Grapes hibernates through the winter on Vines in the open air in Britain. If Vine mildew arises every summer from the germinating spores of an Erysiphe like the mildew of Hops, Peas, and Roses, its mode of passing the winter is very obvious. The spores simply hibernate (securely wrapped in asci and a perithecium) in rotting vegetable matter belonging to various natural orders of flowering plants. If the fungus does not take the Erysiphe form, its mycelium doubtlessly becomes perennial, and lives through the winter in a resting state in the minute cracks and fissures of the main stems of the Vine. This idea of perennial mycelium presented itself to the earliest writers on Vine mildew at the time when the pest first appeared in Europe. The fact of the fungus first attacking the lowermost internodes of the newly-formed shoots lends some probability to the view of the mycelium being sometimes perennial; another instance which points in the same direction is the fact that the spring outbreak of mildew often starts from one well-defined position in a vinery, as if mycelium or resting-spores had suddenly burst into renewed growth in one spot.

By the kindness of Mr. C. Edmund Broome, F.L.S., I have been enabled to engrave two illustrations from Nature of the American Uncinula spiralis. In the upper part of fig. 139, the Uncinula is shown, as seen from above, enlarged 100 diameters, with a section below. The species of fungi placed under Uncinula are almost identical with the Erysiphes of our Peas, and the allied Sphærothecæ of our Hops and Roses. The central body or perithecium of Uncinula is furnished with very long and curious tentacles or appendages, these tentacles are uncinate (or hooked) at the ends (hence the generic name); they are hooked, rolled up, or spirally coiled instead of being straight or rigid (as in Erysiphe), and this is the chief distinctive character of Uncinula.

The use of the appendages is unknown, but it is certain that these organs are always so entangled with the leaf hairs of the Vine that the perithecia are kept in position on the leaf by them after the supporting mycelium has decayed. In removing the perithecia from the leaf with a fine needle under a lens, it is seen that in the attempt to remove one perithecium many more will always be torn from the leaf on account of the entangled mass of leaf hairs and fungus appendages.

When a section is made through the central body or perithecium of Uncinula (see fig. 139, lower figure), it is found packed with from four to eight (but more frequently six) transparent bladders or asci, and each ascus carries from four to eight spores, the more frequent number being four or six.

If mature, dry, and intact perithecia are placed for observation under the microscope and a film of water introduced, it will be noticed that the water at first somewhat distends, and at length bursts the perithecia. A very slight pressure will then cause the asci and sporidia to be gradually discharged, as shown in fig. 140, enlarged 500 diameters. In the latter illustration the tentacles have been removed. The spores are oval, and greatly resemble the Oidium spores from which the perithecia arise. The sides of the spores are generally somewhat flattened, and resemble in shape a reptilian egg. The spores germinate by the protrusion of a germ-tube from one corner, as shown in the top right hand of illustration. Uncinula spiralis was described and in part illustrated by the Rev. M. J. Berkeley in his *Introduction to Cryptogamic Botany*, in 1857, p. 278. Its early state is an Oidium very similar with our O. Tuckeri, Berk., with conidia, however, possibly a shade smaller in size. Sometimes the Uncinula grows in company with Peronospora viticola, just as our Erysiphe Martii, Lk., commonly grows on Peas in company with Peronospora viciæ, Berk. The Oidium of Uncinula spiralis is reasonably enough commonly termed Oidium Tuckeri, Berk., in America.

Worthington G. Smith, Dunstable.

(*To be continued.*

FORESTRY.

CONIFERÆ.

Coniferous trees, particularly the various species of Abies (Silver Firs), just now present a very beautiful appearance, from the bright colours of the pollen catkins. In A. Nordmanniana this is particularly noticeable, the undersides of the branches for, in most cases, the upper half of the trees being a glowing vermilion-red, which contrasts so richly with the dark Yew-green of the foliage. The male cones on A. grandis are more sparsely produced, and of a lighter colour—almost a washed-out pink; but as regards size they are on a par with the former, while the before-noticed peculiarity of the pollen catkins being produced for some years previous to the female ones is still noticeable in several trees.

In A. cephalonica the male cones are usually larger than those just referred to, but as yet have, at least on the trees here, been sparsely produced on the top branches—a striking contrast to those of A. Pinsapo, which are produced low down on the trees and to the very extremities of the branchlets. A. Pindrow is a shy bloomer and coner, but both have been produced here on much smaller and younger trees than any other of the Conifers. A. nobilis is, perhaps, next to A. Nordmanniana as regards beauty when in a pollen-bearing state, for many of the large trees here are rendered conspicuously remarkable by the contrast of light silvery foliage and superabundance of deep pink pollen-cones. Than Cupressus Lawsoniana no Conifer can, however, be more ornamental in a flowering condition, the top half of the tree appearing as if painted with the deepest red.

It is rather a strange fact that in most of the Abies tribe (I am referring to those grown in this country), when the pollen is quite ripe and ready for applying to the female cones, that these latter are not in a sufficiently advanced state to receive it, and therefore remain barren. This I have carefully noted for a number of years in at least four of the trees above-mentioned, and the fact is likewise well known to those in charge of our home nursery, and who, although they select cones from such trees as have produced the greatest quantity of pollen, in many instances, to their disappointment, are rewarded with but empty seed-husks. From some carefully carried-out experiments I have come to the conclusion that, in some seasons at least, the pollen produced by certain trees is useless for the purpose intended, and will not fertilise the female cones although applied, and I shall be very glad to hear from any of your correspondents who have made similar notes or experiments. Another curious fact is, that unfertilised cones are as large (in some instances larger—note A. Webbiana or A. nobilis) as those which produce sound seed. In testing this, the size of trees, state of health, conditions of soil, rate of growth, &c., were all taken carefully into consideration, and the results arrived at were certainly startling.

Again, trees from warm countries produce pollen for a number of years previous to female cones; whereas in such Coniferæ as are natives of much colder countries than our own, male cones are borne simultaneous with, but usually previous to, female cones.

Although strange, it is nevertheless true that when a horizontally-branched Conifer assumes the fastigiate habit, the leaf arrangement is likewise changed from distichous to spiral or whorled, this being well exemplified in the case of the common Yew and Cephalotaxus pedunculata. In both these conifers—the leaves are distichously arranged, whereas in the upright form, or rather variety of the Yew (Taxus baccata fastigiata) and Cephalotaxus pedunculata fastigiata, the leaves are regularly arranged around the stem.

Sowing Grass Seeds.

Where bare places on the lawn, wood rides, or lands cleared of timber, have to be laid down to grass no better time could be selected than during the first week of May. Having thoroughly prepared the ground, which should, in the first instance be well forked over and left in a clean state with a firm bottom and fine surface, the following mixture

which is well suited for semi-shady situations, may be sown :—

Timothy, Meadow Foxtail, Tall Fescue, and Hard Fescue, 2 lb of each	8 lb.
Rough Cocksfoot and Smooth stalked Meadow, 3 lb. of each	6 ,,
Rough-stalked Meadow and Sweet-scented Vernal, 4 lb. of each	8 ,,
Wood Meadow	7 ,,
	29 ,,

For lawn purposes, or sowing on bare patches where trees have been stubbed from the pleasure-grounds, the following mixture is most suitable :—

Evergreen Meadow, Wood Meadow, Trefoil, Golden or Yellow Oat, Sheep's Fescue, 2 lb. of each	12 lb.
Common Rye	10 ,,
Hard Fescue	4 ,,
White Clover	7 ,,
Crested Dogstail	9 ,,
	42 ,,

Sow evenly over the surface on a calm, dry day, run a light seed-harrow over the ground, and finish up with a single turn of the roller. In small patches the seeds may be raked in. *A. D. Webster, Penrhyn Castle.*

The Flower Garden.

GENERAL KEEPING.

HOE and rake shrubberies, and maintain a tidy appearance. Remove the suckers from the roots of trees and shrubs. Weekly attention as to mowing and sweeping and rolling of lawns is now very necessary to produce a fine sward of grass—the pride of British gardens. Where the soil is thin or poor under the turf, watering will have to be resorted to ; and some fertilisers will have to be applied, or else burnt grass will be the result. Now is a good time to dress the walks with some weed destroyer. Choose a dry time for the work, and keep the stuff 9 inches or more away from the edgings of Box or grass.

BEDDING-OUT PLANTS.

The first batches of Alternanthera, Iresine, &c., may now be trusted out in cold pits. If room in intermediate pits be scarce, keep the plants on the dry side, and only water when necessity requires. All the stock of Pelargoniums should now be undergoing the hardening-off process. It is better not to put any of these out into the beds till after the 18th, unless in favoured localities, as we have usually a sharp May frost ; and although it is not sufficient to kill the hardier sorts of summer bedders it gives them an injurious check, which considerably retards their growth.

Pot on Ricinus, Solanums, Wigandias, Chamæpeuce, and other sub-tropicals, and gradually inure them to outdoor temperatures. Such plants must have a sheltered situation allotted to them. Nothing is more noble and striking than large beds of fine foliage, but when rent and torn by the wind they are most unsightly objects.

Make the main sowing of Mignonette and successional sowings of Saponaria, Nemophila, Silene, Iberis, &c. Thin previous sowings and water as necessity may require. Keep a sharp look-out for slugs, and dust with powdered lime and soot in the evenings. This requires to be frequently repeated, as the first shower of rain destroys its properties as a protector. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

FORCING-HOUSE AND PITS.

WHERE these have been employed for forcing purposes during the winter they should be cleared out, the walls whitewashed, and every part made clean for the reception of the young growing stock of plants. Poinsettias should now be cut back to about two eyes, placing them in a gentle heat about three days after cutting them down, and when beginning to break the plants should be shaken out, repotted in good fibrous loam, cow manure, and sand, and be placed on a slight bottom-heat if that is at command. The cut off shoots should be made into lengths of 2 or 3 inches, and placed in small pots on a bottom-heat of about 85° to strike. If large plants are not wanted the old ones should be thrown away. Dwarf plants in small pots are of much more use than large ones, and the system that I adopt to produce these is to cut a number of old plants down during this month, and plant them out in a pit or frame after they have broken. The lights are taken off about the middle of August, the roots made during the summer are partially cut through and left to callus, then taken off and put in singly into cutting pots in a brisk bottom-heat ; in this way plants are obtained in 48's of not more than 6 or 7 inches high, furnished with fine bracts. All the first batch of Primulas, Cinerarias and tuberous Begonias should now be shifted on, and other younger stock should be pricked off. The last batch of Tuberoses may now be potted up and plunged in a cool pit or frame for late blooming. Boronia elatior is a free-flowering subject, and is one so easily managed that it deserves to be more generally cultivated, for it will last in bloom for two months or more. As the plants go out of bloom they should be cut down to about one-third of last season's growth, and started gradually in a cool frame. Euphorbia jacquiniflora should be propagated as fast as the plants make shoots, as this is a most useful winter-flowering plant. The old Sparmannia africana is still a favourite here, is easily grown, and is one of the freest bloomers, its white flowers being distinct from anything else ; plants of this should now be cut back, if large specimens are wanted, or cuttings in put for young stock. *A. Evans, Lythe Hill, Haslemere.*

The Orchid Houses.

CATTLEYAS.

PLANTS of the Sanderiana and gigas type must have plenty of light and a fair amount of sunshine, or they will not push sheaths with their growth ; some of these varieties are very difficult to flower, and should stand in the full sunshine with Cattleya aurea and C. Dowiana. Where it can be managed it is much better to arrange the flowering plants in a separate house from the growing ones, the treatment they require being so very different to those in a growing state.

ODONTOGLOSSUMS.

Many of these will now be in full flower, and this is the time to mark any that are not suited to the requirements of the owner, or any that are of exceptional merit. If Orchids are arranged with other kinds of decorative plants in the conservatory or in the rooms they should not be placed in a draught, and should be shaded from sunshine and kept moderately dry at the root. If these precautions are taken Orchids may be very successfully used, and it is seldom that any serious damage is done to them.

THE ODONTOGLOSSUMS AND MASDEVALLIAS.

Air should be freely admitted night and day (except when strong winds prevail), and even wind, if moderated in some way, is much better than a closed house. It should be borne in mind that due ventilation plays an important part in the culture of the so-called cool Orchids, influencing the colour of the foliage and the substance of the flower.

MISCELLANEOUS.

If the flowering Orchids are not used for decorative purposes they should be arranged at one end of the house or put into another house away from the plants that are not in flower to enable them to last as long as possible ; and to keep them in flower long they must be treated to a rather dry atmosphere, and no water given overhead. This treatment would not be successful in the growing house, the bulbs and leaves would not be properly developed, and the spikes of flowers would get deformed. Great care and perseverance must be exercised in the Orchid-houses now and for a few months.

In the cool-houses too much moisture cannot be used, therefore all tanks must be kept full of water, and walls, paths, and other surfaces be frequently syringed. Insects of all kinds must be kept well under control. If these requirements are not strictly attended to failure more or less will result. As a rule most Orchids are better kept on the dry side for a little while after flowering ; this can be done by placing them in a corner by themselves, but directly they show signs of growing, either in root or lead, they ought to be potted, if it is requisite. This, of course, brings the potting bench into use very often. I would again urge the importance of keeping the blinds of all Orchid-houses well syringed during hot days, as so very much depends upon the atmosphere surrounding the plants. We are now using the hose-pipe three or four times a day to wet the outside of the roofs, walls, and paths round the houses. *A. Bradshaw, Waddesdon, May 4.*

Hardy Fruit Garden.

THE TREES ON WALLS.

THESE will now require considerable attention, all kinds being freely disbudded if the growths are too thick on the bunches, for when all unnecessary growth is removed insects cannot so easily establish themselves unobserved ; and when the trees are syringed, the clear water or a diluted wash applied is more effective. From now onwards is the best time to bring the syringe or garden-engine into use, choosing the afternoon about 5 o'clock, or, better still, just about sundown.

PEACHES.

The trees should now receive a final disbudding. Excepting in the case of young trees which are required as quickly as possible to cover their allotted space on the wall, only two shoots should be allowed to remain on each bearing branch of last year's formation—one at the base and one at the point of each branch, all intermediate ones being removed with a short twist without tearing or damaging the bark. As soon as the disbudding is finished and all protection removed break up the trodden surface of soil over the roots of the trees, and ascertain whether the soil be sufficiently moist near the roots, especially within a radius of 6 feet from the stems of the trees. Undoubtedly water will be required, and if the soil has cracked and receded from the wall a little, it should be firmly trodden back again previous to watering. When sufficient water has been given mulch over with strawy litter not much decayed, and the trees will be right in this respect for a month hence. Any blistered foliage caused by cold winds, or may be through having for too long a time been afforded protection, may be pinched off as shoots advance in growth, when all traces of it will soon disappear.

PLUM TREES : PEARS.

These will be all the better for being looked over, and all unnecessary strong shoots removed if not required for filling blank spaces on the wall, or for terminal extension. The same remarks apply to Pears—in fact, to all, if time can be spared to carry the work out. If the weather should keep dry recently planted trees will require thoroughly watering over the mulching. Young maiden trees not carrying fruit this season should be secured to the wall or trellis with one or two ties, using nails and matting, not shreds. *G. H. Richards, Somerley.*

The Kitchen Garden.

LETTUCES.

A PORTION of the Cos varieties that have stood through the winter, should, when large enough, be tied up to blanch, by having a strip of matting passed round them whilst the leaves are in a dry state. To obtain good Lettuce during the late summer months it is a good plan to sow thinly in drills, on a north cool border, now, and afterwards, when large enough, thinned out to the proper distances, they are to remain. Treated in this manner, they are less likely to run to seed, keep longer fit for use, and are much improved in quality. All the Year Round and Neapolitan Cabbage, Paris White and London Cos are amongst the best for this purpose.

SEEDS TO BE SOWN.

Make succesional sowing of Dwarf French Beans, Peas, Early Horn Carrot, Spinach, Turnips, Radishes, Lettuce and small salading, and the final one of Scarlet Runners, Savoy Cabbage, and Asparagus Kale. Seed beds should be carefully looked over, thinned where the young plants are too thickly placed, kept clear of weeds, and well watered when necessary. *J. Austen, Witley Court Gardens.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 17	Sale of the Collection of Stove, Greenhouse, and other Plants, formed by the late E. K. Harrison, Esq., at Kingsbury House, Northlands, by Mr. Stevens (and will be continued on Thursday and Saturday).
Tuesday,	May 18	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
Wednesday,	May 19	Sale of Importations of Orchids (some received direct), at Stevens' Rooms. Sale of Carnations, Picotees, 2500 Lilium auratum, &c., at Protheroe & Morris' Rooms. Summer Show of the Royal Botanic Society, Regent's Park.
Thursday,	May 20	Sale of Imported Orchids, in variety, from Mr. C. Patni, of Antioquia, at Stevens' Rooms. Show of the Royal Horticultural Society of Ireland.
Friday,	May 21	Sale of Imported Orchids, at Protheroe & Morris' Rooms. Summer Show of the Crystal Palace Company (two days).
Saturday,	May 22	Annual Sale of Bedding Plants at the American Nurseries, Leytonstone, by Protheroe & Morris.

THE roots of plants will only absorb from the soil such materials for food as are in a liquid or gaseous form. No matter how richly plants may be supplied with food-substance, they cannot avail themselves of it, or assimilate it into their structure while in a solid condition. Bearing these facts in mind, it is not difficult to understand the great success which has attended the application of LIQUID MANURE for garden purposes in Flanders, Jersey, and in various parts of our own country, soils that previously were proverbially barren being by this treatment rendered enormously productive.

The late Dr. VOELCKER said, "Any one who has passed through Belgium, and examined the nature of the soil, must have been struck with the wonderful change which liquid manure has produced there." The gardener in his practice must, however, alway remember that soils containing a fair proportion of clay, and more especially stiff clay soils, are diametrically opposed in their chemical and physical character to those which are porous and sandy. Generally speaking the retentive and stiff soils contain not only the more common mineral elements which we find in the ashes of plants, such as lime, magnesia, soluble silica, sulphuric acid, &c., in sufficient abundance, but also the more valuable mineral substances, such as phosphoric acid and potash. They, moreover, possess in a high degree the power of absorbing nitric acid, and retaining it for future use; and in addition, under good garden cultivation, the vegetable remains left in such soils, in the shape of roots and leaves from former crops, yield much nitrogenised organic food for succeeding plants. The decided benefit which is usually found by the gardener to result from a liberal dressing of stable-dung is owing to the fact that by the very bulk of the manure the physical and chemical characters of the soil are so altered that in reality the plants feed upon a new and artificially formed soil.

Particular cultures may demand particular manures, but the standard manure, such as well made farm-dung, affords all the ingredients necessary to the development of plants. Such manure contains all the usual elements which enter into the composition of plants, and all the mineral substances which are distributed throughout their tissues; in fact, carbon, hydrogen, nitrogen, and oxygen are found therein united with the phosphates, sulphates, and chlorides, &c.

In order to be directly efficacious, every manure must present this mixed composition.

The nitrogen of nitrogenised organic substances only benefits plants when converted into nitric acid, hence no material can act as a powerful fertiliser until it passes into a state of oxidation or decomposition, and the presence of any ingredient which hastens the material applied as manure into that condition, although in itself probably comparatively unnecessary to the plant in that particular soil, yet forms a useful manure. It is in this way we often may explain the great benefits derived from an application of lime, marl, or gypsum. Straw, Bracken-Fern, Potato haulms, turf, and vegetable refuse, are sometimes mixed with quicklime and earth, to form a compost, in order to facilitate their disintegration and decomposition. The utility of this practice cannot be disputed while confined within reasonable limits, but it is sometimes abused; for it is beyond question that alkaline salts, such as that supplied by lime, mingled indiscriminately with manure, become in reality very mischievous on certain classes of very light soil, where the business is rather to preserve than to destroy the substances that are used as manure. Such soils part too easily with the stores of fertility committed to them; consequently we find soluble plant-food is washed away by the rain, or even evaporated into the air. MECHI aptly remarked that "the best portion of manure is always attempting either to run away, or to fly away;" and time tends to increase this action.

The most suitable manure for the looser and more friable classes of soil, is some substance which will combine intimately with the fertilising materials, and thus husband them securely for future plant use. Thus hungry loose sands are rendered fertile by the application of clayey composts or materials for consolidating the mass, so as to impart a greater resisting power to atmospheric action.

One great objection to the extensive employment of composts, however, is the amount of labour they require in the repeated turnings which are held necessary in their preparation, and in the large quantity of matter which has to be transported.

In order to show why potash, lime, phosphoric acid, and nitrogen are the most important elements of plant food, it is necessary to consider the chemical composition of our various garden productions, and the amount of each constituent they remove from the soil in order to build up their vegetable fabric.

The following table, compiled from various sources, brings before us at a glance the amount of these constituents removed from the land in 1 ton of each crop in a fresh condition as taken from the garden, which of course includes a very large quantity of water.

Amount of Selected Chemical Constituents in Produce Removed from the Land, in Pounds.

In 1 Ton of each:—	Nitrogen.	Phosphoric Acid	Potash.	Lime.
	lb.	lb.	lb	lb.
Potato tubers	5.6	3.4	12.3	1.5
Carrots	4.5	2.0	6.3	1.8
Parsnips	4.9	4.3	8.1	9.0
White Turnips	4.0	1.1	6.7	1.6
Peas (including pods)	64.8	10.3	12.5	5.7
Cabbage (edible portion)	6.7	2.9	2.9	5.2
Jerusalem Artichokes	5.3	6.7	22.6	1.3
Asparagus	5.0	2.0	0.7	0.5
Onions (bulbs)	5.4	1.6	3.4	1.3
Cucumbers	0.7	2.0	6.7	0.7
Broccoli (heart)	4.4	5.6	10.8	1.1
Cauliflowers (heart)	4.6	4.0	5.2	0.5
Spinach	2.5	3.6	4.5	6.0
Radishes	5.0	5.8	3.1	1.4
Kidney Beans (including pods)	6..5	2.3	5.6	1.7
Lettuces	2.5	1.7	3.9	1.2
Celery (stems)	4.5	2.8	5.4	3.1
Beets	4.4	0.7	6.5	0.5
Rhubarb (stalks)	3.1	2.0	5.2	1.6

The true economy of manure can be understood only when we become acquainted, as by the statistics given above, with the special characters of the crops we cultivate; but we not only have to consider the materials required to form a crop, but the power the particular plant we are cultivating has of assimilating the ingredients applied in manure.

For this reason farmyard dung, purchased or home-made, which supplies all the essential elements of plant food, and particularly the constituents shown to be required to such a large extent by the vegetables we cultivate, is so largely used by growers. But on the other hand the immediate return from an application of farmyard manure is much less than from the same amount of plant food applied in well selected artificial manures. We shall hope to continue the subject on a future occasion.

—— PRIZES FOR YOUNG GARDENERS: MOTTOES OF COMPETITORS.—The following are the mottoes assumed by the different competitors in this contest whose essays have been received:—"Nibil"—"Primrose"—"Altiora Peto"—"Whittingtonian"—"Spes et Perseverantia"—"Excelsior"—

"I took his brush and blotted out the bird,
And made instead a gardener putting in a graff,
With this for motto—'Rather use than fame.'
Merlin: TENNYSON."

—"Tantus amor florum"—"Live and Learn"—"Flos"—"Nil Desperandum" (3)—"Adscriptus glebæ"—"Picotee"—"The Beginning and the End"—"Natura est artis magister"—"Salopian"—"Quercus Ilex"—"Omega"—"Dendrobium densiflorum"—"Ad valorem"—"Beginner"—"Cambrian"—"C. B. R."—"Tibolt"—"Bucks"—"Caractacus"—"May Flower"—"Strathearn"—"Lady Dell"—"A would-be Botanist"—"Water Pot" (drawing)—"Perseverance leads to success"—"Mount"—"Vinca"—"I. J. C."—"Veronica"—"Perseverance"—"Industry is the key of progress." The result will be publicly made known at the Provincial Show of the Royal Horticultural Society at Liverpool.

—— PARIS HORTICULTURAL CONGRESS.—This Congress, organised by the National Horticultural Society of France, opened its discussions on May 13. As will be remembered, a series of questions relating to various departments of Horticulture, fiscal, commercial, cultural, scientific and educational, were propounded as subjects for discussion. To these questions several preliminary answers have been given by various French and Belgian horticulturists, and circulated beforehand as furnishing the basis for further discussion at the Congress. These preliminary reports are very interesting, and we may take an early opportunity of referring to them more at length; in the meantime we may hail them as evincing a desire that means shall be taken of making flower shows more valuable means for instruction and diffusion of knowledge than they are at present. These Congresses are destined to effect the same purposes as the Conferences lately organised by the Royal Horticultural Society with so much success. The Belgian and French plan covers a wide range of different subjects, while the English plan is limited to one particular subject in each year. Which is the better plan of the two experience will show.

—— NEW PARK FOR SHEFFIELD.—The Corporation of Sheffield has just acquired the beautiful piece of woodland lying on the south of the town known as the Endcliffe Wood. It is intended to lay this place out for the use of the public; and as it is within a mile of the centre of the town and easily accessible, it will be a boon to the townsfolk, Sheffield not being too well off in the matter of public parks and gardens. The Endcliffe Wood occupies the slope and valley near the Botanical Gardens and is nearly a mile in length. The slope is covered with large trees, chiefly Oaks, and the River Porter runs along the valley and in its course works three old waterwheels used for grinding, one of which will be retained as a picturesque object, in fact it is intended to preserve the rusticity of the place as much as possible. Broad walks will traverse the wood and rustic bridges will span the stream at various points, while along the boundary will be a carriage and footway, 75 feet wide, planted with trees on each side. The dams which have worked the wheels will be converted into lakes for bathing, skating, and waterfowl; and the outfalls and races will be transformed into waterfalls, there being a fall of some 80 feet or 90 feet in the course of the stream between one end and the other. The natural beauty of the woodlands is such that when embellished a little, few towns will be able to boast of such a delightful public park



WM. PHOTO SPEARCE & C. LONDON

VIEW IN THE PALM HOUSE,
THE ROYAL GARDENS, KEW.

as Sheffield. The work of laying out the place has been entrusted to Mr. WILLIAM GOLDRING of London.

—— BEGONIA "AMELIA."—M. BRUANT, of Poitiers, has raised a Begonia from Begonia Bruanti, crossed with B. Roezlii, and which is described by M. DUCHARTRE as having, in addition to inflorescences of the ordinary character, others which spring from the leaf at the point of junction with the petiole. From M. DUCHARTRE's account it would seem as if the inflorescence in this case was an outgrowth from the leaf, comparable to the similar outgrowths frequently met with in Kales.

—— A NEW SPECIES OF STREPTOCARPUS.—Seedlings of a supposed new species of this genus were raised at Kew last year, or about fifteen months ago, and are now flowering, planted out in the Succulent-house, besides some pots in the Begonia-stove and other houses about the place. Ever since germination growth has been confined to a single leaf and that is a development from one of the cotyledons. This leaf was somewhat singular and imposing towards autumn of last year, when it had attained its maximum size. It was then cordate-oblong, acuminate, strongly rugose or raised and depressed in a striking manner, while the surface was densely clothed with a rufous glandular pubescence which had the effect of imparting a reddish hue to the leaves. The leaves on some of the plants were then 18 inches long by 12 inches broad, remarkable dimensions, certainly for cotyledons to attain, while some in the Succulent-house are 19 inches broad, but have lost their tips. Each plant is now throwing up a flower-scape from the corm close to the base of the leaf, bearing a number of brick-red flowers—a new colour in the genus, and one from which excellent results may be expected by the hybridist who cares to takes Streptocarpus in hand. A figure of this species is being prepared for the *Botanical Magazine*. Not the least remarkable feature in the case is the fact that it had not previously been known in gardens. Seeing that it occurs in the Transvaal at elevations ranging from 3000 up to 6000 feet, from this it may be expected to succeed satisfactorily under greenhouse treatment as far as temperature is concerned.

—— A SOUTH AFRICAN BOX TREE.—In the last number of HOOKER's *Icones Plantarum* is figured and described (t. 1518) a new species of Buxus under the name of Buxus Macowani. It is of special interest (says Professor OLIVER) as the first representative of the genus in that region, as also in certain structural characteristics, but it is more particularly on account of its possibly furnishing a supply of Box-wood for engraving purposes that we call attention to it, as the supplies of Box-wood from the Black Sea districts is rapidly being exhausted. The following extracts are from the "Report of the Superintendent of Woods and Forests (Cape of Good Hope) for 1884." The Conservator of Forests, King William's Town, reports:—

"The coast forests have come into notice during the year by the discovery that the so-called Cape Box is of value for engraving and other purposes for which Box-wood is used. The area of Box-producing forest in the Buffalo River valley is estimated at 15 square miles. Box also occurs in the valley of the Keiskama River, near the coast, but has not as yet been detected west of this in the valleys of the Fish River, Kowie River, and Bushman's River."

And again, under "East London Forests":—

"The event of the year for these forests has been the discovery of the commercial value of Cape Box-wood. This is a small tree like the generality of trees in the East London forests. It is rarely met with over a foot in diameter by 25 of bole, but it is sufficiently abundant to furnish a large supply of wood. Submitted to an expert, it has been declared to be worth about one penny a cubic inch, if seasoned free from cracks. Cape Box (Kafir, Gard-gara) does not appear to coppice, but has a good natural reproduction from seed. The tree was placed on the reserved list a year ago. Previous to that it had been sold at 5s. the waggonload for firewood. See also note by Mr. JACKSON on a 'New Box-wood,' *Journ. Soc. Arts*, 1886, p. 465."

THE "BOTANICAL MAGAZINE."—The May number of this periodical contains coloured figures of

Trichosanthes palmata, t. 6873.—A common Indian Cucurbit, with white fragrant flowers, 4 inches across, and the petals of which are provided at the edges with long branching threads forming a deep fringe. The fruit is about 2 inches in diameter, globose, scarlet, with ten orange stripes.

Gentiana Bigelovii, t. 6874.—A native of the Rocky Mountains from Colorado to New Mexico, but hardy on the rockwork at Kew. It is a perennial with erect branching stems, 1—2 feet high, with linear oblong leaves and tubular-campanulate blue flowers about 1 inch long, arranged in the axils of the leaves at the ends of the branches.

Hæmanthus Baurii, t. 6875.—A curious bulbous plant from Caffraria, with two large broadly ovate spreading leaves. Peduncle short, bearing a dense many-flowered umbel, surrounded by large white bracts. Each flower is tubular, funnel-shaped, white, about 1 inch long.

Cypripedium Godefroyæ, t. 6876.—See *Gardeners' Chronicle*, 1885, vol. i., p. 49, fig. 11.

Hoya Griffithii, t. 6877.—See *Gardeners' Chronicle*, 1885, vol. ii., 334, fig. 74.

—— BULBS.—The *Revue Horticole* states that M. LAFORCADE, head gardener to the city of Paris, to meet the objection that bulbs such as those of Hyacinths, Tulips, &c., occupy the ground too long a time in proportion to the duration of their flowering period, has adopted the plan of placing the bulbs in pots, sinking them where they are required, removing them when out of flower, and substituting other plants according to the season so that the beds are always furnished.

—— NEWSPAPER PRESS FUND.—The annual dinner of this institution will be held at WILLIS' Rooms on Saturday, June 5. The object of this fund is to provide assistance to members of the Press and their relatives in their hour of need. Up to the end of 1885, the total amount granted after careful inquiry into the circumstances of each case, has been £13,145 distributed among 719 applicants.

—— GEOGRAPHICAL SOCIETY OF AUSTRALIA.—We have received copies of the annual address of Baron VON MUELLER, the President of the Victorian branch. It is largely devoted to New Guinea, the discovery of a navigable river leading far into the interior being specially noted. The Finistère Mountains attain a height of over 20,000 feet, New Guinea being "one of the few countries in the world where the bases of mountains of the first magnitude are washed by oceanic waves." New Guinea possesses all the principal zones of vegetation—the hot or tropical, the warm or subtropical, the temperate, the subalpine or cool, and the alpine region proper. We look forward with eagerness to the account which the Baron will, as we trust, be able to give us of the alpine plants of this island. He has the right of priority in this matter, and the Australians have done so much towards furthering research in New Guinea that we trust the Baron may enjoy the privilege of making known a large share of the botanical treasures of that island. Attention was also directed to the subject of antarctic research, and to the opening up of the Australian continent itself.

—— GALANTHUS NIVALIS VAR. SCHARLOCKI.—As mistakes have occurred in the spelling of this name, owing to its publication in a periodical not very familiar to gardeners in this country, it is well to say that the plant was named by Professor CASPARY in 1868, in compliment to the discoverer, Herr JULIUS SCHARLOCK, who found the variety in the valley of the Nahe, a tributary of the Rhine, and introduced it to his garden. The plant was described by Professor CASPARY in the *Schriften der Phys. Œkon. Gesells. von Kœnigsberg*, October, 1868, p. 18.

—— FUCHSIA ARBORESCENS.—There is an excellent figure of this species given in the *Botanical Magazine*, t. 2620. The great height to which it attains probably militates against its admission into every collection where Fuchsias are grown. The flowers are comparatively small, but produced in huge many-flowered, terminal panicles, and on a good sized specimen constitute themselves a feature of the house. They are of a peculiar rosy-purple or rosy-lilac colour, and moreover of a shade by no means common in the genus. F. paniculata and F. syringæflora are synonyms of F. arborescens, and by no means inappropriate names, as a brief description bears witness. The habit and profusion of flowers are characters that recommend the plant for general cultivation in cool conservatories where it can be planted out, and space accorded it for its proper development. By a proper method of treatment it might be made to flower in a comparatively small state, when it could be grown along with and form a striking contrast to the ordinary and better known greenhouse kinds. Unlike the flowers the leaves are large, elliptic, quite entire, narrowed to both ends, and closely cover the branches with an ample deep green leafage. In Sir GEORGE MACLEAY's collection at Pendell Court is a large profusely flowered specimen, planted out in the cool conservatory there, and loosely trained to a support, pillar fashion. Though likely to continue in flower for a considerable time yet the usual period of flowering is reckoned from October to February.

—— MYOSOTIDIUM NOBILE.—Seldom do we see this singular and showy Borage wort in flower, although it is close on thirty years since it was introduced from the Chatham Islands, New Zealand. The inflorescence as a whole and the individual flowers are readily recognisable as those of the order, but the association with them of the huge cordate almost glabrous leaves is calculated to mislead, the more especially so if seen without flowers. The great petioles have more the consistency and appearance of a garden esculent than what we usually associate with members of this order. The upper surface of the leaves is light green, glabrous, and shining, while the under surface is coated with a softish, closely adpressed pubescence—characters applicable to some species of Forget-me-Not. The flowers are light sky-blue, with a broad white margin, and exhibit a tendency common to most members of the order, namely, to expand with a purple tinge, and then gradually fade to blue, pink, or white, as the case may be. The purple tint in this instance is confined to five spots at the base, and alternating with the lobes of the corolla, which latter is salver-shaped, with an extremely short tube. In this respect it recalls the flowers of Anchusa sempervirens, or that of Cynoglossum, while the fruit allies it to Rindera. It is almost hardy, and would be a great ornament to the hardy flower garden, if it could be induced to flower more freely than it has hitherto done. Flowering specimens were lately shown at Kensington, and others may now be seen in the Cape-house at Kew, and a figure is given in the *Botanical Magazine*, t. 5137.

—— DIMORPHISM IN PANSY.—Mr. GUMBLETON sends us two flowers from the same root of a Pansy, the one flower has the two upper petals white, while the two side petals, as well as the lowermost one, have a blotch of purple at the base, surrounded by a deep white edge and a pale yellow eye. The other is a somewhat larger flower, with all the petals of a rich brownish-purple colour, with deeper basal blotches on the three lower petals, and an orange-coloured eye. Pansies are so mixed in the breed that we can only suggest that the white flower is going back to the original stock. We have occasionally seen a similar phenomenon in Roses and other plants, but not before in Pansies. We append Mr. GUMBLETON's letter:—"I send you by this post two blooms of a Pansy of, as you will see, totally different colours, cut from the same plant which was one of some 200 raised from a packet of choice German seed. When I first noticed them I thought that in transplanting from the seed-bed to the blooming bed that two plants must have got together by mistake, and directed the gardener to take them up and separate them, so as to allow each room to grow. When he did so he found they were both coming from one plant. I shall be glad to hear if this is not a very singular if not unique instance, as nothing like it has ever come under my notice before now."

—— DURATION OF KAURI FORESTS.—Estimating, says Professor KIRK, in his "Report on the Native Forests and the Timber Trade of New Zealand," the total extent of available Kauri forest at 200,000 acres (an area greatly in excess of that stated by the best authority, Mr. S. P. SMITH), and placing the average yield at the high rate of 15,000 superficial feet per acre for all classes, the present demand will exhaust the supply in twenty-six years, making no allowance for the natural increase of local requirements. If, however, the demand expands in the same ratio that it has shown during the last ten years, the consumption in 1895 will be upwards of 240,000,000 superficial feet per annum, and the Kauri will be practically worked out within fifteen years from the

present date. Under these circumstances the best interests of Auckland and the colony at large demand the strict conservation of all available Kauri forest. The progress and welfare of the northern district have been largely due to her magnificent forest resources, and their conservation will prove an important factor in the permanence of her prosperity. The utilisation of the ordinary timbers should be encouraged, and it should be an axiom with the settlers not to use Kauri when red or white Pine can be made to answer the purpose. Any steps tending to postpone the period of exhaustion will be of the greatest benefit to Auckland, as a longer period would be allowed for the growth of timber to take the place of the Kauri within the restricted limits in which replacement is possible. Should this warning be unheeded, a large displacement of labour will result, and the prosperity of the north will be greatly retarded.

—— SEAKALE.—Mr. ASHTON, in *Old Times*, gives the following extract showing when this esculent first came into use :—

"'ADVT.—SEA-KALE, a new culinary vegetable.—Mr. CURTIS respectfully informs the nobility and gentry that the small quantity of Sea-Kale fit for the table which he has to dispose of this season will, by his appointment, be sold by Messrs. DICKSON and ANDERSON, seedsmen, Covent Garden Market, to whom he will continue to send it daily, fresh cut, for the short period it may last. Printed directions for dressing it are tied up with each bundle.' (*Times*, April 30, 1795)"

—— THE SURVEYORS' INSTITUTION.—The next meeting will be held on Monday, May 17, when a paper will be read by the President, entitled "The Recent Municipal Works in Rome." The chair to be taken at 8 o'clock.

—— ANGRÆCUM LEONIS. — According to the *Revue Horticole*, M. LOURY, the foreman of the hothouses at the Jardin des Plantes has succeeded in raising from seed two plants of this new Angræcum. The seeds were taken from the pod of an imported plant.

—— CEPHALOTAXUS MANNII (*Icones Plantarum*, t. 1523).—Under this name Sir JOSEPH HOOKER describes an evergreen tree not uncommon in the Khasia Mountains, and so like the common Yew as to be easily mistaken for it. A second species also occurs in Mishmi and Munnipore. These trees are not likely to be hardy in this country; their chief interest lies in their affording a link between the floras of China and those of the Khasia hills.

—— ORCHIDS AT MR. B. S. WILLIAMS'.—Following the practice now become general with the large growers of these plants, Mr. WILLIAMS has opened his collection for general inspection since Wednesday last. A good treat should be in store for all admirers of these plants, and we shall take an early opportunity of alluding to the exhibition more at length.

—— CANTUA BUXIFOLIA.—On seeing a well-flowered specimen of this truly handsome greenhouse shrub, one could almost fancy it is destined to become a universally popular subject at no distant date, and certainly wish it were so. Judging, however, from the time it has been in cultivation, such a hope is not likely soon to be realised. The fact is, it does exist in many gardens, and in most cases as a pot plant in bad condition, and scantily furnished with leaves. Some writers have expressed an opinion that it would soon find its way, like the Fuchsia, into every cottage garden, but although at a distance it resembles the latter it is far less amenable to various modes of cultural treatment. At Pendell Court, where it is planted out against the back wall of a cool conservatory, and covering a superficial area of about 70 square feet, the masses of pendent flowers present a sight not soon to be forgotten. The long tube is crimson and yellow, with a rich rose-coloured limb, and the terminal corymbs, generally stated to be few-flowered, bear from ten to twenty flowers each. This species is probably best known under the name of Cantua dependens, and is an exceedingly variable plant. A figure given in LINDLEY and PAXTON'S *Flower Garden*, ii., 49, represents the above-mentioned form admirably. Other figures vary considerably with regard to the relative length of the corolla-tube and the length to which the stamens and style are exserted from the corolla. The leaves are exceedingly variable on the same plant, ranging from lanceolate or oblong entire, to oblong cuneate and pinnatifid.

—— GHENT HORTICULTURAL SOCIETY.—At a meeting of this Society, held on May 10, the following awards were made :—First-class Certificates : to M. Halkin, Brussels, for Odontoglossum Alexandræ var. Helenianum; to M. Aug. Van Geert, for Davallia fœniculacea; to M. B. Spae, for Rhododendron hybridum The Strategist; to M. Hye-Leysen, for Masdevallia Chelsoni, Cypripedium microchilum, and C. Curtisi. A Cultural Commendation was awarded to M. Emile Decock, for Psychosperma Alexandræ. Votes of thanks were awarded as follows :—For novelty : to Madame Van der Swaelmen, for Cattleya Mossiæ var. ; to M. Louis Van Houtte, for Pescatorea cerina var.; and to M. Aug. Van Geert, for Impatiens Sultani aureo variegata. For culture : to M. Louis Van Houtte, for Tillandsia hyeroglyphica; and to Mr. James Bray, for Dendrobium thyrsiflorum.

—— FASCIATED STEM OF DAPHNE LAUREOLA.—Mr. JOSEPH OLIVER kindly sends an illustration of this occurence. The most likely explanation or this phenomenon appears to be that, from some cause or other, over-luxuriant growth occurs, resulting in the formation of an extra number of buds, and which, instead of becoming separate, in process of growth remain "inseparate." It is a case of arrested partition.

—— THE COLONIAL FLORAS.—With reference to these important matters Mr. P. L. SIMMONDS writes : —"On no former occasion has such an opportunity been afforded the public of studying the indigenous flora of the various colonies and dependencies of the empire as at the Colonial and Indian Exhibition at South Kensington. Independently of the various greenhouses or conservatories attached to most of the Australian, African, and West Indian Courts, there are shown numerous illustrations on the walls of native flowers, herbariums, collections of the foliage and fruits of trees, innumerable water-colour drawings, and collections of Ferns mounted, &c. Commencing with the colony of New Zealand, we find in the extensive greenhouse fine examples of Cyathea medullaris, C. dealbata, and C. Smithii, Dicksonia squarrosa, D. antarctica, Lomaria fluviatilis, L. lanceolata, and L. discolor, Polypodium pennigerum, Asplenium bulbiferum, A. flaccidum, A. falcatum, Aspidium Richardi, and A. aristatum, Todea superba, Hymenophyllum demissum and scabrum, Trichomanes reniforme, Nephrodium decompositum, Myosotidium nobile, besides others too numerous to mention, in fine condition. The Tree Ferns have been well cared for by the Horticultural Society at Chiswick, for many months, and are in vigorous growth. In the New Zealand Court itself, besides the representation of indigenous flowers on the panels of the walls, there are shown many objects of interest, among others a collection of framed water-colour drawings of flowers, named, shown by T. RUSSELL, Esq., C.M.G. A large collection of framed New Zealand Ferns, botanically arranged, and numerous albums of Ferns. Mrs. and Mr. STRONG, of Christchurch, exhibit a large and varied collection of Ferns, fancifully mounted in designs and also botanically named, in books, cards, and portfolios, for presents. A. BOCK, of Auckland, shows a collection of the wild flowers of New Zealand. There are also silk screens, hand painted, with native flowers, and a large and interesting collection, framed and glazed, of the fruit and foliage of the forest trees of the colony. These, with numerous drawings of scenery, convey an excellent idea of the flowering plants and landscape scenery of New Zealand."

—— PUBLICATIONS RECEIVED.—*Revista Popular de la Exposicion Rural Internacional y de las Demas Exposiciones y Ferias Argentinas.—Comptes Rendus des Séances de la Société Royale de Botanique de Belgique. — Holiday Notes in East Anglia. — The National Rose Society : Annual Report. — The Cultivation of Tobacco in England, Ireland, and Scotland* (J. CARTER & Co.).—*Annual Report of the King William's Town Botanic Gardens. — Annalen der K.K. Naturhistorischen Hofmuseums* (DR. FRANZ RITTER VON HAUER).—*Practical Hints on Milk and its Uses* (F. T. BOND, M.D., F.R.S.E).—*The Asclepiad* (B. W. RICHARDSON, M.D., F.R.S.). —*Colonial and Indian Exhibition : Cape of Good Hope : Catalogue of Exhibits.—The Metropolitan Dairymen's Directory and Handbook. — Shall the Loyal be Deserted, and the Disloyal set over them?* (WILLIAM ARTHUR). — *Fifteenth Annual Report of the Secretary of the State Horticultural Society Michigan, U.S.A.*, 1885 (THORP & GODFREY, Lansing, Mich.) — *Congrès d'Horticulture de Paris, en* 1886, *Rapports préliminaires ;* 1er et 2e fascicule (Société Nationale d'Horticulture de France). —*Annual Address*, by [C. V. RILEY, A M., Ph.D , as President of the Entomological Society, Washington, for 1884 (GIBSON BROS., Washington).—*The Botfly of the Ox* (JOHN WALKER).—*The Canadian Record of Science* (Natural History Society, Montreal). —*The London Catalogue of British Plants*, part i., 8th ed. (G. BELL & SONS, London).—*Engineering Education at Hom eand Abroad*, by E. MITCHELL. Tenth thousand (College of Practical Engineering, London). —*Beeton's Garden Management* (WARD, LOCK & Co.).

—— GARDENING APPOINTMENT. — Mr. JAMES CHILD, late Head Gardener and Bailiff to Mrs. TORR, Garbrand Hall, Ewell, Surrey, has been appointed Head Gardener and Bailiff to W. BAILEY HAWKINS, Esq., Houndswood, St. Alban's.

SABAL BLACKBURNIANA AT KEW.

THE principal object in the view in the Palm house at Kew (see Separate Sheet) is a magnificent specimen of the Giant Fan Palm of the West Indies, generally known as Sabal umbraculifera. The size of this tree, the dimensions of its leaves, and the ornamental character of its profusely borne fruit, make it one of the most conspicuous among the many fine Palms represented in this large house. It is probable that this identical plant is one of the two examples of Sabal umbraculifera referred to by the venerable Mr. John Smith in his notes on the Kew Palms published in vol. xxiii. of this paper (p. 534), and which he found at Kew in 1823. The Sabals develope very slowly under cultivation, as compared with many other Palms, and it does not therefore seem at all unlikely that this fine specimen at Kew is over sixty years old. Some idea of its grand appearance may be formed from the view here given, and the following measurements of the specimen under consideration :—Girth of stem at the base, 4 feet 3 inches; height of bare stem, 25 feet; height of crown from the bases of the lowest leaves to the top of the highest leaf, 10 feet; width of crown, 25 feet. Number of leaves, about forty. Length of leafstalk, 10 feet. Size of blade, about 9 feet across. The bases of the leafstalks are widened out, and bear along their margins a thick net of light brown fibre. From the axils of the oldest leaves there hang enormous branching panicles, 5 feet long by 3 feet wide, of creamy-white flowers, each little branch looking like a spike of Dendrochilum bloom. Below these are equally large branches of Grape-like fruit, black, round, and shining, and so closely resembling Grapes as to be often mistaken for such by visitors. These fruits hang after ripening as long as two years; on falling to the ground they soon germinate, so that the tree is often surrounded by hundreds of young seedlings. Although now widely distributed in tropical countries this Palm is said to have been originally confined to Bermuda, where now it is still plentiful. It attains a height of 80 feet, but appears to flower and fruit long before it reaches that height, the Kew plant having borne flowers for many years. When young this Palm, and indeed all the species of Sabal, are too coarse to be useful as decorative plants, and it is only when they have reached a large size that their massive beauty is shown.

Large as this specimen is when considered as an inmate of a hothouse in England, it is, nevertheless, considerably overtopped by other Palms in the great house at Kew. There are, for instance, a monster-headed South African Date (Phœnix reclinata), reaching up to the top of the house, so that its young leaves have to be cut away as they appear, to prevent their pushing the glass out; Seaforthia elegans, now called Archontophœnix Cunninghamii, with a magnificent crown of large feather-leaves, supported on a straight mast-like trunk, 45 feet high; the "dwarf" Australian Livistona, L. humilis, here developed into a giant tree larger even than the Seaforthia; L. sinensis, known everywhere as Latania borbonica, and a useful pot Palm, but here reaching to the roof of the house, its stem alone being over 30 feet high;

the "Umbrella Palm" of Lord Howe's Island, generally known as Kentia canterburyana, its height here being 35 feet; and last, but grandest of all, Caryota Rumphiana, the king of all Palms, as seen here, its enormous leaves, like a frond of Adiantum macrophyllum magnified enormously, and borne upon a massive trunk nearly as thick again as that of the Sabal, surpassing all that Englishmen twenty years ago could have dreamed of ever seeing in a plant-house in a garden near London. *W.*

The Bulb Garden.

HYACINTHS UPON THE DERBYSHIRE HILLS.

I HAVE several times heard it said that to attempt to grow Hyacinths in the open border upon the Derbyshire hills is useless. To believe this statement was difficult, and so remarkable a proof to the contrary has just come before me that I think it ought to be made known for the encouragement, at all events, of those who may hesitate over the planting of this flower. At Middleton Hall, some 5 or 6 miles from Bakewell, the residence of Mr. T. W. Bateman, the well-known antiquary and scientific mechanician, there is at this moment a display that is absolutely startling. The situation of the garden is lofty and exposed. Very few shrubs, besides Hollies, hold their own, yet upon the lawn in front of the mansion, disposed in beds of various forms and dimensions, there are over 2000 Hyacinths in the most glorious state of perfection, the colours admirably harmonised, and the bulbs evidently supplied by persons who know how to select the very best. The evenness and the symmetry are marvellous. There is scarcely a failure in the whole of the glad company, and every individual spike is on a par as to development with every other. The only slight exception is when a little hindrance of the sunshine is produced by a massive and sombre Yew tree. The spectacle is really delightful. I have seen a good many Hyacinths in my time, but never a more charming aggregate. Possibly enough it may be equalled in genial localities in the south and west of England, but I am now speaking of the chilly and wind-beaten hills of Derbyshire. Upon enquiry I learned that the bulbs had been received from Messr. Dickson, Brown & Tait, of Manchester, a firm long locally distinguished for its Hyacinths, the merits of which are disclosed every year, or nearly so, at the Manchester Town Hall flower shows. I write this as a purely independent observer, to encourage, as I have already said, dwellers in hilly districts who are doubtful of success. *G., May* 4, 1886.

THE DOUBLING OF NARCISSUS.

Narcissus poeticus flore-pleno.—Some years ago Mr. Barr told me that the double Poet's Narcissus of gardens belonged to the variety patellaris. I questioned this at the time, asserting that N. p. var. recurvus changed from single to double in other gardens as well as in mine. At the same time I distributed a large number of single Poet's Narcissus var. recurvus to be tested in gardens where they were said to double. So far none of these have become double, and a careful comparison of all the double and single forms in my garden convinces me that the only single Poet's Narcissus I have which exactly corresponds with the double is N. p. var. patellaris. The foliage and the spathe in bud are very characteristic in this variety.

N. incomparabilis semipartitus.—About the same time Mr. Barr announced in the *Gardeners' Chronicle* that the double Daffodil, "Butter and Eggs," was derived, not from the typical incomparabilis, but from its variety, semipartitus, which is rare in its single form. Last year I noticed at Mr. James Dickson's nursery, in a row of N. semipartitus sent to him by Mr. Barr, one or two flowers showing the first symptoms of becoming double. I marked them, and when ripe transferred them to my garden. This year the flowers are completely double, and like common "Butter and Eggs."

N. Mary Anderson.—I hear from all quarters complaints that this, as supplied by nurserymen, becomes double, turning to the common Orange Phœnix. On the other hand, some nurserymen boast of having a stock which never turns double. Has any amateur grown it for three years without part or all of the flowers having become more or less double? *C. Wolley Dod, Edge Hall, Malpas.*

The Rosery.

TEA ROSE HOUSE.

WHERE Tea Roses are grown for the supply of bloom in late autumn, winter, and early spring, the plants should now be compelled to rest by partially withholding water and discontinuing the syringing. Also, to that end, admit air more freely by leaving the ventilators open on all favourable opportunities during the next fortnight, by which time the plants will have become inured sufficiently to be placed with safety out-of-doors for two or three months. At no time should they be allowed to get dry at the root, and as a preventative to this it is a good plan to plunge them in ashes or to place some boards and manure around the sides of the pots or tubs: this will protect the young fibrous roots round the ball from suffering. Houses in which Roses are planted out should have portable roofs, so they may be stripped at this period, as it is surprising how much the plants are benefited when a cooler and more natural atmosphere can be afforded them. Any varieties that it may be desired to increase, may be propagated at this time by taking off mature wood, placing the cuttings under handlights in sandy open but firm soil. The hybrid perpetuals, which are now in bloom or just coming on, may be placed in a house of canvas, or, this not being available, in a cool shaded house. This arrangement saves labour in watering, the blooms come brighter and last much longer than when kept in forcing houses under undue shade. As these varieties go out of bloom they should be hardened off to be afterwards planted out in the open ground, so as to give them a rest for one season before forcing them again. After planting out they require a thorough watering. I force only twenty varieties of this class. *A. Evans.*

The Apiary.

GENERAL DIRECTIONS.

BEES are rapidly increasing in numbers this warm weather, and feeding in most cases may now be dropped. Do not suddenly stop feeding, but give them less and less each day. I cannot describe the process better than the way my mother, a Wiltshire woman, used to do with my flannel shirts when I was a youngster. I wore them in winter, but as the spring got warmer, she cut a piece off the flannel each day, and so the flannel got less and less and I never got a cold! Do so with the food of bees till you have reduced it to about a spoonful a day, then discontinue that, and they will be all right. Be sure to prepare now quickly for swarms, and have hives and supers all ready. It is much better for the hives to wait for the bees, than the bees to wait for the hives. If you do not wish to have swarms, you may very probably prevent the bees swarming by giving them room in advance of their requirements. With the old-fashioned dome skep this could not be done, but if your skeps have holes in the top, or if you keep bar-frame hives, of course nothing is easier. Besides this way of preventing swarms there are many others. Your methods are more likely to be successful in proportion to the way they adapt themselves to the habits of the bee. As a rule bees never swarm till the brood nest is complete, therefore if you can keep the brood nest incomplete in ninety-nine cases out of a hundred the bees will not swarm. The way to do this in a bar-frame hive is to put narrow strips of foundation on three or four frames on the side of the bees nearest the entrance. If the bees begin to work it down cut it off; the wax will do beautifully to put in sections. If you super the bees at the same time that you put these frames in front the bees will probably not work it down, but go into the supers at once. So you can always keep the brood nest incomplete, because the bees will either not complete it, or if they show signs of doing it, you can prevent them. If you want to do this with a skep that has facilities for supering, put the super on, and at the same time raise the stock hive on top of another. If you wish for swarms, let them alone till they swarm naturally, except you make artificial swarms, and this I will treat of a little further on, it is too early yet. Should there be any reader of this article who does not know exactly when to super, I will give him the general conditions of success, viz., hives full of bees, warm weather and fruit trees fully out in flower. Let weak stocks get stronger before supering. *Walter Chitty.*

THE SEED TRADE.

(*Continued from p.* 491.)

BEET.—It must be long since the Beet was introduced into this country, and there appear to be differences of opinion among authorities as to when it first became known to English folk. One puts it as having been introduced to Britain in 1548. A native of the South of Europe, it was perhaps some time before it was recognised by the people of this country as an esculent of value; but it is certain the ancients were acquainted with the plant, and Pliny has given an accurate description of it in his work. It was cultivated at Lambeth by Tradescant the younger, in 1656, but there is no reason to suppose he was the first home cultivator. It is by some considered probable that the Beet was brought into this country by the Romans, and that it has continued since to be an object of partial cultivation. Whether or no it is a native of the warmer countries of Europe, it is clear that it is sufficiently hardy to bear the climate of nearly or quite every part of Britain, though some parts of Scotland are unsuited to its growth. [In the wild form it is common on the sea-coast. ED.]

A list of seeds published in 1817 gives six varieties of garden Beet, viz., the white, white with yellow roots, common red, green, Turnip-rooted, and striped-rooted. Carter's catalogue of seeds published in 1842 gives fine red, green, silver or Sea-kale, and the white. The catalogues of two leading wholesale seed houses give a list of fifteen varieties, but the names differ a little, and perhaps it may be assumed there are as many as eighteen or twenty reputed sorts: a reliable retail seed catalogue gives a dozen varieties.

Some authorities contend that the Beet and Mangel Wurzel are but varieties of the same species, others that they are distinct species. Be that as it may, those who grow a fine selected strain of Beet for seed need to be very careful to keep it right away from anything in the way of Mangel Wurzel flowering at the same time, or it will suffer great deterioration. The Wurzel may be said to completely overwhelm the Beet, and impress its character upon it.

A very large bulk of seed of Beetroot is got through in one season in London alone by the wholesale seed trade. It is very light, and so a hundredweight of seed makes a large bulk. One leading house reports their sales to reach between 3 and 4 tons—a very large quantity.

WHERE GROWN.

The sources from which Beet seeds are drawn are many. Selections are constantly being made by individuals interested in the matter, who grow patches of Beet quite away from anything that is likely to inoculate it, and in this manner a first-rate stock is perpetuated which is sold for market purposes. The greatest care is necessary in supplying strains of Beet for market garden growth; because a crop is valueless unless up to the mark, and some growers sow as much as 40 to 50 lb. weight of seed. An enormous quantity of roots is grown from this, and were the crop to be poor as regards quality, a great and vexatious loss would be sustained. The most reliable stocks are from those who live in districts remote from Mangel growing centres. There is no other vegetable in which so much care is required in saving seed as in the case of Beets.

SORTS.

Any good strain suitable for market is in demand; a fine stock that can be guaranteed fetches good prices. Beet for market is largely grown in many places within 30 miles of London, both by farmers and market gardeners. Some of the growers sow early under protection, and send the roots to market when they are little longer than a man's forefinger, putting six in a bunch and getting good prices for them. In the case of the best of strains some of the roots will come ugly and misshapen, but these are not wasted so long as the quality is good. I have heard of one large grower near London who sells all his misshapen roots as an ingredient in the preparation of patent dog food.

Of types of Beet, one of the best known is Dell's Crimson-leaved, or Black-leaved; or as Elcombe's

Victoria, or Belvoir Castle, as well as other names; a small and handsome rooted variety, with dark flesh and bright blood-red leaves. It is an excellent Beet for private gardens when grown in highly cultivated soil, but it does not come large enough for general market use. It can, however, be made of good service in the flower garden, though probably not so much in these days as a few years ago, when the bedding-out system was all the rage.

The market Beet *par excellence* is that best known to many under the name of Henderson's Pine-apple, or Nutting's Select Dwarf, or Dewar's Northumberland, and others. It is known in the trade as Covent Garden Red Beet, and has been so designated for many years. There are, no doubt, strains of this Beet producing medium-sized weighty bulbs, because solid and firm, as good in colour as the best of Dell's: but grown for its excellent size, and the ready sale it commands in the market. It is principally dark leaved, but a good strain. Such as that known as Pine-apple may have the foliage green rather than red.

That the colour of the foliage is no bar to cultivation is seen from the fact that there is in existence a strain now growing into favour among some market gardeners—a green-leaved type, known as the Cheltenham Green-leaved, and which is also known as Dimmick's Victoria. It is being adopted by the Cheltenham market gardeners, who are very numerous. It is a sort that seems to suit the locality, and it comes large and fine. One drawback to its more extended use is the fact that it is somewhat difficult to get seed of it and keep it true.

The Egyptian Turnip-rooted Beet is said to be a German variety. Miller, in his *Dictionary*, published as far back as 1731, mentions a Turnip-rooted red Beet, but whether the same as that now grown as the Egyptian I cannot say. The seed catalogue of 1817 mentions the Turnip-rooted, but it finds no place in Carter's catalogue of 1842. But why Egyptian Turnip-rooted? unless it originated on one of the Egyptian coasts, where the red Beet is said to grow wild. This variety is largely grown in America, and a great demand was anticipated for it in this country, but it did not come up to expectation. It is a very useful sort, is early, turns in quickly, and can be sown frequently. Cottagers and others who have to show for prize collections of vegetables early in the summer find this Beet very useful, because it matures so quickly. It is suitable for stony, shallow soils, where it is difficult to obtain handsome roots, and in hot seasons it has been found to turn in well on a damp clay, where handsome Beets are rarely obtainable; and, further, the roots of this Beet can be grown very closely together.

Whyte's Black Beet was the longest and blackest of all the Beets, but it has now become almost extinct. The roots of other types are better shapen, not so long nor so tapering, shorter and thicker, and the flesh of it at its best lacked the tender succulency characteristic of types of later introduction. Though practically driven from market gardens, it yet finds a place in private establishments.

Of white Beets there are several, one of the principal being what is known as the Spinach Beet. It is grown for its leaves, and they make a good substitute for Spinach. It is a generous-growing Beet, because it keeps on producing leaves, as it does not throw up its flower-stem until the following season. It is not grown as a market vegetable, and its culture is confined mainly to private gardens. Up to the time that the late Mr. C. Turner, of Slough, sent it out under the name of Spinach Beet it was but little grown, but the publicity given to it tended to popularise it, and it now finds a place in many gardens. The root is not used for any culinary purpose; it is harsh and coarse. It is said that when cows are fed upon the roots they yield a greater quantity of milk in consequence, and that this kind of food does not impart any of that peculiarity of flavour which is communicated by Turnips.

Seakale Beet.

The silver or Seakale Beet, the Swiss Chard Beet of the French, is a much stronger growing type than the preceding, having large leaves, with white midribs and white leafstalks. It takes the name of Seakale Beet through the stalks being cooked in the same way, and used as a substitute for this vegetable. "But to do it justice a rank soil and plenty of liquid manure are needed to promote a quick robust growth. The plant is occasionally earthed up, but this is needless, for a good quality may be obtained without earthing. The leaves should be pulled from the plants, not cut. As these stalks often turn black in cooking, it is advisable to add a few drops of lemon-juice to the water they are boiled in, and of course soda should never be used. They should be served up in the same manner as Asparagus." (Sutton's *Culture of Vegetables*.) Some years ago a very fine selected stock of the Beet was sent out by Messrs. Beck, Henderson & Child, a seed firm in London, now extinct, and these strains have eventually taken the place of the old ones.

The handsome coloured Brazilian Beets come under the heading of the Swiss Chard or Seakale Beet. It was introduced to Belgian gardens about the year 1840, and grown as an ornamental leaved plant. From thence it found its way to England, and for a time was used in the flower garden. There are several varieties, and I have seen a line of plants used with great effect along a mixed border; it is also a striking plant in the subtropical garden. A good sandy loam suits it best, and the plants require plenty of water during the period of development.

Sugar-Beets.

The cultivation of Sugar-Beets has now become a very large industry, both in Germany and France. Great quantities of sugar are manufactured from this class of Beets, and Messrs. Vilmorin, Andrieux & Co., of Paris, have greatly improved them by careful selection. How productive they are is seen from the fact that the small-rooted white Silesian or Sugar-Beet will, under average conditions, yield about 16 tons to the English acre, containing sugar to the amount of 12 or 13 per cent.; some of the improved varieties



Fig. 141.—Spray pump.

will yield 20 tons to the acre. The celebrated Prussian chemist, Margraff, about the year 1747, discovered the existence of a certain portion of sugar in the Beet. "The sugar is extracted from the roots by first reducing them to a pulp between two cylinders, putting the pulp into bags, and pressing out the juice. The liquor is then boiled, and the saccharine matter precipitated by quicklime; the liquor is poured off, and to the residue is added a solution of sulphuric acid, and again boiled. The lime uniting with the acid is got rid of by straining, and the liquor is then gently evaporated, or left to granulate slowly, after which it is left to undergo the common process of refining sugar. So improved is the mode of making the sugar that the French manufacturers extract 12 lb. from 100 lb. of Beet in twelve hours." (Hogg's *Vegetable Kingdom*.)

The culture of Beet is so generally understood that any reference to it is not necessary. The taking up and storing of the crop is well known also. But the growers for a market crop are most particular to so manage the land as to get their roots as clean and handsome as possible—not too large, bright red in colour, and not black. Some market growers have a happy knack of keeping their roots in good condition when lifted, and the sharp competition that prevails in the present day causes the market gardener to vie with his rivals in the trade to have the handsomest roots of the highest quality, so as to command the most remunerative prices. *Pisum*.

FIR TREE OIL SPRAY PUMP.

Among the many inventions in pumps and syringes there is none that can compare with the handy ingenious instrument lately brought into the trade, and invented by Mr. E. Griffiths Hughes, of Manchester (fig. 141). Most of the oily insecticides, and all of those of a pungent or violent action, require much dilution and thorough admixture with an aqueous medium for the safe and effectual distribution on plants infected with insects or fungus growths. This pump is provided with an air-pump by which air is commingled with the water, and ejected in a fine spray together with it. It is well made, easy to work, and reasonably cheap in price. Orchid growers and gardeners would find it of great service as an ordinary syringe, as just enough water can be given with it to moisten the foliage, and no more; thus preventing drip from the leaves on to the pot or basket.

LONG-STEMMED BOUVARDIA.

Long-stemmed Bouvardia is always in demand, particularly of the white varieties, and of these Davisonii continues to take the lead. The new double, Alfred Neuner, is very pretty, blooms well, and keeps a long time on the plant after opening, but it cannot take the place of Davisoni for artistic work; it is too heavy, less graceful, and blooms later. When B. Davisoni is properly managed it is a paying crop, but it does not pay to force any but first-class plants. In order to secure a good crop of Bouvardia, first it is necessary to commence in spring with the young plants. Start them early, and pinch several times while small, to insure bushy plants. This pinching must be done early in the season, or else the plants will be late in coming into bloom. The bloom must come from thrifty, vigorous shoots, or else it will not be first-class either in size or quantity. It is very desirable to produce them so that they can be cut with long stems without wasting too many buds. The secret of this is in raising them with long-jointed wood. To do this it is necessary to have strong, vigorous plants, that are able to grow long stems. These can only be had by raising them on rich land that has been well manured, well prepared, and kept well worked all summer. Second, move the plants into the house early, before the flower-buds appear, so that they will not be checked or stunted. Plant them in rich soil in a warm house where they will have plenty of head-room. If the flower-buds, or even the blooming wood, come in too close proximity with the glass the chilling they get during cold nights tends to check the growth and development of long-jointed wood, which is the secret of long stems. The plants must be lifted with good balls of earth, and as little disturbance of the roots as possible when they are brought into the house. For this reason it is desirable that they should be grown in loamy soil and dug when the land is moist, after a rain if possible. It is, however, sometimes impracticable to observe this latter precaution, as the season when Bouvardia should be housed, early in the ninth month, is frequently the dryest time of the year, so that it is impossible to lift plants with balls.

After housing great care is required in shading, watering liberally, and frequent syringing for a week or two, until the plants become well established in their new situation, to prevent them from flagging or losing their leaves, which would be most disastrous to a crop of fine flowers. Lastly, heat and moisture are essential for the growth of good Bouvardias. They need a warm house with good bottom-heat, and plenty of moisture and syringing in clear weather, or else they are very liable to become red-spidered, the great pest of all houses where there is a hot dry atmosphere; but, fortunately, we have a cheap and effectual remedy for this enemy in moisture, which is maintained by frequent syringing with clear water. When Bouvardias are grown in the manner described they will bloom freely, the flowers will stand for several days after opening before they fade, and nearly all of them can be cut with long stems without much loss. There always will be some waste of undeveloped buds, but the increased value of the long stems compensates for the loss of the small number of short-stemmed heads of bloom. *Samuel C. Moon, in "The American Florist."*

A POWDER DISTRIBUTOR.

Messrs. H. Binko & Co., of 2, Arthur Buildings, Peter's Lane, Cowcross Street, E.C., send us a distributor in the shape of a hollow globe of india-rubber fitted with a wooden nozzle (fig. 142). It may prove of service in a small way, but we do not think the idea is new, having seen such distributors before; but they were fitted with brazen nozzles, and were recommended for the using of liquids.

Home Correspondence.

Origin of the Auricula.—Mr. Churchill's contribution to the discussion (pp. 563, 564) is useful as setting forth the views of Kerner and the experiences of Clusius. In my paper the sixteenth century writers are dismissed as incompetent witnesses, and this has wounded my excellent friends, the writers. Mr. Churchill regards Clusius as a proper arbiter, and by the aid of Kerner's summary professes to find in Primula pubescens the origin of the florists' Auricula. I say he "professes"—I will not do him the injustice of supposing he believes. He says, "to many minds the above paragraphs will be convincing." Yes, because many minds are easily convinced, even in opposition to mountains of evidence. The matter being thus (hypothetically) settled, Mr. Churchill offers me Primula Palinuri and P. Göbiii to assist in making the Auricula; and so far inclines to them himself as to suggest that he is far away from conviction. It is a curiosity of this discussion that, on the one hand, the history of the flower has been traced up to the point of its first appearing as we now know it, about the year 1730; while, on the other hand, the origin of the flower is confusedly assumed to be this or that on the forced testimony of a man who was dead and buried 200 years before the flower had any such existence as the proposition requires. Clusius died 1609. The nineteenth century had dawned ere the florists' Auricula had definitely "acquired" the characters by which it is now known, and which I was required to account for. If Clusius is a competent witness, Moses must be much more so! People who are easily convinced accept as a fact Hugh Miller's supposition of the "eye witness" by Moses of the whole business of creation! Whatever virtue there may be in the archaic treatment of this subject must be augmented by beginning at the beginning. It may be that our flower is of mixed parentage, but my review of the history and my inference therefrom, that the true Auricula is of pure descent from P, Auricula, and the alpine Auricula of descent chiefly from P. pubescens, will not be invalidated by appeals to the dead Clusius or the living Kerner. The first could not, the second did not apprehend the purport of the problem. *Shirley Hibberd.*

The Cultivation of Pontederia crassipes.—Many are doubtless familiar with this stove aquatic, which has maintained itself by cultivation in our hothouses, either from the original or from fresh importations, for the last sixty years. It is a native of Guiana, from whence it was introduced in 1825, and continues in favour from the interest attached to its thick petioled leaves or the beauty of its elegant, shining green, reniform cordate foliage. The singular character of the inflated petioles is implied in the specific name, that probably being the most prominent feature by which to distinguish the species. They are doubtless intended by Nature as air floats, which answer admirably as a natural means of distribution. They also keep young and detached pieces in proper position and depth in the water, but as growth proceeds they evidently lose this function in a great measure, and the plant, in its period of greatest growth, loses almost entirely the primitive character it possessed in the early part of the season. A close observation of its habit as a floating aquatic throughout the year leads to the conclusion that it should not always be treated as such. As the summer advances growth proceeds apace, and the petioles instead of becoming proportionately thickened merely elongate, so that should a plant become detached from the colony it would inevitably topple over in the absence of that mutual support afforded by a group. Furthermore, no flowers, far less fruit, are produced by the plants so cultivated, although the leaves attain a length of 18 inches or more, which is double the height stated for this species in books. This would lead to the conclusion that the inflated petioles were meant principally as a means of distribution, and the brittle character of the rhizome or running stems of the mother plant favoured the detachment of such offsets, which afterwards become stranded on the margins or in the silt deposited by the rivers in which the plant grows naturally. Judging by analogy this is the only method to induce the plants to flower, namely, planting them in or allowing the roots free access to soil rich in organic material. Limnobium bogotense may be taken as an instance in point, which grows and increases amazingly simply treated as a floating aquatic, but does not flower until its roots become fixed in soil, when the small and insignificant inflorescences are produced with great freedom. Like those of other species the flowers of Pontederia crassipes are blue, but rarely if ever produced in this country. The plant is figured in Martin's *Brasil*, t. 4. In our hot-water tanks it grows and increases rapidly by the vegetative process, a character which it holds in common with many aquatics under similar conditions, but many of which rarely flower. Nor ought we to expect the Pontederia so treated to flower, when, out of regard for cleanliness, we scrupulously remove all depositions of decaying organic matter from the tanks where such things are cultivated. Nitrates, so soluble in water, so easily lost to the plant, and wherewithal so necessary for the production of flowers and especially seed, are most difficultly obtainable by plants deficient in their root system or by free-floating aquatics. *J. F.* [See the large figure at p. 113 of the present volume, with Mr. Baxter's remarks on its culture. Ed.]

Queen Wasps in the House.—With reference to the letter on wasps contained in your last issue I would wish to state that whilst at luncheon in my residence during the last week a large wasp, which I have but little doubt was a queen, had entered the room and climbed upon the window glass. I have passed thirty-five years of my life (but not continuously) in London, at the West End, and I never before saw a wasp either in the house or on the glass. In Mr. John Hunter's excellent *Manual of Bee-keeping* the author states, "In the spring, when only the queens are in existence, it must be remembered that every wasp then caught prevents the establishment of a nest." In my early days I remember a premium was offered for these queens, and for a few pence a poor peasant boy would very soon earn the reward. Since penning the above I have found a clue relative to the introduction of this queen wasp into the house; it had been seen in a large pot of Mignonette in full bloom, lately sent from the country. No notice was taken of it at the time, so I suppose the creature must have crawled or flown from room to room and finally settled on the window. This will probably be a good year for fruit, in the present absence of frost, and wasps are therefore more likely to be abundant. The Editor's suggestion to use bisulphide of carbon for destroying the Vespiaries is well timed. *John Colebrook.*

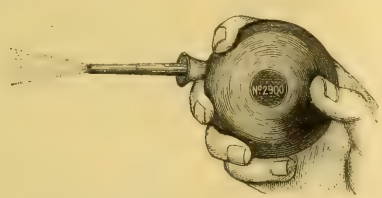


Fig. 142.—Powder distributor. (see p. 628.)

Educational Flower Shows.—It has doubtless struck many a visitor to our flower shows that these might be made much more interesting, instructive, and educational to the general public than they at present are. To explain (partly) if possible my meaning. The visitor is lost in admiration, it may be, at the sight of some well shown plant. He does not know it (and its cumbrous name will not help him in the matter!), but is desirous of cultivating it. It is quite possible that the subject which has so taken his fancy by its beauty is a hardy one, amenable to the ordinary course of cultivation; yet the spectator's ignorance of this very essential matter may induce him to suppose that it has received some very extraordinary hothouse treatment, and so he gives up in despair a matter which for want of a little information he would have embraced with alacrity, and which in the end would have been of commercial good, so true is it that such knowledge spreads. That there are difficulties in the way must be admitted, but with the will to remove them these have only to be encountered to secure their at any rate partial banishment. Perhaps at no better place could the idea of reform be carried out than in connection with the Floral and Fruit Committee meetings at South Kensington, which are the life and soul of the old society. To illustrate in a measure, and perhaps a little indirectly, my meaning: only recently a surprise was in store for the visitors in the shape of the New Zealand Forget-me-Not—Myosotidium nobile. It startled old *habitués* because so seldom seen in such "form," and the strangers as they promenaded in the afternoon were taken quite aback by it; they all wanted to know what it was. Myositidium nobile gave them no clue. One lady asked the writer to what order it belonged. Supposing that a card had been attached calling it the New Zealand Forget-me-Not, the desired clue would have been obtained at once, and as briefly and concisely as possible detailed the system of cultivation that had been pursued in order to bring to such perfection a plant that has hitherto baffled the efforts of so many cultivators; probable result—a more extended interest and culture would have been bestowed upon a subject in every way worthy of it. Much wider interest would be created at these meetings were exhibitors to furnish information, with any little history bearing upon special subjects exhibited. It would be impossible, perhaps, to carry out the idea satisfactorily at a competitive show, but at the meetings under notice, something after the style indicated might be attempted with perhaps satisfactory results. Formerly lectures were delivered after the meetings of the committee, then held in the Council-room, at which the most salient features of the gatherings were touched upon, and thus additional interest was manifested; but in the present position of affairs it is hopeless to even wish that this may now be done. When things wear a brighter aspect, and the connection with South Kensington ceases, perhaps this is one amongst the many matters that will invite and receive deserved attention. But apart from these particular meetings, the important subject of making our flower shows more instructive than they at present appear to be, is one that seems well worthy of discussion; and if this remark should elicit opinions from those most intimately concerned, then the matter has not been alluded to in vain. *B.* [How often have we piped in this strain but without much effect! Ed.]

American Blackberries.—In thanking the Editor for inserting in these columns the brief facts expounded in our last letter, in answer to "F. W. S.," we can readily perceive that he would scarcely wish to continue to advertise our productions gratuitously—as, of course, all replies to above correspondent must indirectly serve to do. Aware, then, of this, we have examined his remarks with a view to drawing the whole matter at issue within the least possible compass; and from that point we will respectfully show "F. W. S." that he has evidently not read the printed matter surrounding the large engraving of the Wilson Junior, because he says, "*Until I saw the generous offer* . . . to replace those plants that had died, *in the article now under notice, I had had no intimation whatever of their* [our] *willingness to do so, therefore the intimation* they refer to as having been made to purchasers *was never made to me*, or ever came under my notice." He further adds, "*After seeing* a large engraving of a branch of Wilson Junior," &c. The italics are ours, simply to show "F. W. S." how he contradicts himself. He asserts in the first place that until he saw our reply to his complaint in the "Home Correspondence" columns of the *Gardeners' Chronicle* of a couple or so weeks ago he "had had no intimation whatever" of our "willingness" to replace any plants of Wilson Junior that failed; and yet in the very same article he acknowledges that he has seen the large circular whereon is engraved a branch of the Wilson Junior Blackberry. Now, if "F. W. S." will but again kindly refer to that same circular to which he alludes he will find that we finish up the N.B. as follows:—"We undertake to replace any plant that may happen to fail." Surely that is plain English enough for any one. As evidence of our determination to afford all purchasers full satisfaction we may further add that 20,000 others besides "F. W. S." received the circular containing the above intimation. *Viccars Collyer & Co., Leicester.* [As we think this matter has now been sufficiently ventilated in our columns, nothing more will be published by us concerning it. Ed.]

Gentians.—Having read my friend Mr. Correvon's note on raising Gentians from seed (p. 590), I looked to-day over our seed beds at Oakwood, and find that Gentiana acaulis sown September, 1884, is up thick. Gentiana septemfida, which used to be called gelida, sown at the same time, is well up, as also some of this species sown March 30, 1885. Gentiana asclepiadea gives no trouble, but most of G. a. alba comes up blue. I thought we had a bed of G. verna, but suspect there is some mistake about this, as so far I have not been able to find it. The Gentians have bloomed well this year. I set some young

people to count flowers and big buds on a bed little more than a yard square; by laying on old Lily stems they were able to divide it so as to count accurately, and gave their number as 600; to-day these are all out. The borders in old gardens—especially Scotch ones in good places—are beautiful, but the effect in a mass is still finer. Old plants of Gentiana verna are blooming well, and we have at last succeeded with G. bavarica. My son sent me a plant from Switzerland last year, and taught by previous failures I gave a right place to it; it seems perfectly happy, and is just coming into bloom. *George F. Wilson.*

The Rose-bud Worm.—Some of my Rose bushes have been very much infested this spring with this "insidious and dire enemy of the Rose grower," as the Rev. O. Fisher calls it. "It defies," he says, "all modes of warfare except the hand to hand combat," *i.e.*, picking it out with a needle. Is it really so? I shall be much obliged if the *Gardeners' Chronicle* can suggest any means of defence less minute and troublesome. *K. J.*

Torula sporendonema is well known to me as a product of my favourite Roquefort cheese. Those who wish for good specimens have but to leave a large piece of cut Roquefort in a damp place for a time and it will present a most sanguinary appearance as the result of the growth of a fine crop of the Torula; and it is worthy of notice that while the Torula is in no way dangerous or even nasty, it consumes in its growth the flavour, and, in fact, all the goodness of the cheese—a most unfortunate circumstance in respect of this very tasty subject. *Shirley Hibberd.*

Renovating a Rose Border.—It may be of some interest to your readers to know the results of our Maréchal Niel Rose tree. The tree seemed to be in a state of decay in the year 1884. In the autumn of the same year we determined to replant it. Accordingly the border, which is inside the house, was dug out to the depth of about 4 feet; at the bottom was put a quantity of brick rubbish and old turf; it was then filled in with the following compost:—Good fibrous loam, leaf-mould, manure from a spent hotbed, clay broken into small pieces, and lime rubbish in equal parts. Since then the tree has made rapid growth, and this year we have had the pleasure of cutting quite 300 fully blown Roses. *T. Ireland, Waterside, near St. Alban's.*

Wistaria sinensis.—There appears to be a marvellous promise of bloom on this fine creeper this spring. Perhaps the dry summer of last year had something to do with the promise of great floriferousness. One plant in particular, growing in a very hot position on the south front of a suburban villa residence, has produced quite large clusters of racemes that will be a striking floral picture when in full bloom. *R.*

Clerodendron Balfouri planted out.—I had a plant of the above, planted out in the border, under the back wall of the plant stove, now three years since, and I find, for cutting purposes, this is invaluable. Grown in this way it blooms very freely, and is at the present time one mass of flower. *Edward Ward, Hewell Gardens, Bromsgrove.*

Wasps.—I read with interest "A. D.'s" remarks in your impression of the 8th inst. We have never seen or destroyed so many hybernated queen wasps as during the past few weeks, and their appearance in such abnormally large numbers is, I think, worthy of attention and remark. Too much cannot be said as to the importance of destroying this destructive, and, indeed, dangerous insect. It is stated that the queen wasp generally builds from 500 to 700 cells, in which she deposits as many brood, and renews them three times in one season. At this rate each queen destroyed during this month practically prevents the maturing of some 2000 insects. Our plan for destroying the nest of the wasp is this. At night when most of the insects are at home we thrust the lighted end of a squib containing a mixture of equal parts of gunpowder and sulphur into the hole, which has been previously marked as "A. D." recommends during the day, the hole is then closed with a piece of turf, and in about a minute the insects are so far quieted that the nest can be dug out complete, dropped into a bag, tied in, and the bag put under water or into the fire. For stings liquid ammonia applied to the parts stung will relieve the pain and reduce the swelling. *George Duffield, Winchmore Hill.*

European Primulas.—In my synopsis printed at p. 532, and laid before the Primula Conference, I indicated what I understand to be the European species of the genus Primula, using the term species in the sense in which it is used in Bentham and Hooker's *Genera Plantarum*, and in the Kew *Floras* of different parts of the British possessions. I have not attempted to deal with the sub-species, varieties, hybrids, and synonyms, which will be found in Mr. Dewar's catalogue, classified in their relation to these specific types, as here briefly defined. In a complicated genus like Primula it is much the best plan to begin by learning thoroughly the clearly distinguishable species, and afterwards to work out the subordinate types and to attempt to classify them in their proper order in relation to the primary types. In those difficult genera, with which horticulture has so largely to deal (such as Narcissus, Primula, Lilium, Iris, Crocus, Pelargonium, Fuchsia, Odontoglossum), unless this be done, and the different grades of individuality according to the rules of systematic botany be kept distinct as far as possible, we soon slide into confusion. *J. G. Baker.*

Beaumontia grandiflora.—The condition of the style in this plant, as shown in the section published on p. 593, is worthy of attention. The stigma is immovably fixed by a viscous secretion amongst the anthers; but whilst the filaments of stamens cease growing the style continues to make considerable growth. The result is as shown; the stigma cannot free itself from the anthers, so the style takes a wavy shape. The pollen closely agrees with that of Vinca major, Mandevilla suaveolens, &c. *W. G. S.*

The Auricula Aphis.—In repotting my Auriculas I notice an almost entire absence of the aphis. This has led me to suppose that owing to the plants having been so long frost-bound during the past winter the frost might have had something to do with diminishing the usual quantity. On the other hand, does the use of fire-heat assist in developing it? Whether it be present in large or small quantities it does not appear to do much harm, though one would rather be without it than with it. Is there any evidence of frost destroying the aphis? *R. D.*

Reports of Societies.

ROYAL HORTICULTURAL: May 11

An excellent show in the pictorial sense greeted the visitor to South Kensington on Tuesday last, in the conservatory. The bright colours of Roses, Pæonies, Rhododendrons and Azaleas having now taken the place, for some occasions, recently occupied by the Narcissus and the Primula. Not tha these last two were not present, but they did not obtrude themselves so much. The mixed bank from the Hale Farm Nurseries was of great interest, and Roses in pots, as well as many boxes of the cut blooms in very good condition, heralded the coming season of the Rose. Orchids were present in smaller numbers than usual, chief amongst them being a few choice Odontoglossums from a well known amateur, and a fine Dendrobium speciosum.

The exhibit of fruit from Australia was good in quality and very suggestive of the capabilities of that home of our people in the producing of those particular kinds of dried fruits, for the supply of which our markets have had to rely on consignments from France, Spain, and the Levant.

Scientific Committee.

Sir J. D. Hooker in the chair.

Gladiolus tristis.

Mr. Ridley ascertained this to be the species of Gladiolus sent to the last meeting by Mr. Boscawen.

Beetroot.

Mr. Ridley examined the specimen brought to the last meeting, and believed that a seed had originally fallen into a hole in the stone; it had then grown through it; but that a stone had subsequently been pressed into it from above and so cut off the leaves.

Passiflora Diseased.

Mr. Michael gave the following report upon the specimen sent to the last meeting:—

"I have to report that I have examined the large outgrowth from the stem of Passiflora edulis, forwarded to Dr. Masters by Mr. W. Speed, of Penrhyn Castle, with a view to ascertain whether it was caused by the attacks of Phytopti (mites). It was in a very unfavourable state for such examination, as to make that reliable the object should be forwarded when the mischief is commencing, not when it is complete, and the conditions of the whole thing so greatly changed. The object should be taken in the earliest stage, cut with a portion of the healthy stalk, and immediately it is cut put in a sponge-bag, or in gutta-percha tissue or oil-silk, and tied up so tightly that neither Acari nor moisture can escape; or a tin box will do equally well if closely fastened up, and it should be forwarded at once.

"I examined the outgrowth and other parts of the plant as well as the condition permitted, and failed to find any trace whatever of Phytopti; neither living specimens, nor any cast skins nor remains were to be found, even under a tolerably high power of the microscope. The outgrowth was near to a leaf-bud, which, so far, would somewhat favour the idea of Phytoptus action, but there was not any indication that it arose from the bud itself, or from leaves in any stage which would be expected to be probably present if the view were correct.

"On the other hand, the whole outgrowth, both internally and externally, was absolutely swarming with myriads of Acari of the genus Glyciphagus, which occupied every part of it, and were in all stages, and had penetrated from the outgrowth into the portion of the stem itself lying immediately below it, where sections of the wood revealed them in considerable numbers. There was not any sign of living creatures of any kind except the Glyciphagi and a few Gamasids which were preying upon them.

"The Glyciphagi would not be likely to be the first cause of mischief, but they might possibly, and even very probably, be instrumental in turning a slight and unimportant injury into a serious one. They are creatures found principally on dried fruits, seeds, flowers, and some dried animal products, as cantharides, &c, and are universally distributed and extremely abundant, doing great damage to such products as those above-named, but they do not habitually attack uninjured living plants. At the point where the outgrowth arose from the stem there was decided evidence of some injury having been sustained, although not an important one, and I could not in the present condition of the specimen say from what cause.

"The conclusion I am inclined to draw is that probably the bark received some slight injury, possibly from insects or Acari, but more probably from other causes; that an exudation of sap and matter containing more or less sugar or gum occurred and happened to attract the Glyciphagi, who would feed eagerly upon it and breed with immense rapidity, and pursuing their search for it into the wood itself would give rise to an irritated condition which might well cause an abnormal flow of sap and such outgrowths as the present. It is, however, quite possible that the outgrowth may have arisen from some other cause, and that the Glyciphagi had only come when it was dried up. It would require to have the outgrowth in an early stage to be certain about this. There were not any Glyciphagi on the other portions of the stem where the bark was uninjured.

"Finally, I would suggest that application of carbolic acid, sulphur, or, better still, tar, in an early stage of the mischief, might probably stop it, if, as I surmise, it be aggravated by the Glyciphagus."

Pansy Dimorphic.

Dr. Masters showed for Mr. Gumbleton two blossoms, one of a dark purple, the other smaller and white, with a central purple spot, both being from the same plant. The latter appeared to be a reversion to some earlier form of Heartease (see p. 625).

Thickened Branch of Laburnum.

Mr. W. G. Smith reported on the swollen branches of Laburnum submitted to him by Dr. Masters, on the part of Mr. Webster, of Penrhyn Castle grounds. The trees, some 500 in number, in different parts of the ground, are all affected in the same way. It will be seen from our illustration (fig. 143, p. 631) that the branches of the ordinary character and thickness suddenly develope enormously thickened shoots. This happened last year, and there are indications that a similar thickening of the shoots will take place this year. The trees, which are on the average 7 feet high, present a very unsightly appearance, which renders them unfit for planting out. It appears, on examination, that the shoots were injured, probably by frost, at or near the point A on fig. 143, and that the lateral shoots became hypertrophied in consequence. The constituent cells of the swollen portion are enlarged as shown at fig. 143 B in comparison with the cells of the natural branch at C.

Coir with Rhizomorpha.

Mr. Smith exhibited a specimen of cocoa-nut fibre matted together by a remarkable form of fungus. The Rhizomorpha consisted of silk-like threads of a dark brown colour and of an almost metallic lustre. Mr. Murray suggested that it was probably a form of some species of Agaricus. It was found to damage the commodity very materially.

Ivies Injured and Uninjured by Frost.

Professor Church remarked that of six varieties of Ivy growing on a north wall only one (Azorica) was at all injured during the late severe weather.

Deutzia gracilis.

Dr. Lowe exhibited two specimens from the same

plant, one with ordinary flowers, the other with small greenish or so-called "blind" flowers. They were referred to G. Henslow for examination and report.

ERGOT OF WHEAT.

Mr. Plowright sent specimens for exhibition. They were given to Mr. Murray for cultivation. They are mostly shorter and thicker than the common form from Rye, and are therefore suggestive of a different variety or species of Cordyceps.

INFECTION OF THE JUNIPER BY RÆSTELIA.

The following communication was received from Mr. Plowright:—"I am sure this is the first time this has been done in England, and it has seldom, if ever, been done abroad. It is a much more tedious process than the converse culture of the Ræstelia from the Podisoma, which is done in a week or two, for this has taken two years. The germ-tubes of the Ræstelia can enter through the stomata of the leaves, and the mycelium passes down the leaf and enters the green stem. Then it hybernates. The leaf by which it entered falls off, and two years afterwards (not the next year) the mycelium in the stems (which has shown its presence by causing a slight enlargement visible at the end of the second year) in the spring following produces the teleutospore.

"*Podisoma Juniperi*. — Although many cultures have been made by placing the promycelial spores of this fungus upon Hawthorn leaves, &c., and thereby producing the Ræstelia lacerata (its Ægidiospore), very few have been made in the opposite direction, by placing the Ræstelia spores on the Juniper. In the course of my experimental culture with the heteræcismal Uredines I resolved to try this experiment. For this purpose, in the year 1883, I obtained some ripe Juniper berries from my friend, the Rev. Dr. Keith, of Forres. In 1884, out of a great number of berries, I obtained some half-dozen seedlings. I also provided myself with two young Junipers, about 12 inches high, from Mr. Bird's nursery, at Downham, in 1883.

"*Exp.* 420. — On June 24, 1884, one seedling Juniper was infected with Ræstelia lacerata. On July 1 it was noted that some of the leaves of the Juniper were paler in colour than the rest. On August 11 this was still more marked. May 17, 1885, the base of the stem of the seedling was slightly enlarged, but there was no appearance of teleutospores. During the summer of 1885 the plant died. It appeared as if the swelling at the base of the stem had strangled the plant.

"*Exp.* 421.—The two Junipers obtained from Mr. Bird were planted side by side in 1883. One of them was infected with the Ræstelia spores, but without result. The reason for that was that the plant had not got over the shock of its removal, and had not, at the time the infection was made, thrown out any young leaves, so that the spores fell only upon old leaves. On June 25, 1884, when it had thrown out new leaves, it was again infected. The other Juniper was covered with a bell-glass in order that it might not become accidentally infected.

"*July* 8.—Many of the new leaves have a paler hue. This paling of leaves is the rule when the germ-tube of a Uredo has succeeded in entering a host plant. The first change noticeable is a sickly-looking or pale spot, which subsequently changes colour according to circumstances.

"*Aug.* 11.—The infected Juniper contrasts in appearance very strongly in foliage with the healthy one.

"*Nov.* 11.—Many of the leaves which turned paler have now fallen off from the infected plant, so that it has an unhealthy appearance and a lanky habit of growth.

"*May* 17, 1885.—The infected plant is deficient in last year's leaves in many places, but has thrown out new shoots and foliage. I can see no enlargements on the stems, but the appearance of the bush contrasts very strongly with that of the uninfected one growing beside it. There are no teleutospores.

"*Oct.* 28, 1885.—No teleutospores have been produced this year, but I feel sure the infection has been successful, and that no mycelium of the Podisoma is present in those parts of the stems which are leafless, because they are slightly swollen.

"*Dec.* 3, 1885.—Swellings more marked.

"*April* 1, 1886.—The Podisoma has at length appeared upon the swollen parts of the leafless stems.

"*April* 11, 1886.—A specimen gathered and sent to the Scientific Committee, showing the mature teleuto spores.

"The other Juniper is perfectly free from Podisoma, and healthy in every respect.

"*Walter B. Plowright*."

POLYANTHUS VAR.

Mr. Henslow exhibited a pale-flowered variety, and a truss from a similar plant which had been treated with lime, the effect being to convert it to a crimson.

PLANTS EXHIBITED.

Mr. J. T. Lynch exhibited the following plants from the Botanic Gardens, Cambridge:—Crybe rosea, Iris Eulefeldi, from Turkestan; I. Tertuliæ, Heterotropa asaroides, with a remarkable box-like flower and Cyclamen-like leaves, from Japan; Mackaya bella, Kæmpferia ovalifolia, Tulbaghia Lüdwigiana, named after Lüdwig, a snuff merchant of the Cape, who originated the Botanic Garden there, and was the first botanist to import large Cycads to England. Mr. Lynch also brought several varieties of Tulips from that colony.

Floral Committee.

Present: G. F. Wilson, Esq., in the chair, and Messrs. J. Douglas, H. Bennett, W. Bealby, Amos Perry, H. Herbst, W. Wilks, J. Walker, Shirley Hibberd, J. Hudson, G. Duffield, G. Paul, R. Dean, W. Holmes, H. Ballantine, J. Dominy, H. M. Pollett, J. O'Brien,



FIG. 143.—LABURNUM, WITH SWOLLEN BRANCHES.

H. Turner, T. Baines, H. Cannell, A. F. Lendy, and W. B. Kellock.

GROUPS.

The finest group of Roses was that staged by Messrs. W. Paul & Son, The Nurseries, Waltham Cross. The stocky well furnished plants in pots, with their healthy green foliage and abundant brilliantly coloured flowers, were placed at the back of the table, and the boxes of cut Rose blooms at the front. Of sorts most noticeable we may name Maréchal Niel, Charles Lawson, Violette Bowyer, Madame Willermoz, President, Crown Prince, Rêve d'Or, Devoniensis, Countess of Rosebery. A Silver-gilt Banksian Medal was awarded.

Mr. W. Rumsey, Joyning's Nursery, Waltham Cross, had likewise a very nice display of Roses in trained standards and dwarfs, supplemented with mixed sorts as cut blooms in boxes. A Bronze Medal was awarded.

Messrs. H. Lane & Son, The Nurseries, Great Berkhamstead, made a showy display with large plants of hybrid Rhododendrons, Azalea mollis in much variety, and A. indica; the latter (mostly small specimens) were used to grade down the group to the ground level. The group was an extensive one, and occupied in length about 25 yards on the south side of the area. A Silver-gilt Medal was also awarded.

The group of hardy plants in bloom from Mr. T. S. Ware's nursery, Tottenham, took up half the space at disposal on the north side, making a brave show with the flowers in season. It was rich in showy varieties of Primula suitable for the border or for pot culture, such as P. amœna, P. Sieboldi roseo-alba, P. laciniata, a deep carmine flower; and P. Nellie Ware, a profusely flowered rose-coloured variety. Trillium grandiflorum was in fine condition, and the numerous varieties of Moutan Pæonies, mostly of Continental origin, were objects of great attraction. Very fine blooms were seen in P. Reine Elizabeth, a double, of deep rosy-scarlet colour; P. Louise Bouchetet, a full flower of rose tint; P. Samarang, a semi-double loose flower, crimson, with prominent golden anthers; P. Caroline, a buff-flesh-coloured flower; P. Zenobia, a semi-double of beautiful glistening deep purple with golden anthers; and Lord Macartney, a bold flower of a crimson tint. Many others were observed of charming tints and large size, but space forbids our naming them here. Of hardy Orchids there were Sambucina and militaris, nicely flowered; Dodecatheon Jeffreyanus, a tall pink and white variety; Lupinus nootkatensis, Cistus vaginatus, of a rose colour; Adonis pyrenaica, a rarity, with elegant Fern-like foliage and soft yellow flowers, a showy border plant; Iris pumila in variety, I. Olbiensis, and last, but not least, the many varieties of Narcissus of the Tazetta and poeticus sections. A Silver-gilt Banksian Medal was deservedly bestowed on this collection.

Messrs. Paul & Son, the Old Nurseries, Cheshunt, had some lovely white-flowered Rhododendrons, well furnished with bloom, in R. Edgeworthi and Lady Alice Fitzwilliam, and a pale pink in R. Fortunei Mrs. Charles Butler. The hybrids, like the species from which they are derived, possess pubescent foliage and trusses of Azalea-like blooms, making them splendid additions to choice collections of greenhouse plants. From the nurseries of this firm came their new Tea Rose Sunset, well-flowered; and a small group of hardy plants, viz., Caltha nana flore-pleno, C. palustris, the white-blossomed Ficaria ranunculoides, Sarracenia purpurea, a fine mass of pitchers and one bloom; Claytonia sibirica, and Trillium grandiflorum. A Bronze Banksian Medal was awarded.

Messrs. J. Veitch & Sons, Chelsea, showed the new Phœnix hybrida, a Palm that readily shows characteristic leaves in the young state, rendering the plant of value as a decorative object without much loss of time; the habit is graceful, yet compact. Pteris Bausei is a dwarf-habited Fern, with narrow elongated pinnæ and black rib—a distinct hybrid, useful for covering ground under the dense foliage of Tree Ferns, &c. Two Gloxinias of handsome markings were observed in Diana and Rossine; Filicium decipiens is an Aralia-like plant with the aspect of a Fern; the leaflets of the compound foliage are narrow lanceolate. Some showy masses of colour were seen in Pyrus (Cydonia) Maulei and Spartium præcox. Some pretty plants of Rubus arcticus, were shown, covered with their rosy circular blooms; and Philadelphus microphyllus, a dwarf variety, with neat small leaves and white blossoms of the size of a shilling.

Messrs. Barr & Sons, Covent Garden, showed a collection consisting of dwarf Irises, Narcissi, Scilla nutans and S. n. rosea, species and varieties of Tulipa, Muscari, including the rarer M. moschatus; Fritillarias, Lachenalias, Corydalis, Ophrys lutea, and Orchis papilonacea. For the interesting group of plants a Silver Banksian Medal was awarded.

ORCHIDS.

Mr. F. Bridger, gr., Penshurst Place, Kent, brought Dendrobium thyrsiflorum and Zygopetalum Gautieri, a good specimen with four spikes of bloom.

H. Voss, Esq., De Montfort House, Streatham, showed a well-marked Odontoglossum Pescatorei.

E. Charlesworth, Esq., Heaton, Bradford (gr., Mr. R. Eichel), showed Cattleya Gaskelliana alba.

Baron Ferdinand de Rothschild, Waddesdon, Aylesbury (gr., Mr. Bradshaw), exhibited a large plant, very well bloomed, of an ordinary form of Lælia purpurata.

H. M. Pollett, Esq., Fernside, Bickley (gr., Mr. Parkis), had some handsome forms of species of Odontoglossum, consisting of O. citrosmum roseum grandiflorum, a rather larger form of this charming species, with two shades of pink in it; O. guttatum roseum, with rosy-lilac blotches on a white ground; O. Wilckeanum pallens, with primrose-yellow flowers with brown patches—a large flower, a beautiful spotted variety of O. Andersonianum; O. species, probably a form only of hebraicum, a strong branched spike of pale yellow, with brown spots occupying the middle of each segment of the flower; O. Alexandræ Bonnyanum, a large white suffused pink bloom, slightly spotted; and O. sceptrum splendens, a flower with the union of dark brown and bright golden-yellow. A Bronze Banksian Medal was awarded the interesting group.

Mr. J. E. Bonny, 88, Downs Park Road, Hackney, showed the small Phalænopsis Parishi, a plant bearing minute white flowers, possessing a lip of purple colour.

Mr. F. Bennett, Tulse Hill (gr., Mr. Howes), exhibited a good mass of Dendrobium speciosum, bearing twelve spikes of bloom, a healthy strong specimen in condition but rarely seen. It received a Cultural Commendation.

MISCELLANEOUS.

The New Plant and Bulb Company showed species of Tulipa, as T. fragrans, T. triphylla, yellow; T. Eichleri, crimson; and T. Greigi, scarlet.

Messrs. J. R. Pearson & Son, Chilwell Nursery, Nottingham, showed a group of zonal Pelargoniums, bearing fine trusses of crimson and scarlet.

A few seedling tricolor Pelargoniums came from Mr. Kimpton, Smeath Paddock, Ashford.

Mr. C. Orchard, Coombe Warren, Kingston, showed a double flowered Cinerarias, rose and white in colour.

G. F. Wilson, Esq., Weybridge, had Potentilla argyrophylla, a species with yellow flowers.

Messrs. Wills & Segar showed several basketfuls of well bloomed plants of Erica Cavendishi.

CERTIFICATED PLANTS.

To Mr. T. S. Ware, for Pæony Moutan Reine Elizabeth.

To Mr. T. S. Ware, for Adonis pyrenaica.

To Messrs. J. Veitch & Sons, for Phœnix hybrida.

Fruit Committee.

Present: T. Francis Rivers, Esq., in the chair; and Messrs. J. E. Lane, W. Denning, J. Ellam, W. Warren, G. T. Miles, G. Norman, A. Sutton, J. Burnett, T. Mason, T. J. Saltmarsh, P. Crowley, R. D. Blackmore, J. B. Heywood, Harrison Weir, G. Bunyard, C. Silverlock.

SOUTH AUSTRALIAN DRIED FRUIT.

The most important exhibit, and one which had the element of novelty, was that of the Commissioners of South Australia. In this were specimens of dried raisins, Currants, Pears, Apricots, properly put up for commerce in small oblong boxes, and which seemed from appearance to be equal to any that come from the customary sources of supply. We will specify briefly the various items shown, giving the names and addresses of the senders. Mr. T. Hardy, Bankside, Adelaide, sent Almonds, Reine Claude (Green Gage) Plum, Napoleon Pears, dried whole; Sultana Nonpareil raisins, Moor Park Apricots and Prunes, dried after the most approved method, the variety being the Italian Quetsch; Gravenstein Apples in slices, and Currants. Of these, the Prunes were Highly Commended. Lady Devonport, Beaumont, Adelaide, showed boxes of Currants.

SOUTH AUSTRALIAN FRESH FRUIT.

T. Pascoe, Esq., Karra Wara, South Australia, showed several varieties of fresh Apples, one of which, Cleopatra, received a Commendation. A dish of dessert Apples were shown by Mr. R. Devonport, Battunger, South Australia. The Hon. R. D. Ross, Higherbambe, South Australia, had fine large Reinette du Canada and Mobb's Royal Apples. Mr. J. Laine, Harcourt, near Castlemaine, Victoria, showed Worcester Pearmain, Scarlet Nonpareil, Reinette du Canada, Lane's Prince Albert, Dumelow's Seedling, Newtown Pippin, Cleopatra, of excellent flavour; Merritt's Pearmain, London Pippin, Northern Spy (Highly Commended) of extraordinary size and colouring. Mrs. Holbrook sent Napoleon Pears of so remarkably good character that they were Highly Commended. A quantity of the Pear-shaped Quince and Lemons was sent by G. Quick, Esq., Merida, South Australia. This raw fruit from the Antipodes was of generally fine quality, the flavour being quite equal to the appearance of the fruit. It was noted that those sorts which bore English names did not resemble those grown here. A Silver Knightian Medal was awarded the Commissioners for their exhibit.

CANADIAN FRUIT.

The Canadian Commissioners showed fifteen dishes of Nova Scotian Apples, medium-sized, brightly tinted, local kinds, such as we now commonly find in our markets in late winter and spring, and well into the summer.

HOME-GROWN FRUIT.

Of home growers were noted Mr. Rivers, of Sawbridgeworth, with Bedfordshire Foundling, and a large showy unnamed kind; and Mr. W. Divers, of Wierton Place, Maidstone, with a collection of twelve kinds of Apples and three of Pears. The fruits were shown to exhibit the good keeping capabilities of a dark room kept at a low temperature, oftentimes below 32°. The samples were not remarkable.

Collections of salads, consisting of ten kinds in each, were shown for the Veitch Memorial Prizes, but we were unable to glean the names of the winning competitors.

SCOTTISH HORTICULTURAL ASSOCIATION.

THE second ordinary meeting of the year was held in the Society's rooms, 5, St. Andrew Square, on Tuesday evening, May 4, Mr. Alexander Milne, of Messrs. James Dickson & Son, President, in the chair. Ten new members were added to the roll. Mr. W. H. Divers, Ketton Hall, Stamford, communicated a paper, which was read by the Secretary, on "The Culture of the Double Primula sinensis." The double white he considered the most useful winter-flowering plant we have. By growing about 300 plants in succession he can supply plenty of cut flowers from November to April, and he predicted that, when better understood, it will be largely grown by all growers who have to keep up a large supply during winter. He gave a detailed account of the uses of the flower, minutely detailed his method of propagation and treatment of the young plants. He gave a description of the varieties in cultivation, the insects by which they are infested, and entered into "every particular necessary to grow these plants to perfection." He concluded by observing that "it is only by strict attention to the smallest matter that one can excell either in the cultivation of double Primulas, or in anything else." After a few remarks from some of the members a vote of thanks was awarded to Mr. Divers.

Mr. Todd (of Messrs. Todd & Co., Edinburgh) communicated a paper on "The Flowers that Bloom in Spring." He treated the subject in the first part from a practical standpoint, referring to the Snowdrop, Crocus, Daisy, Scillas, and Narcissus, &c. He then pointed out how easily they could be grown in town gardens, and nowhere better or to more advantage than in West Princes Street Gardens, Edinburgh, and for the want of which he compared it at the present time to a highland moor. With the exception of one or two patches of Arabis albida, it was destitute of a single flower. In proof of his contention that various spring flowers could easily be grown at a very small expense to the ratepayers, he pointed to the display made by many of those who dwell in suburban villas and in the various cemeteries. Particular reference was made to the Dean Cemetery, and to the beautiful display of Aubrietia grandiflora in Kilgraston Road, described many years ago in the *Gardeners' Chronicle* by the late Mr. McNab, and which is this season as beautiful as ever. In the discussion which followed the reading of Mr. Todd's paper it was pointed out that the principal object which the authorities had in confining the floral display to the autumn months was the desire to make the gardens as bright and gay as possible for visitors, who flock to the city during that season. It was, however, generally admitted that something should be done for the inhabitants themselves during the early spring, which would not in the least interfere with the usual autumn display of bedding plants. Mr. Todd was awarded a vote of thanks for his interesting paper.

The following exhibits were on the table:—Forty-six species and varieties of Narcissi from Mr. Mackinnon, Melville Castle; the flowers remarkably large and clean. From Mr. C. W. Cowan, of Valleyfield, a large collection of Narcissi, correctly named, and in fine condition. Mr. Cowan, in a letter to the Secretary, stated that they were "grown in the open air, 550 feet above sea level;" and, in order to distinguish character, they must be seen growing in mass." He invited any of the members interested in this class of plants to visit his collection at Penicuik. From Messrs. Dicksons & Co., Edinburgh, a collection of hardy spring flowers. From Mr. Howie, Inch House, a collection of alpine Auriculas, mostly seedlings, in fine condition. From Mr. McMillan, Edge Hill, Dean, a "sport" from a Pelargonium, with pure white leaves and double white flowers; a bunch of Chrysanthemum segetum and pot Marigold flowers. From Messrs. T. Methuen & Son, Edinburgh, Arum Dracunculus in flower.

A vote of thanks was awarded to the various exhibitors, and also to Mr. Milne for presiding.

AN EASTCOTE GARDEN.

BRIEF reference was made recently to the beautiful effect of a zone of white Crocuses planted near the margin of a grass plot in front of Mr. Kingsmill's cottage at Eastcote. Perhaps a few notes on this gentleman's charming garden may be acceptable to some of your readers. It is the *beau ideal* of an amateur's garden, and the cottage of an artist's home. The house and garden occupy about half an acre at the junction of the Pinner and Uxbridge roads, and are surrounded by prettily wooded scenery. A belt of Scotch Firs forms an admirable background to the picture. The cottage is a three-gabled old-fashioned structure, with lime-washed walls and tiled roof, and the garden lies before it, the sloping lawn, with the belt of Crocuses being immediately in front. The walks, which are of smooth fine gravel, are about 4 feet in width, and are bordered with large flints, over and between which dwarf Saxifrages, Aubrietias, Phloxes, and Stonecrops are allowed to grow. A peculiarity of the garden is that the beds are all raised, and broken into irregular surfaces by means of blocks and boulders of sandstone and flint. A result is to give greater life and diversity to the borders, and afford a variety of aspect, light, and shade. More perfect drainage is secured in these sloping beds, and each individual plant has room to show its true character without crowding or confusion. Ordinary bedders are rigorously excluded from the choice assemblage of herbaceous and alpine plants; their rank growth and glaring colours would be obviously out of place here. Most of the plants have permanent stations, and are consequently well established, and great taste and judgment are shown in the choice of position. Even in early spring there was a display of delightful colour, and there are scores of bits about the garden which form charming vignettes, worthy of the artist's pencil. Towards the middle of the garden is a pond which serves both for ornament and use. Advantage is taken to plant its margin and the steep banks with Bulrush, Flags, Caltha palustris, Meadow Sweet, hardy Papyrus, and various Ferns, among which are strong clumps of Osmunda and the Lady Fern. Dwarf shrubs and Rhododendrons find a suitable footing on the upper margin. There is a pretty little rockery near the entrance-gate, the material being red sandstone, brought, at considerable expense of carriage, no doubt, from a railway cutting in Cheshire. The blocks of sandstone are most artistically arranged round a little rock pool, which is utilised for dwarf aquatics. On the ledges, and creeping over the red sandstone, there are several varieties of Saxifrage, Stonecrop, and the tiny Fern-like Arenaria. The most conspicuous of the plants round this rock basin are the white and blue Triteleias and several varieties of Squills; the latter have done unusually well this season. The deeper blue Lithospermum will supply their place shortly. In spring Chionodoxa was a striking object. It is planted on the higher stations of the rockery in groups of a dozen bulbs or more. Aubrietia deltoides is pretty and effective when drooping over flint boulders. Anemones are admirably suited for rockeries. They are here in force from the brilliant crimson stellata to the lovely blue apennina, and the milk-white wilding of our woodlands and meadows. Several groups of Hyacinths and Narcissi give additional colour and freshness to the borders. Among the latter were patches of the beautiful bicolor Empress, and the grand Sir Watkin. Among the plants that have suffered most during the prolonged winter are the dwarf Phloxes frondosa and Nelsoni; the lovely snow-white masses of the latter will be missed. The surface of all the beds is covered with a mulching of cocoa fibre dust. It serves as a foil to the prettily marked glossy leaves of the hardy Cyclamens and Erythroniums and the creamy foliage of the Funkias. By the sides of a walk overarched with Filbert trees, which last year bore enormous crops, there were numerous little groups of hardy Primroses of a rich, deep magenta strain, alpine Auriculas and Pansies. A pretty contrast of two colours is furnished by the semicircular bed on each side the little conservatory door — dark crimson Daisies with a broad edging of Cerastium tomentosum. The rarer species of terrestrial Orchids are grown in a little bog garden along with Sarracenias and the feathery Equisetums. There is a fine collection of Delphiniums and Roses. By a path parallel to the high road some of the best of the autumn-flowering Clematises are trained to poles in company with Ivy. It would take many pages of the *Gardeners' Chronicle*, however, to describe the floral treasures of this interesting and beautiful garden. There is always something to admire in it, from Snowdrop to Christmas Rose; it is admirably designed, artistically planted and nicely kept, and it is altogether one of the most delightful gardens I have seen. *T. W., Harrow.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON

FOR THE WEEK ENDING WEDNESDAY, MAY 12, 1886

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat = 100.	WIND. Average Direction	RAINFALL.
May	In.	In.	°	°	°	°	°	°			In.
6	30.15	+0.40	71.7	44.0	27.7	58.2	+ 6.6	39.8	50	W.: S.S.W.	0.00
7	30.01	+0.26	74.5	45.7	28.8	60.7	+ 9.0	42.0	49	S.S.E.	0.00
8	29.88	+0.14	67.5	53.0	14.5	59.4	+ 7.8	46.6	62	S.W.: S.S.E	0.00
9	29.85	+0.10	67.2	47.0	20.2	55.4	+ 3.9	48.3	78	W.: W.N.W.	0.00
10	29.66	−0.08	65.5	46.0	19.5	54.2	+ 2.9	44.5	70	E.	0.00
11	29.68	−0.07	49.6	45.3	4.3	46.4	− 4.8	44.5	94	E.	0.09
12	29.53	−0.21	53.5	43.0	10.5	47.8	− 3.6	45.1	92	E.	0.15
Mean	29.82	+0.08	64.2	46.3	17.9	54.6	+ 3.1	44.3	76	variable	0.24

May 6.—Very fine bright day.
— 7.—Very fine bright day.
— 8.—Very dull throughout
— 9. Fine day.
— 10.—Very fine morning, dull afternoon.
11.—Dull; drizzling rain all day.
12.—Drizzling rain nearly all day.

LONDON: *Atmospheric Pressure.* — During the week ending May 8, the reading of the barometer at the level of the sea increased from 30.29 inches at the beginning of the week to 30.43 inches by 9 A.M., decreased to 30.39 inches by 5 P.M. on the 2d, increased to 30.44 inches by 9 A.M., decreased to 30.39

inches by 5 P.M. on the 3d, increased to 30.47 inches by 9 A.M., decreased to 30 43 inches by 5 P.M. on the 4th, increased to 30 51 inches by 9 A.M. on the 5th, and was 30.03 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 30.33 inches, being 0.30 inch higher than last week, and 0.40 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 74°.5, on the 7th; on the 2d the highest was 51°.7. The mean of the seven high day temperatures was 65°.7.

The lowest temperature was 32°, on the 2d; on the 8th, the lowest temperature was 53°. The mean of the seven low night temperatures was 41°.1.

The greatest range of temperature in one day was 28°.8, on the 7th; the smallest, on the 8th, was 14°.5. The mean of the seven daily ranges was 24°.6.

The mean temperatures were, on the 2nd, 42°; on the 3d, 48°.3; on the 4th, 52°; on the 5th, 54°; on the 6th, 58°.2; on the 7th, 60°.7; and on the 8th, 59°.4; of these the first three were below their averages by 8°.1, 2°.1, and 1°.2 respectively; the rest were below by 2°.8, 6°.6, 9°, and 7°.8 respectively.

The mean temperature of the week was 53°.5, being 5°.9 higher than last week, and 2°.1 higher than the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 131° on the 7th. The mean of the seven readings was 125°.

The lowest reading of a minimum thermometer placed on grass was 22°.7 on the 2d. The mean of the seven readings was 31°.

Rain.—No rain fell during the week.

ENGLAND: *Temperature.*—During the week ending May 8 the highest temperatures were 78°.5 at Cambridge, 76° at Leeds, 75° at Sheffield; the highest at Sunderland was 65°, at Newcastle 68°, at Plymouth 68°.1. The general mean was 61°.3.

The lowest temperatures were 25° at Cambridge, 28° at Hull, 32° at Blackheath and Wolverhampton; the lowest at Liverpool was 43°.3, at Newcastle 40°, at Plymouth 37°.5. The general mean was 34°.3.

The greatest ranges were 53°.5 at Cambridge, 45° at Hull, 42°.5 at Blackheath and Sheffield; the least ranges were 24°.9 at Liverpool, 28° at Newcastle, 29° at Sunderland. The general mean was 37°.

The mean of the seven high day temperatures was highest at Cambridge 71°.6, at Blackheath and Leeds, 65°.7; and was lowest at Sunderland 58°.8, at Plymouth 60°.9, at Brighton 61°.1. The general mean was 63°.7.

The mean of the seven low night temperatures was highest at Liverpool, 47°.2, at Preston 46°.4, at Newcastle, 46°; and was lowest at Cambridge, 38°.8, at Sunderland 39°.8, at Bristol 40°. The general mean was 42°.9.

The mean daily range was greatest at Cambridge, 32°.8, at Bristol 25°, at Wolverhampton 24°.8; and was least at Liverpool, 14°.9, at Preston 15°.2, at Newcastle 16°.1. The general mean was 20°.8.

The mean temperature was highest at Blackheath and Cambridge, 53°.5, at Leeds 53°.2; and was lowest at Sunderland 47°.6, at Hull 50°, at Brighton 50°.3. The general mean was 51°.7.

Rain.—The largest falls were 0 45 inch at Sheffield, 0.37 inch at Liverpool, 0.29 inch at Hull; the smallest fall was 0 01 inch at Nottingham. No rain fell at Brighton, Bristol, Blackheath, Cambridge, or Wolverhampton. The general mean fall was 0.11 inch.

SCOTLAND: *Temperature.*—During the week ending May 8, the highest temperature was 72°.6, at Edinburgh; at Greenock the highest temperature was 64°. The general mean was 67°.6.

The lowest temperature in the week was 30°, at Perth; at Aberdeen the lowest temperature was 37°.5. The general mean was 33°.6.

The mean temperature was highest at Edinburgh, 53°.1, and lowest at Greenock, 49°.6. The general mean was 51°.5.

Rain.—The largest fall was 0 41 inch at Greenock, and the smallest fall was 0.06 inch at Leith. The general mean was 0.18 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, May 10, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been fine and bright during the greater part of the period, and the air very dry. Some rain fell, however, at our extreme western and northern stations on the 4th and 5th, and at the end of the week overcast skies and rain were reported from nearly all parts of the kingdom.

The *Temperature* has been equal to the mean value in "Scotland, N.," but in the other districts it has varied between 1° and 4° above. The maxima, which were generally registered on the 7th, ranged from 64° in the west and north of Scotland, to between 74° and 77° over eastern, central, and southern England. The minima, which were recorded in most places either on the 4th or 5th, varied from 29° in the "Midland Counties" and "England, S.," to 39° in "Ireland, N.," and 43° in the "Channel Islands."

The *rainfall* has been rather more than the mean over the northern parts of England and the west of Scotland, and equal to it in "Scotland, E.," and "Ireland, N.," but in all other districts it has been less than the normal value.

Bright sunshine shows an increase in the "Channel Islands," but a decrease elsewhere, especially in Ireland, Scotland, and the north of England. The percentages of the possible amount of duration ranged from 8 in "Ireland, N.," 12 in "Ireland, S.," and 14 in "Scotland, W.," to 53 in "England, S.," and 67 in the "Channel Islands."

Depressions observed.—The distribution of barometric pressure over our islands continued anticyclonic until towards the end of the period, when a shallow depression had reached our southern coasts and the north of France from the south-westward. During the first part of the time southerly breezes were general over the United Kingdom, but during the last few days light easterly breezes were experienced.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

Will some correspondent who has practical experience kindly reply to the following question:—I shall be greatly obliged by instructions as to the use of ammonia from gasworks—in what proportion is it to be mixed with water; in what quantity applied to vegetables, Roses, &c., in the open air, and how frequently used? *A. E. C.*

Answers to Correspondents.

*** HIGH PRICED ORCHIDS.—A CORRECTION.—We have to correct an inadvertance in our last issue, at p. 594. We find that Knox's variety of Odontoglossum Pescatorei, which was sold recently for 165 guineas, and the Lovat collection of Orchids were both sold by Mr. J. C. Stevens, of King Street, Covent Garden. The following prices were realised at the latter sale:—Lælia purpurata, 54 gs.; Cattleya Mendelii, 42 gs.; Masdevallia Harryana, £10; Oncidium macranthum, 17 gs.; Brassia Lawrenceana, 10½ gs.; Cymbidium Lowianum, 70 gs.; the Chatsworth variety of Cœlogyne cristata, 19 gs.; Cattleya Warneri, one of, if not the finest existent varieties, 75 gs.; C. Mendelii, 30 gs.; another, 64 gs.; and one 40 gs.; C. labiata 20 gs.; and a grand plant of Lælia anceps Dawsoni, with nine pseudobulbs, 30 gs. Many of the specimens were remarkable for their size or rarity.

BOOK ON ARBORICULTURE: *T. L. J. Grigor, Arboriculture*, published at Edinburgh by Edmonston & Douglas.

BOOKS ON THE CULTURE OF THE FUCHSIA AND PELARGONIUM: *J. K. Poland. F. Buss, The Fuchsia*, published by G. W. Allen, 8, Ave Maria Lane, London, E.C.; *Greenhouse Management for Amateurs*, by W. J. May, published by Upcott Gill, 170, Strand, London, W.C.

CALCEOLARIAS: *E. M.* Your flowers, which measure 6 inches in circumference, are very large indeed, but we think so monstrous a gain in size is obtained at the expense of gracefulness in the flower. If you would propagate the kind, remove the bloom-stalks as soon as the first flush of bloom is over, allowing no seed to form; you may then make cuttings of such shoots as the plants possess, dipping them for a few minutes in weak tobacco-water, to kill aphides that are almost sure to be present. Prepare 48's, well crocked, filling up with sifted loam well mixed with silver sand; in these insert the cuttings in a row round the edge only; give water with a fine-rose water-pot, and when the leaves are dry stand the pots under a hand-glass at the foot of a wall with an east or west aspect; shade when the sun is powerful, give air daily for half-an-hour to dispel excess of damp, water when necessary, and see that no decaying foliage remains on the cuttings. Rooting will take place in a month or six weeks, when the plants must be potted off and grown in a cool frame close to the glass. Young plants are better than old ones. Loam, rough decayed manure, and sand—in fact, a thoroughly open compost, and frequent small shifts, with less manure in the final shift, should grow these plants well.

CATTLEYA MENDELII: *J. Collier.* A very fine variety

FUNGI: *Chesterfield.* The Mushrooms sent are saturated with water, and infested with larvæ. They are not "diseased" in the ordinary sense of the term, but are in a very bad state from the improper condition of the material in which they have been grown. *W. G. S.*

FUNGUS ON SAVIN: *J. S. & Sons.* The fungus is Podisoma Sabinæ. The spores of this fungus, when growing on the Pear, are said to produce a fungus of a totally different character (see report of Scientific Committee in present issue for analogous case). The matter has been discussed frequently in these pages, with illustrations.

GLOXINIA: *Need.* Yes, often. They have often been mentioned in the *Gardeners' Chronicle*, and have been made the subject of comment in botanical works.

INSECTS: *W. S., Bangor.* We can discover no traces of red-spider, aphides, or other insects, on your Vine leaves; the pale blotches on which are so irregular in size and shape as to preclude the supposition that they are caused by the working of some small subcutaneous larvæ, of which also there are no traces of cast skins or excrement on the blotches. *I. O. W.—C. N.* Your seedling Peas are infested to a great extent by the "tiny worms," of which sometimes as many as twenty were found in one Pea, sown about a week, which are full-grown myriapods, named Julus pulchellus; but we found other myriapods in the specimens sent, namely Julus plumbeus, 1½ inch long, and a Lithobius. Your soil must be in a foul state, and should be burnt, or well saturated with gas-tar water and soapsuds. *I. O. W.*

NAMES OF PLANTS: *W. H. Divers.* 1, Basella rubra; 2, Hexacentris mysorensis; 3, Narcissus biflorus var.—*Old Subscriber, Coniston.* Cape Bulbs, Ixias, and Sparaxis—beautiful greenhouse plants that can be grown in the open in the South of England, but probably not in your locality. — *D. C. A.* Ranunculus parnassifolius, a native of Switzerland. We doubt its being truly wild in any part of Ireland.—*J. H.* What you send are the male flowers of Abies (or Picea) Pinsapo. We do not often see it flower so freely.—*A. S. T.* Saxifraga (Megasea) cordifolia.—*Old Subscriber.* Ribes aureum. — *Begonia.* 1, Begonia hybrida floribunda; 2, B. odorata; 3, B. Sandersii semperflorens.—*J. P.* Eriobotrya (Loquat). Where was it fruited? The *Dictionary of Gardening* (170, Strand).—*C. E. F.* Anthyllis vulneraria.—*G. F.* 1, Prunus Padus; 2, Ornithogalum nutans. — *Southton.* If you would send the flowers again, we will endeavour to name them.—*A. T.* 1, Hippophaæ rhamnoides; 2, Ribes aureum; 3, Lonicera Ledebouri; 4, Ribes species; 5, Forsythia viridissima; 6, Begonia fuchsioides; 7, Selaginella apoda.—*X.* Geranium phœum.

PEACH SHOOTS: *T. W. D.* A bad case of blistering, or curl. It is supposed by some to result from the action of cold on the leaves, and is sometimes caused by a minute fungus, Ascomyces. It is difficult to eradicate, and when it has appeared is apt to recur. Cut off affected leaves and burn them.

WIRE-WORKER: *Constant Reader.* Mr. Thomas, Maida Vale, Edgware Road, London.

CATALOGUES RECEIVED.

J. DICKSON & SONS, Newton Nurseries, Chester—Plant Catalogue.

T. KENNEDY & CO., Dumfries, N.B. — Roses, Florists' Flowers, &c.

WOOD & INGRAM, Huntingdon—Plant Catalogue.

COMMUNICATIONS RECEIVED:—P. Leigh (next week).—A. L. S.—G. M.—W. D.—Sutton & Sons.—A. D. W.—C. W. D.—Dammann & Co., Portici.—Baron von Mueller, Melbourne.—J. G. B.—Professor Caspary, Kœnigsberg.—W. S—C. M. O.—W. J.—P. L. S.

Markets.

COVENT GARDEN, May 13.

A steady trade doing with prices generally firm. Grapes, with a large supply, are cleared at lower rates. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18 0	Evergreens, in var., per dozen ..	6	0–24 0
Arum Lilies, dozen..	9	0–12 0	Ficus elastica, each..	1	6– 7 0
Azaleas, per doz.	24	0–42 0	Ferns, in var., dozen	4	0–18 0
Bedding Plants, various, per dozen ..	1	0– 2 0	Foliage Plants, various, each ..	2	0–10 0
Begonias, per dozen	6	0–12 0	Genistas, per dozen	6	0–10 0
Bouvardias, doz ..	12	0–18 0	Lilies, per dozen ..	12	0–24 0
Cinerarias, per doz.	5	0– 8 0	Marguerite Daisy, per dozen	8	0–12 0
Cyperus, per dozen..	4	0–12 0	Myrtles, per dozen..	6	0–12 0
Dracæna terminalis, per dozen ..	30	0–60 0	Palms in var., each	2	0–21 0
— viridis, per doz.	12	0–24 0	Pelargoniums, doz..	9	0–18 0
Ericas, various, per dozen ..	12	0–24 0	— scarlet, per doz.	3	0– 6 0
Euonymus, in var., per dozen	6	0–18 0	Spiræa, per dozen ..	9	0–15 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Anemone, 12 bun.	3 0-	6 0	Mignonette, 12 bun.	3 0-	9 0
Arum Lilies, 12 blms.	4 0-	6 0	Narcissus, various,		
Azaleas, 12 sprays	0 6-	1 0	12 bunches	2 0-	6 0
Bluebells, 12 bunches	0 9-	1 0	Pelargoniums, per 12		
Bouvardias, per bun.	0 6-	1 0	trusses	0 9-	1 0
Camellias, 12 blms.	1 0-	4 0	— scarlet, 12 trusses	0 4-	0 6
Carnations, 12 blms.	1 0-	3 0	Primroses, 12 bun.	0 6-	1 0
Daffodils, 12 bunches	1 6	6 0	Primulas, double, per		
Eucharis, per dozen	4 0-	6 0	bunch	0 6-	1 0
Forget-me-Not, or			Roses, Tea, per doz.	0 9-	2 0
Myosotis, 12 bun.	2 0-	4 0	— red, per dozen	2 0-	4 0
Gardenias, 12 blooms	1 0-	4 0	Spiræas, 12 bunches	6 0-	9 0
Lapageria, red, 12			Stephanotis, 12 sprs.	1 6-	3 0
blooms	1 0-	2 0	Tropæolums, 12 bun.	1 0-	2 0
Lilac, French, bunch	2 0-	7 0	Tuberoses, 12 blms.	1 0-	1 6
— English, 12 bun.	4 0-	8 0	Tulips, doz. blooms	0 4-	0 6
Lily-of-the-Valley,			Violets, Parme, Fr.,		
12 sprays	0 6-	1 0	per bunch	4 0-	6 0
Marguerites, 12 bun.	3 0-	6 0			

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0-	4 0	Melons, each	3 6-	5 0
— Canadian, barrl.	8 0-	21 0	Peaches, per dozen	8 0-	15 0
Figs, per dozen	3 0-	6 0	Pears, per dozen	12 0	15 0
Grapes, per lb.	2 6-	6 0	Pine-apples, Eng., lb.	2 0-	3 0
Kent Cobs, 100 lb.	40 0-	..	— St. Michael, each	2 6-	10 0
Lemons, per case	8 0-	10 0	Strawberries, per lb.	2 0-	6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0-	..	Mint, green, bunch	3 0-	..
Asparagus, Eng., 100	2 0-	5 0	Mushrooms, punnet	1 0-	1 6
— French, natural,			Mustard and Cress, 2d.	4 0-	..
per bundle	1 6-	6 0	Onions, per bushel	5 0-	..
Beans, Kidney, lb.	2 0-	..	Parsley, dozen bunch	2 0-	3 0
Beet, red, per dozen	1 0-	2 0	Parsnips, per dozen	1 0-	..
Broccoli Sprts., bush.	5 0-	..	Potatos, per cwt.	4 0-	5 0
Carrots, per bunch	0 6-	..	,, kidney, per cwt	4 0-	5 0
Cauliflowers, per doz.	3 0-	4 0	Seakale, punnet	1 6-	..
Celery, per bundle	1 6-	2 0	Shallots, per pound	0 3-	0 9
Coleworts, doz. bunch	8 0-	..	Spinach, per bushel	3 0-	6 0
Cucumbers, each	0 9-	1 0	Sprue Asparagus, per		
Endive, per dozen	1 0-	2 0	bundle	1 0-	..
Herbs, per bunch	0 4-	..	Tomatos, per lb.	1 6-	2 6
Leeks, per bunch	0 6-	..	Turnips, bunch	0 6-	..
Lettuce, per dozen	1 0-	1 6			

POTATOS:—Old: Magnums, 6s. to 8os.; Regents, 7os. to 9os. per ton. New: Jersey Kidneys, 6d. lb.; ditto, small, 3d. lb.; other samples lower; Malta Kidneys, 14s. to 20s.; ditto, Rounds, 12s. to 16s. per cwt.

SEEDS.

LONDON: *May* 12.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., report a diminishing sowing demand for farm seeds. As regards prices no material alteration can be noted. Values all round remaining at decidedly a speculative level. Indeed several parcels at the temptingly low rates current have been bought up for holding over until next season. For Mustard and Rape seed there is more inqury. Spring Tares are without quotable variation. Canary seed continueus exceedingly steady; but Hemp seed, on account of heavy arrivals is depressed. Blue Peas and Haricot Beans are firm.

FRUITS AND VEGETABLES.

COLUMBIA (East London): *May* 12.—Good supplies of all kinds of vegetables; moderate demand, prices lower. Fruit trade slow. Quotations:—Apples, 3s. to 4s. 6d. per sieve; Asparagus, 1s. 3d. to 1s. 9d. per bundle; Sprouting Broccoli, 4s. 6d. to 5s. per sieve; Spinach, 4s. to 4s. 6d. do.; Turnip Radishes, 10d. to 1s. per dozen bunches; spring Onions, 3s. 6d. to 4s. 6d. do.; Rhubarb, 1s. to 2s. do.; Cabbage Lettuce, 1s. to 1s. 6d. per dozen; Cabbages, 8s. to 12s. per tally; bunch Greens, 7s. to 10s. per dozen bunches; do. Carrots, 2s. to 2s. 6d. do.; do. Parsley, 2s. to 2s. 6d. do.; do. Rhubarb, 1s. to 2s. do.; Onions, 4s. 6d. to 6s. per cwt.; Carrots, 18s. to 40s. per ton; Mangels, 17s. to 22s. do.

STRATFORD: *May* 12.—During the past week there has been a good supply of all kinds of produce, and a fair trade was transacted at the undermentioned prices:—Cabbages, 6s. to 6s. 6d. per tally; Greens, 7s. to 8s. per cwt.; Cauliflowers, 2s. 6d. per dozen; Carrots, household, 25s. to 35s. per ton; do. cattle feeding, 15s. to 25s. do.; Mangels, 20s. to 22s. do.; Onions, 120s. per ton.

POTATOS.

BOROUGH AND SPITALFIELDS: *May* 11.—Trade slow or all sorts. Quotations:—Regents, 70s. to 110s.; Magnum Bonums, 50s. to 95s.; and Champions, 55s. to 65s. per ton.

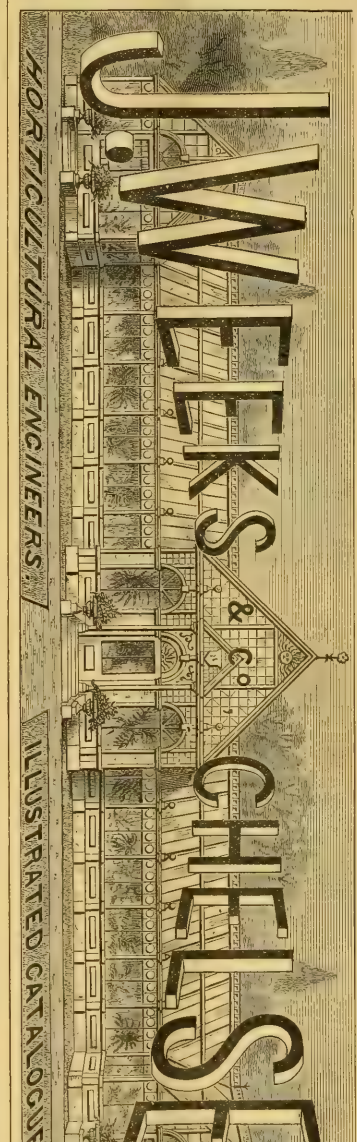
COLUMBIA (East London): *May* 11. — Large supplies to hand, prices fair, except for good samples, which realised higher rates. Quotations:—Magnums, 50s. to 90s.; Regents, 50s. to 65s.; Victorias, 50s. to 70s.; and Champions, 40s. to 50s. per ton.

STRATFORD: *May* 12.—Quotations:—New Malta, 13s. to 17s. per cwt.; Magnums, best, 80s. to 90s.; do. seconds, 70s. to 80s.; do. inferior, 50s. to 60s.; and Champions, 50s. to 60s. per ton.

Imports.—The imports into London last week consisted of 3644 bags from Hamburg, 3 from Rotterdam, 46 from Harlingen, and 5396 packages, 50 cases, 55 bags from Malta.

Government Stock.—Consols closed on Monday at 101⅝ to 101 for delivery, and 101 to 101⅛ for the account. Tuesday's figures were 101⅛ to 101⅛ for delivery, and 101 3/16 to 101 5/16 for the account. The closing figures of Wednesday were 101⅛ to 101⅜ for delivery, and 101 5/16 to 101 7/16 for the account. Thursday's business closed at 101½ to 101⅝ for both transactions.

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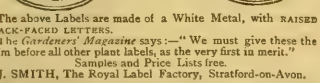
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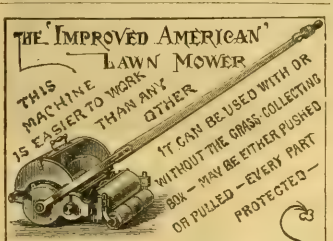


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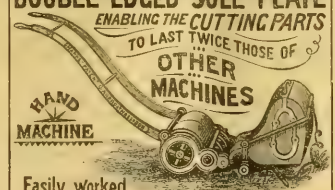
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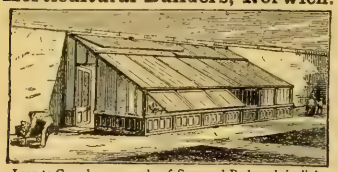
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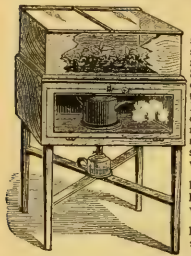
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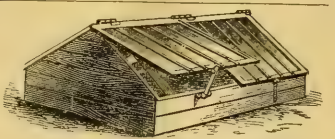


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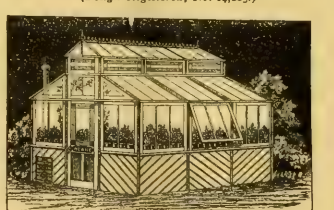
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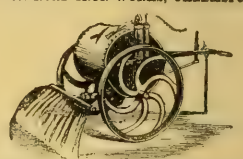
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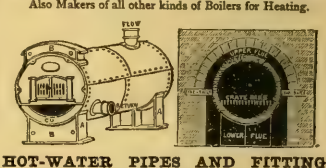
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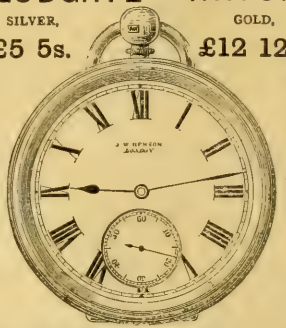
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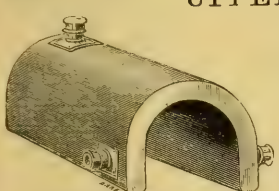
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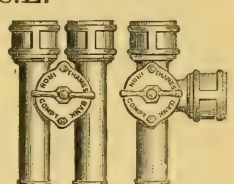


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_____ 1886.

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TO GARDENERS.—A steady youth (age 19), from the country, seeks a situation under a Gardener. Not been out before, and has a good knowledge of Agriculture. —R. W., 18, Rokesmith Street, Earle Road, Liverpool.

TO NURSERYMEN —Wanted by Advertiser, a situation in a Nursery. Well up in Roses, Clematis, Camellias, Budding, Grafting, &c.—A. B., Bellevue, Upton, Slough, Bucks.

GENERAL MANAGER, of Nursery and Seed Business, or as TRAVELLER. — Twenty-five years' experience. Unexceptionable references. Well up in all branches, and well-known on English ground. Disengaged at Midsummer, or earlier if required.—XYX, *Gardeners' Chronicle*, Office, 41, Wellington Street, Strand, W.C.

TO the NURSERY and SEED TRADES.—Advertiser (age 30), is strong, active, and energetic. Fifteen years' experience. Good Salesman. Would place £30 in a responsible employer's hands, in return for a good and permanent situation of trust. Would not object to a Partnership with one similarly situated.—Address by letter, E. J., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

TO FLORISTS and HORTICULTURISTS.—Wanted, by a well educated youth (age 19), a situation in a good establishment, for improvement, with a view to an ultimate Share of the Business.—Mr. JAMES B. JENKINS, Auctioneer and Estate Agent, Christchurch, Hants.

TO SEEDSMEN and FLORISTS.—Wanted, by a respectable youth (age 17), a situation in Seed and Florist's Business, as Improver. — M., Penshurst House, Queen's Park Road, Brighton.

COWMAN.—Married, two in family. Five and a half years' good personal character.—T. OSBORN, Wyckham Cottages, Totteridge, Herts.

CARPENTER, JOINER, and Practical GREENHOUSE BUILDER, wants job, by day, piece or contract.—J. CAVE, 8, Nursery Cottages, Sidcup, Kent.

HOLLOWAY'S PILLS.—Weary of Life.—Derangement of the Liver is one of the most efficient causes of dangerous diseases, and the most prolific source of those melancholy forebodings which are worse than death itself. A few doses of those noted Pills act magically in dispelling low spirits, and repelling the covert attacks made on the nerves by excessive heat, impure atmospheres, over-indulgence, or exhausting excitement. The most shattered constitution may derive benefit from Holloway's Pills, which will regulate disordered action, brace the nerves, increase the energy of the intellectual faculties, and revive the failing memory. By attentively studying the instructions for taking these Pills and explicitly putting them in practice, the most desponding will soon feel confident of a perfect recovery.

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MANUFACTURER OF

TERRA COTTA GARDEN VASES, FERN PANS, ORCHID BASKETS AND PANS, BORDER TILES,

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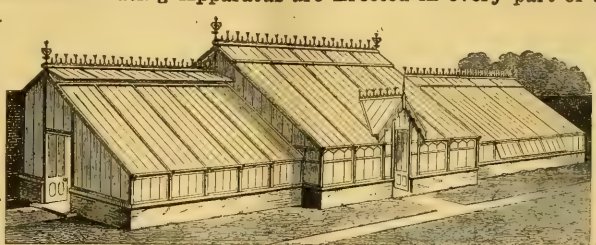
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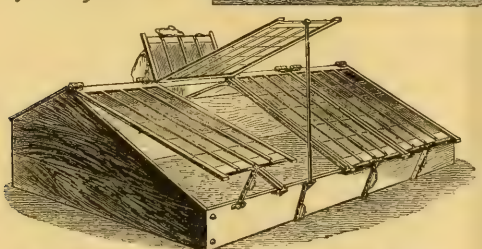
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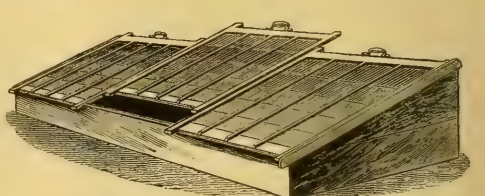


No. 74.—NEW THREE-QUARTER SPAN-ROOF GARDEN FRAME.

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Size.	Length.	Width.	Price.	Packing Cases.
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No. 4	16 feet	6 feet	6 0 0	5s. 6d.

Depth in front, 13 inches; back, 24 inches; Lights, 2 inches thick. Strengthened with iron rod. One handle to each light. Lights only, 6 by 4 feet, unglazed and unpainted, 6s. each; glazed with 21-oz. sheet glass, and painted four coats, 16s. each.

Cheaper Frames than the above are made by us but not advertised. All the Frames Painted Four Coats, and Glazed with Best 21 oz. English Glass, and Carriage Paid to any Railway Station in England and Wales; also to Edinburgh and Dublin.

PACKING CASES allowed for in full if returned within fourteen days in good order and duly advised.

Editorial Communications should be addressed to "The Editor;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE! — COMMITTEE MEETINGS, Fruit and Floral, at 11 A.M., in the Conservatory: Scientific at 1 P.M., in the Lindley Library, on TUESDAY NEXT, May 25.
SHOW OF POT ROSES, AZALEAS, &c.
N.B. Open to Fellows at 12 o'Clock, and the Public at 1 o'Clock.

ROYAL HORTICULTURAL SOCIETY.—GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5.
GREAT EXHIBITION of IMPLEMENTS, GARDEN STRUCTURES, TOOLS, and APPLIANCES, in the Wavertree Park.
Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.
NOTICE.—Entries Close June 12.
Applications for Advertisement Space in the Official Catalogue should be made at once to ADAMS AND FRANCIS, Advertising Agents, 59, Fleet Street, London, E.C.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1886 will open at the Gardens, Old Trafford, on FRIDAY, June 11, at 2 P.M. Entries close on June 4. Schedules may be had from the undersigned.
BRUCE FINDLAY.
Royal Botanic Gardens, Manchester.

SHEPPERTON and THAMES VALLEY HORTICULTURAL SOCIETY'S EXHIBITION of ROSES and other FLOWERS, FOLIAGE PLANTS, ORCHIDS, FRUITS and VEGETABLES. Special Classes open to all England.
The THIRD ANNUAL SHOW of this Society will be held on THURSDAY, July 1, in the Grounds of Mrs. Lindsay, the Manor House, Shepperton. Schedule of Prizes, Entrance Forms, &c., may be obtained of
E. RUTTER, Esq., Hon. Sec. and Treasurer.
Shepperton-on-Thames.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.
A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of
PHILIP MAC MAHON, Curator.
Hull Botanic Gardens.
The following, amongst other valuable Prizes, will be awarded:—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

ROYAL AQUARIUM, Westminster.—The STRAWBERRY FÊTE announced for July 9 and 10, and SHOW of TABLE DECORATIONS fixed for August 20 and 21, are unavoidably WITHDRAWN FOR THIS SEASON.
R. DEAN, Ealing, W.

CLEMATIS JACKMANNI ALBA (Noble).
The White Jackmanni.
The Raiser now distributes the above at the Reduced Price of 5s. each. The value of strong 2-yr. old Plants will be well understood by all.
CHARLES NOBLE, Bagshot.
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YELLOW PETITE MARIE.—A clear golden-yellow sport of the old-fashioned free-flowering Petite Marie. The above will be an excellent substitute for the yellow Calceolaria, with the additional advantage of hardiness. Plants, per dozen, 18s.; each, 2s., post-free.
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NEW ZEALAND FLAX, strong, 18 inches to 2 feet, 6s. doz.
SAXIFRAGA PYRAMIDALIS. and S. WALLISII, 3s. doz.
JAMES WILSON, Florist, &c., Greenside Gardens, St. Andrews, N.B.

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W. GROVE, Nurseryman, Hereford.

CHEAP PLANTS.—Strong and well-rooted. DAHLIAS, finest named Show, Fancy, and Pompone, 3s. per dozen, 20s. per 100. VERBENAS, White, Purple, and Scarlet, 6s. per 100. GERANIUMS, Vesuvius, Bonfire, &c., 8s. per 100; Flower of Spring, White Queen, &c., 10s. per 100. FUCHSIAS, strong, best sorts, 8s. per 100. PETUNIAS, 8s. per 100.—W. JACKSON, Blakedown, Kidderminster.

Vines—Vines—Vines.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on appliction.
The Vineyard and Nurseries, Garston, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

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MESSRS. GREGORY AND EVANS, Longlands Nursery, Sidcup, and 285, 286, 287, 288, Flower Market, Covent Garden, W.C., REQUIRE CONSIGNMENTS of CHOICE CUT FLOWERS. Messrs. G. & E., having a ready Sale for same, can ensure good Market Prices. Account sent daily.
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TOBACCO CULTURE IN ENGLAND—In view of the recent inquiries in the House of Lords, we have imported a collection of the most important varieties of Tobacco as cultivated for commercial purposes in the United States and other producing centres. Seedling Plants of the following kinds can be supplied about June 1 (so long as the stock lasts). TOBACCO PLANTS:—Seed Leaf, Florida, Yellow Prior, Hester Virginia, Pennsylvania, One Sucker, Virginian, Big Frederick, Maryland Broad Leaf, Island Broad Leaf, White Burleigh, White Stein, Yellow Orinoco, Connecticut, Glasner. Plants of any variety, price 1s. 6d. per dozen, 10s. per 100; mixed, price 8s. per 100, post-free. Carters' pamphlet upon Tobacco Culture is now ready, price 1s., post-free (gratis to purchasers of Tobacco Plants).

CARTERS', Seedsmen by Royal Warrants to H.M. the Queen, and H.R.H. the Prince of Wales, 237 and 238, HIGH HOLBORN, LONDON, W.C.

W. AND G. DROVER have 10 good Plants of their New Certificated JAPANESE CHRYSANTHEMUM "GLORIOSUM"—(vide *Gardeners' Chronicle*, December 12, 1885)—strong Plants. Reduced price, 4s. each. Orders in rotation for cash.—Nurseries, Fareham.

CYPERUS FLABELLIFORMIS.
Hardy and very picturesque variety.
One Guinea per Hundred.
Apply for the NEW GENERAL PRICE LIST.
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HOLLYHOCKS—HOLLYHOCKS.—Strong Seedlings of a fine strain, to bloom this season. 12 for 1s., 25 for 2s., 50 for 3s. 6d., 100 for 2s.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

CAMELLIAS.—A Customer wants to dispose of 14 Plants in 8 good varieties, about 4 feet; and 1 ALBA PLENA, 12 feet, in tub. For particulars, apply to DICKSON, BROWN AND TAIT, Corporation Street, Manchester.

ROSES IN POTS.—Her Majesty, the Bennett Rose, and all the best new English and Foreign varieties. All the choicest well tried sorts, in pots, 15s. to 36s. per dozen. Descriptive LIST free on application.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

CHRYSANTHEMUMS—Clearance Sale.—We offer a splendid assortment, including the newest and choicest large flowered, incurved, Japanese, or Pompon, all in healthy young Plants. New and very choice sorts, per dozen, 2s. 6d.; per 100, 15s. Good standard varieties, including fine exhibition sorts, per dozen, 1s. 6d.; per 100, 10s. 6d.; carriage free for cash.
DANIELS BROS., Town Close Nurseries, Norwich.

PRIMULAS.—PRIMULAS.—PRIMULAS.—Seventeenth year of distribution. Williams' Superb Strain, 1s. 6d. per dozen; 10s. per 100. CINERARIAS, same price. Package and carriage free. Also Double White Primulas, 6d. each.—JOHN STEVENS, The Nurseries, Coventry.

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EUCHARIS CANDIDA.
LILIUM NEILGHERENSE.
FREESIA REFRACTA ALBA.
To clear out, no reasonable offer refused
NEW PLANT AND BULB COMPANY, Colchester.

HINTS on the IMMEDIATE BEAUTIFYING of GARDENS. See Herbaceous, Alpine and Bedding Plant LISTS, free on application.
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CHARLES TURNER is now sending out strong Plants of the above. LISTS free on application.
The Royal Nurseries, Slough.

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GARDENER, Holly Lodge, Stamford Hill, London, N.

PANSIES.—PANSIES.—VIOLAS.—Of all the leading and best varieties of both Show and Fancy, having about 30,000 more than we require for Retail purposes. Just ready for blooming, in strong, healthy Plants, 20 varieties, 12s. per 100, £5 per 1000. Purchaser's selection in 50 varieties, 15s. per 100, £6 10s. per 1000. Violas in choice variety, 8s. per 100, £3 10s. per 1000. Package free, and cash with all orders to
T. FLETCHER, SON AND CO., Florists, &c., Chesterfield.

ASPARAGUS (true Giant).—Special Offer to clear ground:—2-yr., 20s.: 3-yr., 30s.; 4-yr., 40s. per 1000.
NEW POTATO (Bird's Doctor Bob), 4s. per stone.
Trade prices on application.
JAMES BIRD, Nurseryman, Downham.

SALES BY AUCTION.

Tuesday Next.

ORCHIDS IN FLOWER.—SPECIAL SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, May 25, at half-past 12 o'Clock precisely, over 300 lots of ESTABLISHED ORCHIDS in Flower from various collections. Amongs them will be found :—

Odontoglossum Alexandræ, several very fine vars.	Odontoglossum vexillarium splendens, grand form
,, sceptum, twenty-three flowers	Cœlygne cristata, Trentham variety, grand mass
,, Pescatorei, fine spotted and other varieties	Cattleya Mossiæ, superb form, probably white

CATTLEYAS, CYPRIPEDIUMS, DENDROBIUMS, MASDEVALLIAS, and many others.

On view morning of Sale, and Catalogues had.

Finchley Road, N.W.

Close to the Castle Hotel, and within a mile of either of the Finchley Road Stations.

ANNUAL SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, the Child's Hill Nursery, Finchley Road, N.W., by order of Messrs. Morle & Co., on TUESDAY NEXT, May 25, at 12 o'Clock precisely, thousands of GERANIUMS of sorts, 2000 COLEUS, 1000 CALCEOLARIAS, 2000 CHRYSANTHEMUMS of the finest sorts, 300 beautifully-grown CAMELLIAS, principally half specimens, 400 AZALEAS of sorts, 500 Tea and other ROSES in pots, FERNS, PALMS, a few ORCHIDS, LILIES, and other useful PLANTS for Decoration.

On view Saturday and Monday prior to Sale. Catalogues had on the Premises, or of the Auctioneers, 67 and 68, Cheapside, E.C.

Wednesday Next.

500 first-class CARNATIONS and PICOTEES, all named, from a well-known collection; PHLOX, PANSIES, PYRETHRUMS, and other HERBACEOUS PLANTS; MAIDENHAIR FERNS, PELARGONIUMS, GERANIUMS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, May 26, at half-past 12 o'clock precisely.

On view Morning of Sale, and Catalogues had.

Friday Next.

CYPRIPEDIUM CAUDATUM.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, May 28, at half-past 12 o'Clock precisely, a truly grand importation of CYPRIPEDIUM CAUDATUM, in extraordinary fine condition, among them distinct broad-leaved masses, and an altogether exceptional consignment; grand lots of ONCIDIUM AMPLIATUM MAJUS, EPIDENDRUM STAMFORDIANUM, very compact masses; TRICHOPILIA SUAVIS, ONCIDIUM CHEIROPHORUM, CATTLEYA TRIANÆ from Popayan, ODONTOGLOSSUM KRAMERIANUM, EPIDENDRUM MACROCHILUM ROSEUM and ALBUM, ODONTOGLOSSUMS, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next, May 26.—(Sale No. 7165.)

AERIDES SANDERIANA.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on WEDNESDAY, May 26, at half-past 12 o'Clock precisely, a magnificent importation of AERIDES SANDERIANA, in extra health. This grand Aerides is one of the very finest of the genus, and of easy free growth. Also many fine things, among them :—EPIDENDRUM WALLISI, ANGULOA UNIFLORA, ODONTOGLOSSUM RAMOSISSIMUM, CYPRIPEDIUM SCHLIMI, ONCIDIUM WELTONI, ODONTOGLOSSUM VEXILLARIUM, CATTLEYA AUREA, Warrea species, and many other fine ORCHIDS, including Three Plants of TRICHOPILIA LEPIDA.

On view morning of Sale, and Catalogues had.

Wednesday and Thursday Next.

The first portion of the COLLECTION of ORCHIDS formed by the Rev. J. B. Norman, of Whitchurch Rectory, Edgeware.

MR. J. C. STEVENS has received instructions from the Rev. J. B. Norman, who is going abroad on account of ill-health, to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY NEXT, May 26 and 27. The first portion of his famous COLLECTION of ORCHIDS, consisting principally of varieties of Odontoglossum Alexandræ and others, also C. exoniensis, C. labiata (autumn flowering var.), Odontoglossum radiatum, O. Wilckeanum, and O. liliiflorum, many fine Masdevallias, Oncidiums, and other ORCHIDS.

On view mornings of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7166.)

VALUABLE IMPORTED ORCHIDS, collected by Mr. C. Patin.

MC. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 27, at half-past 12 o'Clock precisely, NEW and VALUABLE IMPORTED ORCHIDS, comprising 100 Plants of a splendid new Lælia, also several Plants of two new Odontoglossums—Bollea Patinii and B. Laludei, and many ORCHIDS, many of which were collected in flower by Mr. C. Patin, of Antioquia; also specimen EUCHARIS, PALM SEEDS, &c.

On view morning of Sale, and Catalogues had.

Thursday Next (Sale No. 7166.)

50 fine Plants of CYPRIPEDIUM CONCOLOR var. REGINERII, without Reserve.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 27, 50 fine plants of the above new CYPRIPEDIUM (50 of which will be in bud). It is described by Professor Reichenbach in *Gardeners' Chronicle* of March 20, p. 362. See also *Garden* of March 27, p. 291. The plants will be offered without reserve.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7166).

Consignment from U. S. of Colombia.—Received direct.

MR. J. C. STEVENS will include in his SALE by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, May 27, 50 fine masses of ODONTOGLOSSUM CRISPUM var. POPAYANENSE, the type produces large branching spikes, and generally two spikes to the bulb; also some fine pieces of ONCIDIUM OLIVACIUM, H. B. Kth. (cucullatum var. macrochilum, Lindl.), just received direct from the U. S. of Colombia.

On view morning of Sale, and Catalogues had.

Valuable Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, at half-past 12 o'Clock precisely, about 200 lots of Choice ESTABLISHED ORCHIDS, from the Collection of Charles Dorman, Esq., of Sydenham, including fine plants of :—

Dendrobium nobile nobilius	Cattleya Trianæ Backhousiana
,, ,, Cooksoni	,, ,, ,, Dodgsoni
Cypripedium vexillarium	Dendrobium Ainsworthi
,, ,, Druryii	Epidendrum Wallisi
Lælia anceps Dawsoni	Cymbidium Lowii
Vanda Sanderiana	,, Parishii (very rare)
Angræcum Kotschyi	Dendrobium D'minii
,, sesquipedale	Odontoglossum blandum (Dormannianum), &c.
Odontoglossum Hrubyanum	
Cattleya Wagneri	

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower and Bud.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in FLOWER will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 9.

Mr. Stevens will be glad if gentlemen desirous of entering Plants for this Sale will please send particulars as soon as possible.

The Sale is fixed a week earlier than usual in consequence of Whitsuntide intervening.

Rare and Valuable Plants.

IMPORTANT SALE of the whole COLLECTION of RARE and VALUABLE PLANTS, selected with the greatest care and discretion by the Proprietor, Robert Ward, Esq., of Crosshill House, Baillieston, during the last twelve years, whose taste as a Horticulturist is so well known throughout the West of Scotland.

MESSRS. HUTCHISON AND DIXON have been favoured with instructions to offer the above, Without Reserve, on TUESDAY and WEDNESDAY, May 25 and 26, at Crosshill House, Baillieston, near Glasgow, commencing each day at 12 o'Clock noon, and they are confident that such a Collection, for variety and rarity, combined with a high state of cultivation, has not been offered for public competition in the West of Scotland for a considerable period.

The Collection being so well known, it is unnecessary to particularise the many Specimens described in Catalogues, to be had on application to the Auctioneers, 7, West Nile Street, Glasgow, ten days prior to Sale.

The Park, Ealing, W.

MR. JAMES W. TIDY, is instructed by Mr. Holden to SELL by AUCTION on the Premises, on SATURDAY, May 29, at 2 o'Clock, the desirable and well situate LEASEHOLD NURSERY, containing an area of about 250 feet by 70 feet, with Three Greenhouses, measuring each 40 feet by 12 feet—15 feet by 10 feet—30 feet by 14 feet, and about 40 feet of Frames, all heated by one Boiler; Potting Shed, &c. Held under a Lease of 49 years from March 25, 1878, at an annual rental of £45 There are two Cottages let at weekly rentals of 5s. and 5s. each respectively.

Particulars may be obtained of the Auctioneer, Ealing, W.

The STOCK of a NURSERYMAN will also be SOLD by AUCTION at the SAME TIME.

Kent, Mottingham (near to Eltham and Chislehurst).

By order of the Mortgagees.

The VALUABLE LEASE of nearly 80 years of the well-known ROSE NURSERY, embracing about 5 a. 1 r. of productive Nursery Ground, together with Ranges of Heated Glasshouses some 450 feet in length, pits, &c.; and a comfortable Cottage Residence with Stabling and necessary Outbuildings. Possession on completion.

MESSRS. BAXTER, PAYNE AND LEPPER will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, June 9, at 2 o'Clock precisely, the above PROPERTY.

May be viewed, and particulars with Conditions of Sale obtained of Messrs. FLAGATE AND FLADGATE, Solicitors, 40, Craven Street, W.C.; at the Mart; and of BAXTER, PAYNE AND LEPPER, Surveyors and Land Agents, Bromley and Beckenham, Kent, and 69, King William Street, E.C.

Heathrow, in the Parish of Harmondsworth, in the County of Middlesex.

About 14 miles from London, and a short distance from G.W. and S.W. Railways.

IMPORTANT SALE of valuable FREEHOLD ESTATES, all Tithe Free.

MR. E. P. NEWMAN is instructed by the Trustees under the Will of the late Samuel Hunt, Esq., to SELL, by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on TUESDAY, June 22, at 1 for 2 o'Clock, an exceedingly valuable property known as the HEATHROW FARM, with comfortable Farmhouse and numerous Buildings, forming 2 Homesteads, 16 Cottages, Orchards, and Gardens thereon; the whole comprising about 215 acres, and calculated to produce about £650 per annum. The land, which is well drained, is principally arable, has been highly farmed, and comprises a good depth of rich Loam; it is in a very clean state, and well adapted for Market Gardening, Seed Growing, or Nursery purposes, and the whole Property will be divided in 9 Lots. There are very extensive Building Frontages to good roads, and there is Brick Earth on a considerable portion of the estate. Possession on completion of the purchase.

May be viewed 7 days prior to the Sale, and particulars with Conditions and Plans can be obtained at the Auction Mart, London, E.C.; Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; and of the Auctioneer and Estate Agent, 42, High Street, Uxbridge, Middlesex.

TO BE DISPOSED OF, on easy terms, a small compact SEED BUSINESS in the West of England. Apply to Mr. HEDGES, 33, Strode Road, Willesden Green, London, N.W.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

Gravesend.

FOR SALE, Gentleman's FREEHOLD COTTAGE RESIDENCE, with well-fitted stabling, beautiful old gardens, conservatory, range of Peach houses, Vineries, Camellia house, Stove houses, Melon and Cucumber houses, numerous Pits (all new and of the best construction), Orchard and Meadow land, in all about 7 acres, with small Model Farmery and Cottage. Residence contains Billiard room, three Reception rooms, seven Bed rooms and Bath room. High and bracing situation; pretty part of Kent; a mile from Station; forty minutes by Rail from Cannon Street.

Messrs. DEBENHAM, TEWSON AND CO., 80, Cheapside, E.C. (3,542.)

TO LET and SELL, Small FARMS (Dairy and Pleasure), MARKET GARDENS, COUNTRY HOUSES and COTTAGES with Land. NURSERIES and BRICKFIELDS. See *Essex County Register*, 2 stamps.

Mr. HALTRIDGE, Auctioneer and Land Agent, Brentwood.

TO BE LET, an unusually attractive GARDEN and GROUNDS of 3 acres (kept by one man), with a capital moderate-sized House, Stabling, Cow, and Greenhouses and accessories. 12 acres can be had. Favourite part of Kent. Twenty-eight minutes by train from Cannon Street. Rent £155: no Premium. Drawing-room 36 feet by 21 feet, Billiard Room nearly as large, good dining Room, &c.

Personally inspected by Messrs. DEBENHAM, TEWSON, FARMER AND BRIDGEWATER, 80, Cheapside, E.C., who can give all details. In capital order. Lessee has occupied the Property eleven years, and has expended £2000 in improvements Worthy the notice of any one wanting a roomy, yet inexpensive house, and who can at the same time appreciate really good grounds, quite different in character and appearance to the narrow "strip" gardens usually found now-a-days in connection with modern builders' houses. (40,061.)

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

CARNATION "PRIDE of PENTHURST."—The most beautiful yellow (First-class Certificate Royal Horticultural Society). Vigorous grower, perpetual bloomer, suitable for either pot culture or borders, perfectly hardy, forces well. Healthy, well-rooted plants, established in pots, of this lovely variety, 12s. per dozen; sample plant post-free for fifteen penny stamps.

F. WEBBER, Quarry Hill Nursery, Tonbridge, Kent.

ADIATUM CUNEATUM.—Good strong Plants from boxes, fit for single pots, 7s. 6d. per 100, 4s 5s. per 1000: sample of 50 for 5s, free Cash with order.

G. ADCOCK, Florist, Rokeby Road, Brockley, S.E.

ALPINE and HERBACEOUS PLANTS a Specialty.

50,000 of the most desirable sorts, established in pots, and many other varieties growing in the open ground. To ensure flowers at all seasons, plant at once and do not delay. Special LIST of varieties on application. 4s., 6s, and 9s. per dozen. Cheaper if taken by the 100 or 1000.

R. H. VERTEGANS, Chad Valley Nurseries, Edgbaston, Birmingham.

Cheap Bedding Plants.

WILLIAM BADMAN offers as under, all from store pots, and fit for present potting off :—

TRICOLORS: Mrs. Pollock, 2s per doz., 15s. per 100; Lady Cullum, Sir R. Napier, Sophie Dumaresque, 2s, 6d. doz., 18s. 100; 12 sorts, 6s.

BRONZE: McMahon, Black Douglas, The Czar, 2s. doz., 12s. 100.

SILVERS: May Queen, Flower of Spring, Prince Silverwings, 2s. doz., 12s. 100.

GOLD-LEAF: Crystal Palace Gem, 1s. 6d. doz., 10s. 100; Happy Thought, 2s. doz., 15s. 100.

SILVER TRICOLORS in variety: best sorts, 2s. doz, 12s. 100.

ZONALS: Vesuvius, Jean Sisley, 1s. 6d. doz., 8s. 100; Madame Vaucher, Virgo Marie (white), 1s. 6d. doz., 10s. 100; Master Christine, Mrs. Lewers, Jenny Dodds (pinks), 1s. 6d. doz., 10s. 100; Waltham Seedling, 1s. 6d. doz., 8s. 100; Henry Jacoby, Bonfire (crimsons), 1s. 6d. doz, 12s. 100; Mrs. G. Smith (fine salmon), 1s. 6d. doz., 10s. 100; White Vesuvius, 1s. 6d. doz., 10s. 100.

BEST WHITE ZONAL: Queen of the Belgians, 4s. doz., 25s. 100; Niphetos, 2s. doz., 15s. 100.

LOBELIAS: Blue Stone, Pumila magnifica, Emperor William, Brighton Gem, 2s. 6d. 100, 20s. 1000.

CALCEOLARIAS: Golden Gem, 5s. 100, 40s. 1000; Camden Hero, 6s. 100.

HELIOTROPES: Jaun des Amours, Miss Nightingale (light), 6s. 100, 50s. 1000.

AGERATUM: Imperial Dwarf (blue), the best bedder, 5s 100, 40s. 1000.

TROPÆOLUM: Vesuvius, good dwarf crimson, 8s. 100; coccinea elegans, 10s. 100.

CENTAUREA: candidissima, healthy seedlings, 20s. 100.

FUCHSIAS: a good collection of single and double, 6s. 100.

PELARGONIUMS: Show and Fancy, good free sorts, 3s. doz., 20s. 100.

DOUBLES: F. V. Raspail (fine scarlet), M. Baltet (white), Madame Thibaut (pink), 1s. 6d. doz., 12s. 100.

IRESINE LINDENI, 5s. 100, 40s. 1000.

VERBENAS: see separate Advertisement.

Packing included. Terms, cash with order.

Cemetery Nursery, Gravesend.

Verbenas—Verbenas.

WILLIAM BADMAN offers well-rooted Spring-struck Cuttings of Purple King, Boule de Neige (White), Crimson King, Lustrous (fine Scarlet), Pink and Crimson Verbenas, at 6s. per 100, 50s. per 1000. Post-free 3d. per 100 extra. Terms cash, packing included.

Cemetery Nursery, Gravesend.

100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

To the Trade.

BEACHEY'S SWEET VIOLETS, finest collection in England. Clumps of following, 4s. 6d. per dozen, 32s. per 100:—DOUBLES: Marie Louise, New York variety; De Parme, Duchess of Edinburgh, Belle de Chatenay, Double Red Russian, and La Reine. SINGLES:—Argentæflora, Single Neapolitan, Odoratissima, Victoria Regina, Czar, and White Devonshire. The two following Clumps, 6s. 6d. per dozen, 40s. per 100:—COMTE BRAZZA'S NEAPOLITAN, the finest Double White; PRINCESS of PRUSSIA, the finest Single Purple known. Single rooted Crowns, half price. Terms strictly cash with order. Package free.
R. W. BEACHEY, Fluder, Kingskerswell, Devonshire.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 10 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12s. to 24s. per dozen, strong plants. Descriptive LIST on application. Plants may *now* be knocked out of pots and sent by parcel post.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

CHEAP BEDDING PLANTS.

GERANIUMS, strong autumn-struck plants.
,, Vesuvius (scarlet), Jean Sisley, Dazzler (crimson), Master Christine, Madame Vaucher, Happy Thought, 2s. per dozen, 12s. per 100, from single pots.
LOBELIA (true), from cuttings, Emperor William, 2s. 6d. per 100, 20s. per 1000
DAHLIAS, Single, named sorts, of all shades of brilliant colours, including White Queen and Paragon, 2s. 6d. per dozen, 18s. per 100, from single pots.
,, Double, best named show varieties, 2s. 6d. per dozen, 18s. per 100, from pots.
CHRYSANTHEMUMS, selection of finest named Show varieties, strong, and well-grown, 2s. 6d. per dozen, 18s. per 100, from single pots.
Package free. Plants allowed for carriage. Terms cash.
CATALOGUE gratis.
H. J. HARDY, Stour Valley Florist Grounds, Bures, Suffolk.

To the Trade

MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.
Seed Growing Establishment, Wisbech.

100,000 VERBENAS.—VERBENAS.—Our Verbenas are again this year unusually strong, healthy, well-rooted, vigorous, and clean, quite equal to previous years, which according to testimonials received, show they have given great satisfaction. Purple, White, Crimson, Pink, Rose, and Scarlet, 6s. per 100, 50s. per 1000; in 12 choice Exhibition varieties, 8s. per 100, 70s. per 1000.
Carriage free for cash with all orders to
T. FLETCHER, SON AND CO., Florists, &c., Chesterfield.

100,000 HARDY HEATHS.—These beautiful Plants are suitable for covering banks and mounds, or for rockwork. Will do planted in exposed situations, and the present is a good time to plant them. PRICES (exclusive of packing):—

	Per doz.	Per 100.	Per 1000.
A Selection of 10 varieties ..	3s. 6d.	16s.	140s.
A Selection of 20 ,, ..	3s. 6d.	18s.	150s.
A Selection of 30 ,, ..	4s. 0d.	21s.	160s.
A Selection of 40 ,, ..	4s. 0d.	24s.	180s.

JAMES SMITH AND SONS, Darley Dale Nurseries, near Matlock.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE.

4d. per bushel; 100 for 25s.; truck (loose, about 2 tons), 40s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks 25s.; sacks, 4d. each.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. per half ton, 26s. per ton in 2-bushel bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—H. G. SMYTH, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

SALT for MANURE and DESTROYING WEEDS, in any quantities.
Prices, &c., on application.
WESTON AND WESTALL, 115, Lower Thames Street, London, E.C.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18s.; ½-cwt., 9s. 6d.; ¼-cwt., 5s.; ⅛-cwt., 3s.; Tins containing 7 lb., 2s. 6d.; 2½ lb., 1s.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool.
Can also be had from all Nurserymen and Seedsmen.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

NATIVE GUANO, price £3 10s. per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4s. per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5s.
Extracts from Tenth Annual Collection of Reports.—Native Guano for Potatos.—H. S. EASTY, Great Totham, Essex:—"Used for Potatos. Good. Consider this manure about the best for Potatos. Very economical. Took about twenty prizes." Native Guano for Vegetables and Fruit Trees.—J. SMITH, Head Gardener to the Right Hon. Lord Rosebery:—"Used for Pears, Onions, Lettuces, Cabbages, Potatos, Turnips, and Fruit Trees. Onions a splendid crop. Other crops most satisfactory." Native Guano for Vines, Roses, Strawberries, Pot Plants, &c.—J. TOWNSEND, Florist, Putney:—"Used for Celery, Roses, Cucumbers, Tomatos, Chrysanthemums, Pelargoniums, Fuchsias, &c. Excellent results. Best and safest manure I have tried." D. WILLIAMS, Gardener to Lord Wimborne:—"Used for Vines, Strawberries in pots, Peaches, Asparagus, Onions, &c. Very good on all kinds tried." A. F. BARRON, Royal Horticultural Society, Chiswick:—"Without doubt a very valuable manure, and easy of application."—Orders to THE NATIVE GUANO CO. (Limited), 29, New Bridge Street, Blackfriars, London, E.C., where Pamphlets of Testimonials may be obtained.

J. JENSEN & CO.'S
NORWEGIAN
FISH-POTASH MANURE.

Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows:—

Cod Fish and Potash. Per Cent.		Herring and Potash. Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15.0
10.0	Magnesia	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
20

The Prices are £10 per Ton (bags included) for the COD, and £9 for the HERRING, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.
IN TINS.—2 lb. for 1s.; *and*
IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6d.; 56 lb., 10s. 6d.
1¼ cwt., 20s.; 2 cwt., 30s. Bags free.

☞ Apply to all Nurserymen and Florists, or to
J. JENSEN & CO.,
10, ST. HELEN'S PLACE, LONDON, E.C.

For Perfect Tennis Lawns, Bowling Greens, and CRICKET PITCHES, use

"BELLCIDE," the DAISY and WEED ERADICATOR. Manufactured by HURST AND SON, 152, Hourd-ditch, London, E. To be obtained (with needful instructions) from all Seedsmen and Florists everywhere. Sample Dredger-canister, 1s. per post.

12-oz. Sample Packets, free by post, 12 Stamps.
FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 5s 6d per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton per Truck. Sample Bag, 6s.; 3 Bags, 22s. 6d.; 10 Bags, 45s. Bags included. Fresh SPHAGNUM, 10s. 6d. per Bag.
SILVER SAND, Coarse or Fine, 52s. per Truck of 4 Tons.
WALKER AND CO., Farnborough Station, Hants.

CRESYLLINE
(PATENTED)
WILL KILL
WIRE WORMS,
AND ALL NOXIOUS INSECTS, WITHOUT THE SLIGHTEST INJURY TO PLANTS.
7 lb., 3s.; 1 Cwt., 22s. Carriage Paid.
PATENTEE and SOLE MANUFACTURER,
W. H. KEYS, Hall End, West Bromwich.

IMPORTANT TO GARDENERS.

BENTLEY'S WEED DESTROYER.
Invaluable for the Destruction of Weeds and Moss on Garden Walks and Carriage Drives.
Particulars sent Post-free.

BECK CHEMICAL WORKS,
BARROW-ON-HUMBER, LINCOLNSHIRE.

GARDEN REQUISITES.
Two Prize Medals.

Quality, THE BEST in the Market.	(All sacks included.)
PEAT, best brown fibrous .. 5s. per sack;	5 sacks for 22s. 6d.
PEAT, best black fibrous .. 4s. 6d. ,,	5 sacks for 20s.
PEAT extra-selected Orchid 5s. 6d. ,,	5 sacks for 25s.
LOAM, best yellow fibrous ..	12 per lb.
PREPARED COMPOST, best	1s. per bush., 3s. per sack
LEAF MOULD, best only ..	(sacks included).
PEAT MOULD, ,, ..	
SILVER SAND, coarse, 1s. 6d. per bush., 14s. half ton, 4	ton
RAFFIA FIBRE, best only	12 per lb.
TOBACCO CLOTH, finest imported ..	8½ lb. 5s. 6d., 18s.
TOBACCO PAPER .. (Scalloped)	32 lb., 2s. 6d., 18s.
MUSHROOM SPAWN, finest Multrack ..	5s. per bushel.
SPHAGNUM MOSS, all selected, 2s. per bush., 6s. per sack.	
COCOA-NUT FIBRE REFUSE (by Chubb's special process),	
sacks, 1s. each; 10 sacks, 9s.; 15 sacks, 13s.; 20 sacks, 17s.;	
30 sacks, 25s.; 40 sacks, 30s. Truck-load, loose, free on rail,	
25s. Limited quantities of G., special quality, granulated, in	
sacks only, 2s. each. Terms, strictly Cash with order.	

CHUBB, ROUND & CO.,
WEST FERRY ROAD, MILWALL, LONDON, E.

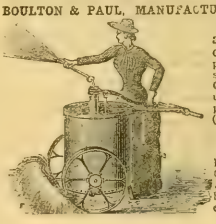
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The Original and Only Genuine.



A True Gardener's Friend.
Effectually Destroys Weeds, Moss, Dandelions, &c., on Garden Walks, Carriage Drives, Stable Yards, &c.
For Prices and full particulars, apply to
MARK SMITH,
Manufacturing Chemist,
LOUTH, LINCOLNSHIRE.

FOR SALE, Ornamental GREENHOUSE, 25 feet by 18 feet 6 inches, with Hot water Piping and Staging; also Collection of STOVE PLANTS, including large Eucharises, Adiantum Farleyense, A. gracillimum, Lomarias, Crotons, Draccenas, &c.
CHARLES HERRIN, Gerrard's Cross, Bucks.

BOULTON & PAUL, MANUFACTURERS, NORWICH.



Garden Engine and Water Barrow combined.—This implement is specially suited for Amateur Gardeners, as it can be used for a variety of purposes. CASH PRICES (carriage paid)—
15 gal size, £3 15s.
20 ,, ,, £4 5s.
25 ,, ,, £4 15s.
A very requisite for the Garden and Pleasure Grounds manufactured by ourselves. New General Catalogue sent free.

The "INVINCIBLE" LAWN MOWER.

SAMUEL EDWARDS' PATENT.
GOLD MEDAL.

GARDEN ROLLERS.
WHEEL BARROWS.
Horse-Power Lawn Mowers.
Side Delivery.

The Only Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



AWARDED the First Prize at each of the 3 Great Contests
BIRMINGHAM, MANCHESTER, and LONDON.

Is the BEST in the Market

VIDE RESULTS OF CONTESTS.

PRICES (including Grass Box),

6 in.	7 in.	8 in.	9 in.	10-in.	12-in.	14-in.	16-in.	18-in.	20-in.	24-in.	Side Delivery. 30-in.	36-in.	42-in.
30s.	40s.	50s.	60s.	70s.	90s.	110s.	130s.	150s.	170s.	190s.	£22	£26	£30

Sole Makers: JOHN CROWLEY & CO., Sheffield.

CLAY'S
FERTILISER
OR
"PLANT FOOD"

Sold in Packets, 6d. and 1s. each, and in
Sealed Bags only,

7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

CLAY & LEVESLEY,
TEMPLE MILL LANE,
STRATFORD, LONDON, E.
C. & L. also supply Crushed Bones, Bone Dust, Peruvian Guano, Sulphate of Ammonia, and Nitrate of Soda, in best qualities only.

HUGHES' SOLUBLE
FIR-TREE OIL INSECTICIDE
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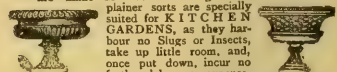
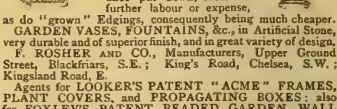
Mesh.	2 ft. wide. s. d.	3 ft. wide. s. d.	4 ft. wide. s. d.	6 ft. wide. s. d.
3-in.	3 9	5 8	7 8	11 3
2-in.	5 4	8 0	10 8	16 0
1½-in.	6 6	9 9	13 0	19 6
1-in.	10 0	15 0	20 0	30 0



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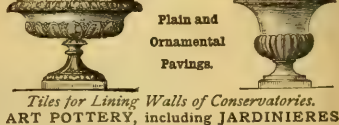
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AËRIDES SANDERIANA.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. SANDER, on WEDNESDAY, May 26, at half-past 12 o'Clock precisely, a magnificent importation of AËRIDES SANDERIANA, in extra health. This grand Aërides is one of the very finest of the genus, and of easy free growth. Also many fine things, among them :—EPIDENDRUM WALLISI, ANGULOA UNIFLORA, ODONTOGLOSSUM RAMOSISSIMUM, CYPRIPEDIUM SCHLIMI, ONCIDIUM WELTONI, ODONTOGLOSSUM VEXILLARIUM, CATTLEYA AUREA, Warrea species, and many other fine ORCHIDS, including Three Plants of TRICHOPILIA LEPIDA.

On view morning of Sale, and Catalogues had.

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FRIDAY NEXT.

CYPRIPEDIUM CAUDATUM.

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HORTICULTURAL BUILDERS and HEATING ENGINEERS,



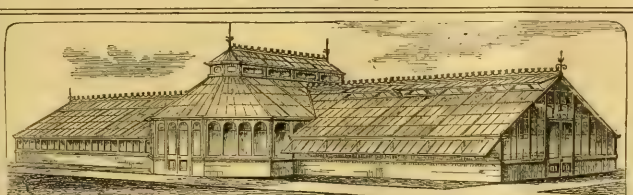
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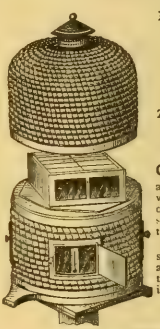
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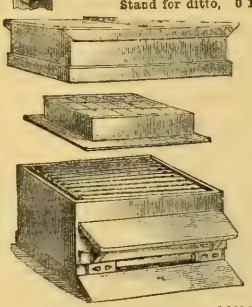
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THE

Gardeners' Chronicle.

SATURDAY, MAY 22, 1886.

SPRING AT EATON HALL.

NOT alone in Chaucer, but in all the "makers" down to the days of the Elizabethans, there are few descriptions of Nature that are not inspired by the month of May. Gawain Douglas, one of the latest of the Chaucerian school, like the great master, begins his strain by describing how he woke on a May morning. It is not to be explained by the fact that those who came after Chaucer feared or had not the genius (perhaps the time was not ripe for such a poet) to depart far from his models. Rather, perhaps, it was a kind of superstitious feeling of starting under the cheerfullest auspices. It is not fair to Chaucer to say that his feeling for the variedness and religion of Nature is limited, and that it is only the birds, the flowers, the "schowres swote," and the other products of spring that he delighted to sing.

The above prelude may seem out of place, but never before did my vagabondish spirit so thrill with response to the call of springtime, or run so lovingly back to the old versemakers, as in the long approach through park and woodland to the Cheshire home of the Grosvenors. If such a day as we had could be constant, and such a place was turned into a people's park, the followers of the flowers, who

> "Deliten in no businesse
> But for to hunte, and hawke, and play in medes,"

would be an overwhelming majority. The pleased carol of the birds in the thickets, and the sunny sheen of the glad light green leaves, were sufficient to delight any earthly wight, and straightway suggested these well-known lines of Dan Chaucer—

> "Save certeynly whan that the moneth of May
> Is comen, and that I here the foules synge,
> And that the flourës gynnnen for to springe,
> Farewel my boke, and my devocioun."

The mansion at Eaton is one of the finest in stances of Gothic architecture used for the adornment of a dwelling-house to be found. The grounds around are in excellent taste, and the views from the side on which lies the wing which the family occupy stretch across typical English rural scenery to a fringe of woody upland. One of the pleasantest features of the near prospect is the perfect order in which everything is kept. This is also the case in the garden, where not a vestige of neglect, untidiness, or imperfect work can be seen.

The number of glasshouses is very great, and the plants in all—thanks to incessant watchfulness and the skilful use of paraffin—innocent from any insect pests. All throughout, the standard of cultural skill is quite parallel with the latest and best practice. Mr. Sellwood and his staff have every reason to expect the genuine praise which has so often been given them in the horticultural Press. The cool Orchid-houses glowed with masses of colour, most prominent of all being the golden hues of Dendrobium thyrsiflorum, of which there was a goodly number of plants. The gem of the collection at present in flower was a large D. Pierardi,

latifolium. This specimen was not only one of the largest, but the best coloured of any I had hitherto seen elsewhere. Attractive as this house was it produced a very small tithe of the mental pleasure which the tropical Water Lily tank gave. The transcendently pure colouring of Nymphæa cœrulea and N. Devoniensis caused quite an æsthetic thrill. Round the tank was a setting of Ferns, through which protruded large Nile Lilies (Arum). Adjoining the glass, between it and the path, is another rocky bed of Ferns, and on the right and left as you enter are masses of Spiræa palmata. This is, no doubt, one of the best managed houses of the kind in any private garden in England. The effect of the varied colouring given by the plants above mentioned, and their unique beauty as grouped at Eaton, intensified the often expressed enquiry why the tropical Nymphæas are so little cultivated. I know of no house in which a true gardener could take a more enthusiastic delight. The beauty of it would grow upon him day by day. What scope there is, too, for his fancy! Something will have to take the place of the Spiræas and Callas later on in the season, if the Water Lilies and Ferns are not to be, as they full well might, the only attractions.

This house opens out into a corridor 400 feet long. From the roof hang down Tropæolums and other creepers. One side of the path is lined for nearly the whole distance with Schizanthus pinnatus. This is one of the most valuable plants for such purposes known. The plants attain to a great size, and last in flower for close upon three months. The flowers are not only interesting to study closely, but when viewed as a mass present a soft glow of colour that contrasts well with the brighter hues of the Genistas, Acacias, Callas, and Roses that are planted on the opposite side of the path. The Schizanthus is a plant easy to cultivate; those of your readers who have it not lack one of the freest flowering and easiest forced cool conservatory plants.

It would be a long paper that would do justice to the immense number of store plants that are grown at Eaton. Suffice it here to say that there are some splendid Cycads, and that the ordinarily seen flowering plants, such as Clerodendron Balfouriand Tabernæmonta coronaria attain to dimensions hardly equalled elsewhere. *Il Vagabondo.*

THE LATE PROF. MORREN.

We avail ourselves of the kindness of M. Pynaert to lay before our readers a portrait of the late Prof. Edward Morren, of Ghent. (See p. 649). It is not necessary for us to advert again to the untiring labours of our late friend, consummated by the completion of the Botanical Institute at Liége, nor to the sad void he leaves in horticultural matters. The gardening press of Europe has recognised his merits as a professor, a journalist, and a man of business. Nothing is left for us but to cherish his memory, and follow his example as we best can.

New Garden Plants.

ADIANTUM BIRKENHEADII, *n. sp.*

Fronds triangular, tripinnate, membranaceo-herbaceous, glabrous; pinnæ alternate, distant, long-stalked, bipinnate in the lower part, more closely set nearly or quite sessile and simply pinnate upwards, the lowest pinnules overlying the rachis; upper pinnæ gradually shorter, the frond terminated by a rather elongated simply pinnate apex; pinnules of the simply pinnate portions about half an inch long, shortly pedicellate, the larger ones obtusely oblong-trapezioid, frequently dilated at the apex so as to become obliquely blunt-lobed, the lower side entire and sligtly curved, the upper edge cut into shallow lobes; the apical pinnule is small, triangular-lobate, with a cuneate base; pinnulets small, bluntly trapezioid, scarcely more than one-fourth of an inch long; veins free, flabellately forked, ecostate; sori numerous, medium sized, rounded or roundish reniform, one set in the notch of each marginal lobe; stipes elongate, slender, ebeneous, quite smooth; caudex tufted.

This handsome Maidenhair Fern has a distinct aspect which separates it from all the species of Adiantum at present known. It was raised by the Messrs. Birkenhead, of the Fern Nursery, Sale, near Manchester, who have done so much for the introduction and popularisation of Ferns in that district as to well deserve the compliment intended by the selection of the name here proposed. It was raised some three or four years ago, and has continued quite true to its peculiar characteristics, one of the most striking of which is the dilatate-lobate development of the apices of the larger and more conspicuous pinnules. The stipes are rather long and slender, but nevertheless, owing to the profusion of the fronds, the plant is close and compact in habit. The specimens before us are about 2½ feet high, including a stipe of 12 inches, and they are about a foot broad in the lower and widest part, the outline being deltoid, tapering up to an almost caudate apex. The pinnæ are alternate and the lower ones long-stalked and distant—2 inches apart—so that the lower portion of the frond appears rather thinly furnished, but the upper portion is more closely set with pinnæ and pinnules, and near the top the lowermost pinnule on each pinna overlies the rachis. In the lower portion, where the frond is tripinnate, the secondary pinnules or pinnulets are considerably smaller than in the other parts of the frond, but they have the same bluntly oblong-trapezioid outline, wanting only the dilated lobate apices which are so prominent in the other parts. The sori are not large, but they are numerous, and are of a roundish form with a notch on the upper side, where they are affixed to the sinus of one of the small lobulets by which the margin is indented; sometimes they are rather widened out so as to become almost rotundate-reniform. The veins are free, and are flabellately forked, the furcations commencing at the short pedicel of the pinnules, and being continued in a dichotomous manner so as to fill the whole space, the sori being developed on the apices of those which run out to the sinuses of the marginal lobes, sometimes on a solitary veinlet, sometimes between two combined veinlets, the latter being the sori which approach the reniform outline.

The fine tufted habit of growth and the open ramification of the frond give it a handsome appearance as a specimen plant, to which its bright deep green colour also contributes. The fronds here described have been sent to us—the earliest in 1884—by the Messrs. Birkenhead, who are the fortunate raisers and possessors of the plant. *T. Moore.*

NARCISSUS JUNCIFOLIO-MUTICUS (Mr. Buxton's Narcissus).

Leaves narrow, linear, bright green, ⅛ inch broad, channelled all down the face. Peduncle slender, terete. Umbel three-flowered, two upper flowers ascending, lower horizontal; spathe of two lanceolate membranous valves above an inch long; pedicels 1—1½ inch long. Ovary green, oblong-trigonous, ⅛ inch long; tube greenish-yellow, subcylindrical, ⅝ inch long; expanded limb horizontal, bright lemon-yellow, 1½ inch in diameter; segments ovate-oblong, much imbricated, ½—⅝ inch long, nearly ½ inch broad. Corona obconic, orange-yellow, ½ inch long, above ½ inch in diameter at the entire erect throat. Anthers all on one level opposite the base of the corona. Style overtopping the anthers. Strongly scented.

This was discovered by E. W. Buxton, Esq., Knighton, Buckhurst Hill, growing in company with N. juncifolius and N. Pseudo-Narcissus var. muticus, and is no doubt a hybrid between them. It is a handsome plant, sweet scented, flowering with us at the latter end of April. I am indebted to Mr. Barr for the specimen from which the above description was made.

I take the opportunity of putting on record, at the same time, descriptions of the three principal hybrid types now in fashion—Leedsii, Barrii, and Burbidgei. Though they have been repeatedly exhibited they have not been described. My notes are taken from plants now flowering at Kew (first week in May) which may be considered as representing a fair average in each case, but of course these hybrids always shade off gradually towards their parents in both directions, and under each a crowd of garden forms with English names are in circulation.

N. Leedsii ×, Hort.—Leaves linear, twisted, glaucous, 1 foot long, ½ inch broad. Peduncle 1-flowered, ancipitous, a little longer than the leaves. Flower about horizontal; pedicel 1 inch long; spathe one-valved, membranous, clasping the pedicel and ovary; ovary oblong-trigonous ⅓—½ inch long; tube cylindrical, greenish, ¾ inch long; segments patent, oblanceolate-oblong, cuspidate, milk-white, 1—1¼ inch long, ½—¾ inch broad at the middle, not imbricated. Corona pale sulphur-yellow, ½ inch long, ¼ inch diameter at the throat, plicate in the upper half, crenulate at the erect margin. Anthers all six placed opposite the base of the corona. Style overtopping the anthers. Probably a hybrid between poculiformis and some form of incomparabilis.

N. Barrii ×, Hort.—Leaves linear, twisted, glaucous, above a foot long, ¼ inch broad. Peduncle ancipitous, 1-flowered, about 1 foot long, with one horizontal or ascending flower; pedicel and spathe as in incomparabilis. Ovary oblong-trigonous, ½ inch long; tube greenish, sub-cylindrical, 1 inch long; segments oblong, pale sulphur-yellow, spreading horizontally, slightly imbricated when fully expanded, 1¼ inch long, ¾ inch broad at the middle. Corona obconic, ½ inch long, ¾ inch broad at the throat, lemon-yellow below, orange-yellow at the throat, crenulate, strongly plicate in the upper half. Stamens, all six opposite the base of the corona. Style just overtopping the anthers. No doubt a hybrid between incomparabilis and poeticus, the former predominant.

N. Burbidgei ×, Hort.—Leaves linear, glaucous, twisted, above 1 foot long, ⅓—½ inch broad. Peduncle one-flowered, ancipitous, 1 foot long, flower horizontal or ascending; pedicel and spathe as in poeticus. Ovary oblong-trigonous, ½ inch long; tube green, cylindrical, 1 inch long; segments pure white, spreading horizontally, not imbricated, oblanceolate, oblong, cuspidate, 1¼ inch long, ½ inch broad. Corona obconic, ½ inch long, ¾ inch broad at the throat, very plicate, crenulate, the base yellow, the edge bright red, anthers and stigma placed in the corona. No doubt a hybrid between poeticus and incomparabilis, the former element strongly predominating. *J. G. Baker.*

ONCIDIUM ANNULARE, *Rchb., f.*

Baron von Hruby of Peschkau has kindly sent me a magnificent inflorescence of this rare and fine plant. The panicle has a length of 2.74 metres. The top bears a six-flowered raceme; one branch has three flowers, four branches have four flowers: hence the whole inflorescence boasts of twenty-five flowers. The plant was sent to me in 1883, by Mr. F. Sander. The inflorescence is therefore one of the finest productions of Peschkau, where Mr. V. Faus, the enthusiastic grower, has the good luck to be the helpmate of the enthusiastic possessor. English growers should remember that, with everything at hand and the finest examples and the best advice standing at their command, their work is far easier than that of those who live at wide distances from any orchidic emporium. *H. G. Rchb. f.*

EPIDENDRUM FRAUDULENTUM, *n. sp.**

A great surprise! You see an Epidendrum, whose whole habit is quite that of a narrow-leaved Epidendrum elongatum. Yet the flowers do not belong at all to that section, but to that of the Schistochila carinata. There were only two species known with such small flowers, E. decipiens, Lindley, and E. calanthum, Rchb. f. Both are widely distinct in the lip. The flowers are light rosy, column and inferior part of ovary purple. Keel and calli yellow. It is called "fraudulentum" (deceiving), since nobody would think at first sight that it belonged to the "carinata" group, since it looks as if it were a member of the "tuberculata" section, or even, in the absence of leaves and peduncles, as if it were an ally of Epidendrum blephariste um, Lindley, itself. It was most kindly given by Sir Trevor Lawrence, Bart., M.P., P.R.H.S. *H. G. Rchb. f.*

MAXILLARIA LEHMANNI, *Rchb. f.*

At length this is at hand in a fresh state, having been kindly sent me by Mr. W. Bull. It is a very

* *Epidendrum fraudulentum.*—Aff. Epidendro calantho, Rchb. f. foliis ligulatis angustis; racemo densiusculo; sepalis tepalisque oblongo-ligulatis acutis, labelli lamina triloba, lobis lateralibus antrorsis extus fimbriatis lobo mediano emarginato subretuso antice fimbriato, carina per discum, angulis geminis ante basin; androclinii laciniis integerrimis, lateralibus semirhombeis. Ex horto celeberrimo ill. eq. Trevor Lawrence. *H. G. Rchb. f.*

stately thing, far superior to Maxillaria grandiflora, Lindley, and bearing a very long peduncle exceeding a span in length. The flower is as large as that of a middle-sized Lycaste Skinneri, and snow-white, of fine firm substance. Lip and column are differently coloured. The side lobes of the lip are light reddish-brown and of the lightest ochre colour outside, with fine dark Horse-Chestnut-coloured veins. Inside it is covered with fragile hairs which proceed from loose cells containing a good store of starch. As to this I have indicated it for Maxillaria anatomorum; the statement, however, not being quite a quarter of a century old (Von Mohl and Schlechtendal, *Botanische Zeitung*, 1852, p. 936) no one has taken notice of it since, neither of the provision of starch in the calli of Elleanthus, likewise indicated by me. The anterior lobe of the lip is triangular, beautifully wavy and sulphur-coloured. This affords a fine mark of distinction from Maxillaria grandiflora. Column snow-white, with sulphur inside, covered there with numerous brown streaks. I regard the plant as being worthy of recommendation to all those who know that Orchids comprise more than Cattleyas and Lælias, Odontoglossums and Masdevallias. *H. G. Rchb. f.*

The Exhibition at the Royal Aquarium, Westminster.—The Manager of the Royal Aquarium Company states that the exhibitions fixed for July 9 and 10 and August 20 and 21, are unavoidably withdrawn for this season, owing to the number of exhibitions arranged to take place during the summer.

SPRING FLOWERS AT BELVOIR.

A visit paid to this interesting place in the late spring is scarcely the right time to see Mr. Ingram's happy adaptation of gardening at its best; the glow of Tulips, Crocus, Hyacinth, and Narcissus, is then only visible in their remains, seen amongst the still gay if somewhat soberer tints of later blooming hardy plants.

The great gaps that were scooped out from the tall wood surrounding the hill on which Belvoir Castle stands have completely lost the air of newness and unfinish inseparable from the experiment at the beginning, the diverse landscapes having year by year acquired the look of age. The rocks which afford the many plants employed a resting-place have also the appearance of age, and therefore of naturalness, betraying but small traces of man's handiwork—perhaps the best criterion of their having been the work of a man of taste and knowledge.

The various views seen across from one side of the circuitous bank to the other are prettily diversified; trees of perpendicular growth, mixed up with round-headed ones, occupy the middle distance, and being judiciously planted secure variety, while they are thinly enough distributed, that no part is quite hidden by them from view. Of shrubs and the like which succeed here may be mentioned Olearia Haasti, Bambusa metake, B. japonica, Azara microphylla, Daphniphyllum glaucescens, and Eleagnus macrophyllus, the two last being plants of recent introduction that are likely ere long to be generally grown where choice evergreens are valued. Turning to the beds of spring flowers, that were still full of flowers, in rare and happy combinations, and which are distinct from, although forming an adjunct to the rockery gardens proper, we found several planted with Oxlips of many colours, the stout flowerheads standing up well above the foliage; around these was a broad band of Aubrietia, and then one of white Daisies to serve as an edging. Red Tulips had been dotted over these beds but their glories, as we have said, had waned. Another bed was of white Arabis, the centre part filled with Polyanthus—Scilla sibirica dotting over the mass of snowy Arabis. A bed remarkably effective, and rare as to its components, was filled with Erica herbacea carnea, and margined with Heuchera Richardsoni.

In some beds were noticed a pretty double white form of Anemone nemorosa, very effective in combination with other rose-coloured and blue flowers. This plant is one of Mr. Ingram's particular favourites. One large bed was planted with Megasea ligulata, Anemone apennina, and Cardamine pratensis florepleno. Another was filled with small flowering plants of Rhododendron Nobleanum præcox, Helleborus niger and Narcissus; but of these none remained in flower excepting the first. The Belvoir yellow Wallflower and good forms of Forget-me-Not were frequently employed in the parterres and on the different rockeries.

Some plants, nicely adapted for salient points on or the centres of beds are Agapanthus floribunda,



EDWARD MORREN.

varieties of Hemerocallis, flava and fulva, Salix herbacea, and Funkia subcordata.

No class of plants is more useful in a garden than that that thrives and blooms in the shade of and under large trees. Here Megasea Stracheyi, usually regarded as spring-tender in the open, flowers beautifully under shade, the blooms never suffering from frost. Saxifraga muscoides purpurea is freely employed in small beds; its compact and abundant flowering habit making is indispensable as a pink flowering plant for dotting lines and masses.

The pale pink-flowering Daphne cneorum was found in some of the smaller beds, and a pretty sweet-scented subject it is, full of flower at this season. A bright crimson Aubrietia, from Max Leichtlin, of Baden-Baden, is a charming thing, being totally distinct in colour from any other of the varieties of Aubrietia, all of which are found here. Primula obconica is found to be hardy enough to withstand the winter, and is used plentifully with very good effect in small designs. Doronicum austriacum grows strongly, and found use in one instance as the central mass in a bed, with Myosotis cœrulea underneath and surrounding it. The contrast was capital. Another plant, reputed to be tender, Lachenalia pendula, is also hardy at Belvoir, and at the time of our visit it had been flowering for two months. One part of the rockeries is overrun with species of Gentiana, but of them all G. acaulis was the only one remaining in flower. This is a most interesting section of the garden at an earlier period of the spring. Species and varieties of dwarf Phloxes are plants no rock garden can do without, and we found P. Nelsoni, P. prostrata, and the beautiful white masses of P. nivea employed abundantly, and in parts covering large portions of the rocks. Lithospermum prostratum made charming patches of blue in sundry places; this is a plant better adapted for the rockery proper, and is not so serviceable in flower beds. The varieties of Grape Hyacinth are rarely disturbed purposely, and run about unrestricted in certain parts of the garden. Iris pumila, rich purple; I. olbiensis, I. biflora minor, purple and crimson, all of them of dwarf habit and beautiful combinations of colour, are equally at home. One of the best dwarf shrubs observed was Amygdalus nanus, some plants of which formed masses of glowing rich pink flowers, their height not exceeding 3 feet, the habit compact, and form globular, the shape possibly being the result of pruning in slightly.

A promising attempt has been made to imitate a Swiss flower-mead—that is, a grassy slope is planted with Narcissus, Oxlips, Primulas, Myosotis, Gentians, Iris, &c.; this, when the various plants and bulbs have become thoroughly established will be a pretty feature; but plants establish themselves slowly on dry steep banks from which the moisture—none too abundant in an English spring—runs off, leaving but a small quota to nourish the bulbs and roots of the flowers.

In alpine regions there is abundance of rain, and the water there is constantly trickling from snow in higher regions, either over or under the surface, in spring and summer, at a time when we are enduring the parching effects of east winds for weeks together. The reserve garden at Belvoir, as is well known, is very rich, as it needs must be, to provide material for such a system of gardening as is there carried out. The Narcissi are cultivated in great numbers, for this and for cutting for indoor use, and we found all the best varieties under cultivation and doing well. The enjoyment of hardy plants in flower there can scarcely ever be said to know any end, for the big beds and borders in the reserve contain an enormous collection, which carries on the flowering season to the latest period of the autumn, to recommence in January in mild seasons.

We see here an instance, and a rare one, of the many uses in garden decoration to which hardy plants and bulbs can easily be put; and if the example thus set could be more frequently copied our gardens would not be so comparatively bare and uninteresting in the spring months as many are at present. After seeing a well furnished bed of Narcissus, Hyacinths, or Scillas carpeted with some of the many subjects adapted for the purpose one cannot but remark how ill-managed is most of the bedding in our public gardens in London and elsewhere, in which beds of bulbs may be seen totally devoid of all other vegetation save that furnished by the bulbs themselves, which is never of a luxuriant nature.

Not a tithe of the subjects employed at Belvoir finds space in our brief notice, scarcely any but the more prominent plants that were in bloom at the time being taken, those that precede and follow the present month finding no place.

PLANT NAMES.

UNDER the heading "Iris cengialti" Professor Foster has discussed the important question, What is the best plan for giving names to plants, especially varietal names? His remarks come home to many amateur gardeners who have selected a favourite class amongst garden plants to which they have paid special attention. Each of us finds, as our knowledge of a variable species or genus grows, that there is many a form without a distinctive name, which for variety of flower, or time of flowering, or difference of habit, is attractive to us, and which we wish to cherish and perpetuate in our collection. We like to have a name for it by which to distinguish it, and perhaps to distribute it amongst our friends. Of course this naming may easily be overdone. A friend, who had a specialty for British Ferns, once told me that he had raised from spores 2000 varieties of Hart's-tongue, all quite distinct, and to each of which he had given a Latin name. Such specialists are not always the best judges whether such and such a flower ought to be named or not; and as regards garden plants, at any rate, the general public of gardeners are considered the best judges of the merits of a flower or plant. It is in the hope of being saved from an overwhelming number of worthless named plants that committees for naming plants of merit have been formed. The most recent creation of this kind is the Narcissus Committee: we may soon want an Iris Committee, but first we must see whether the Narcissus Committee has been or is likely to be a success. Its success depends in a great measure on the nurserymen, if they loyally co-operate in carrying out its resolutions. Much has already been done, and will continue to be done, to clear away the confusion which has long surrounded this class of plants.

I propose, therefore, to say a few words about naming generally, but referring more particularly to Narcissus names, that being the only class which has hitherto been honoured by having a special committee appointed for the purpose. In saying that we leave the determination of genera and species to botanists, I may be allowed privately to express a hope that the example of that great man, Bentham, will be followed by the botanists of this generation, and that they will not make the science of botany repulsive by unnecessarysubdivision: but this makes the question of varietal names all the more important. On what principle, then, are we to give these varietal names? Are we to distinguish between wild or natural varieties, and varieties known to have had their origin in gardens? Professor Foster seems to think that we ought not to do so, and calls the action of the Narcissus Committee "unphilosophical and misleading" because they proposed to give a Latin form to the names of wild varieties, whilst to those of garden origin trivial names were to be given. I do not dispute Professor Foster's authority in matters of philosophy, but briefly apologise for what the committee has done. When a plant is found with every appearance of being entirely wild, and isolated from other species of the same genus, and especially when it is found in quantity, it may fairly be inferred that it is an evolutionary development of an ever-changing type. In gardens, however, where many species and varieties of the same genus are grown together, the chances are ten or more to one that any new form that may be observed is due to mixture of pollen and is merely a cross; and this is the reason why the committee wished to make a distinction in the names. The proposal was first made by Mr. Elwes, and supported by Mr. Baker, before I joined the Narcissus Committee, but I may plead that I have zealously endeavoured to carry out the rule. Unfortunately so many inconsistent names are already prevalent that it is too late to now make the rule general.

We may fairly, however, consider what rule shall be applied in future. I would propose to limit all names to three in number—the generic, the specific, and the varietal. I deal only with the last, and in deference to Professor Foster I will no longer insist on having two kinds of varietal name, one for wild the other for garden varieties, and I suggest that both gardeners and botanists shall be contented in future with two Latin names for each plant, leaving it to committees or to specialists to give the third when wanted, but let the line be drawn absolutely at three names. As an example of what I mean, let botanists do generally, what Asa Gray has done with American Asters, and other genera—when he finds a large number of plants to be what he calls "confluent in series," the extremes being too widely separated to be covered by one, two, or less than ten or twenty species, he draws up intermediate sets of characters, sufficient in number to make convenient halting grounds for species, leaving it free to every one to assign individual plants to the name which seems nearest to their characters.

Next, what is the best form of varietal name? Professor Foster seems to prefer giving descriptive names. This may be philosopical in theory, but it is generally a failure in practice. Either the names must be appallingly long, or they fail to be sufficiently descriptive to denote fully the genus or species they indicate, to the exclusion of all others. Generic names formed from the surnames of distinguished botanists are reasonable enough, but better still are neatly arranged combinations of letters as mere generic symbols—such unmeaning words as Neja, Gaura, Priva, Tellima, are preferred by most of us to Heterochroma, Trichocoronis, Chrysothamnopsis, Pleuricospora. Next Professor Foster suggests geographical names, neat and elegant enough. The prettiest lines in Virgil are undoubtedly those rich in geographical epithets, but they are very often utterly misleading. We know too well that in the case of a rare plant to label it with its exact habitat is the certain way to lead to its extinction. Hence both nurserymen and amateurs are driven to mislead in this respect.

They tell us, for instance, that an Anemone, which they import by the bushel from the vineyards of the Basses Pyrenees is "found rarely in the mountains of Greece," which may, after all, be true enough—and they relegate to Japan the habitat of a variety which is found on a Welsh mountain. The fact is that short words, no matter whether taken from names of men or women, or places, or nothing, may be supplied in quite sufficient quantity to furnish any number of varietal names for any species of plant; and if the givers of names would be reasonable in their selection, these names would be distinctive and sufficient for all purposes. Instead of such descriptive names as Narcissus incomparabilis Leedsii argenteus aureo-tinctus, and N. i. L. sulphurescens marginatus major, or such honorary names as Narcissus Ajax bicolor the Rev. Jeremiah Bishopstoke Camelbury, we might be contented with Narcissus Milo, N. Maia, N. Creon.

Unfortunately some nurserymen seem to think that the better the plant the longer its name ought to be, and some gardeners hold the converse to be true; but I know that these formidable names deter more customers than they attract, and there is hardly a class of florists' flowers of which two-thirds of the names might not be done away with without damage to the interests either of gardeners or nurserymen. *C. Wolley Dod, Folkestone, May 15.*

CLIMBING PLANTS AT PANSHANGER.

IN the same house as the Beaumontia grandiflora (see p. 595), and on the opposite side of it, Combretum purpureum, Clerodendron Balfouri, Thunbergia Harrisii, Dipladenia amabilis and D. boliviensis, are planted out and trained up the front to the roof. All these grow and flower well, D. boliviensis keeping on blooming most of the year. The Bananas, which, as already said, are planted out in the bed that occupies the whole of the house except the path running round it, thrive and fruit well. Eucharis amazonica in large numbers is grown in this house, and does splendidly, mostly in big pots; they are stood about on the bed amongst the Bananas. The way they succeed under the shade of the Bananas, and far from the glass, shows the exceptional character of this Eucharis in its dislike to being grown under the influence of full light, such as beneficial to most plants. Artocarpus Cannoni is now fruiting here.

Mr. Ruffett is very successful with many other climbing plants. In the conservatory are a number of unusually fine examples. The house is a lofty span-roofed building with a back wall on the north side some 18 feet high. Here Bignonia Cherere covers a large space right up to the roof with dense wreaths

of drooping shoots that bloom profusely; Cassia corymbosa, a grand plant, occupying a large space, one of the best subjects for a conservatory wall; Berberidopsis corallina, an evergreen plant from Chili, nearly, if not quite, hardy in some places, but desirable for a conservatory where its drooping racemes of red flowers are very effective; Mandevilla suaveolens does finely here, where there is plenty of room for it to extend; Clianthus puniceus — of this there is one of the finest examples I have met with bearing quantities of flowers, backed with dense healthy foliage, a condition in which it is not always seen; Adhatoda cydoniæfolia, usually grown in a higher temperature than it gets here; Thibaudia acuminata, the flowers of which are very effective; Brugmansia suaveolens—a very fine example of this showy plant was in bloom, covering a large space. Of Habrothamnus, the crimson and the yellow-flowered kinds are both immense specimens and in fine condition: the former is almost continually in flower, the yellow kind, often met with under the name of Cestrum aurantiacum, blooms three times a year: both are well suited for a house like the Panshanger conservatory, where, from the heavy character of the building, there is a deficiency of light for many things.

In one of the stoves, Dipladenia profusa was nicely in flower. When well managed so as to get them to commence blooming thus early in the season, Dipladenias have few equals, as they keep on flowering continuously until late in the autumn. The beds of Tulips in the flower gardens near the mansion made a fine display, some 20,000 being grown. *T. B.*

Colonial Notes.

THE SOUTH AFRICAN FLORA.

Ever since the time of its first settlement the Cape has been a constant source of pleasure and delight to the botanist and the gardener. Though Cape plants have somewhat gone out of fashion of late years, it is still probably true that no single country in the world has contributed so largely to European conservatories and gardens as the Cape of Good Hope. The despatch of plants, indeed, began before the settlement of Van Riebeek, for we find that one Huernius, a missionary *en route* to the East, had sent to his brother at Leyden several curious plants, which were figured by Stapel in his edition of *Theophrastus' History of Plants*, published at Amsterdam in 1644. These are the earliest known figures of Cape plants, and amongst them was the well known Orbea variegata or the Lion's Rump, which was called a Fritillary, and an Oxalis which, with equal reason, was styled a Trifolium! But those were the days before Linnæus had arisen with master mind to reduce to order the rapidly increasing stores of vegetable forms. In 1772 came Thunberg, the father of Cape Botany; in 1810, Burchell; in 1825-1834, Ecklon, Zeyher, and Drège. All these made journeys of thousands of miles, and of several years in duration, exploring the vegetation of the country. Besides them were others of less note, and a host of gardeners and collectors of seeds and living plants. From 1775 to 1835, Cape plants may be said to have been quite the rage. The conservatories, temperate, houses, and gardens of England and the continent, teemed with the Pelargoniums, Heaths, Proteas, and other handsome flowering shrubs, and the lovely bulbous plants of Iridæ, Amaryllideæ, and Liliaceæ; and the pages of the *Botanical Magazine*, and other similar periodicals, were filled with figures and descriptions of them.

The public taste of that day was amply justified. Perhaps the recently increasing exportation of flowering bulbs may be taken as an indication that the fashion will be revived. But though fashion in flowers may be variable, the interest of science is more permanent; and notwithstanding the diligent exploration of the country for the last hundred years, the constant discovery of new forms, even up to the present day, has largely occupied the attention of systematic botanists.

The South-western Region.

It is the South-western region which has for the most part furnished that large quantity of garden plants which I have referred to above, and which is the home of what has been for the last hundred years popularly known as the Cape flora. It is an angular littoral strip, bounded on the west coast by the Olifant River and the mountains near it, but including properly the mountain range from Cedarbergen up to the Khamiesberger; on the east by the Van Staden's mountains; and inland by considerable mountain chains under various names. Its greatest width does not exceed 80 miles, and probably averages not more than 50 miles. The inland mountain chains referred to may average 4000 feet in height, attaining sometimes (Great Winterhoek) 6800 feet. The surface of the Region is extremely diversified; sandy and bushy tracts alternating on the coast with grassy downs, and vast mountain slopes of the most barren appearance when lying a short distance inland, but clothed with an immense variety of small plants.

The soils are varied, the exposed rocks being chiefly granite, clayslate (Malmsbury beds: Silurian?) and sandstone (Table Mountain sandstone: Devonian); with insignificant exceptions, tertiary deposits are absent, occurring only in low places and of shallow depths. Throughout South Africa the influence of soils upon the distribution of plants appears to be less important than that of climate and exposure.

Rivers are few, and badly supplied with water except in winter; practically none of them are navigable.

The mean annual temperature of Cape Town is 16°.25 C. (61°.25 Fahr.); of the six summer months, 20° C., and on the six winter months 12°.5 C.; the mean annual humidity of the atmosphere 71·83 per cent.; the mean annual rainfall in the city itself is 23·80 inches; but in the suburbs it reaches in some localities to 60 inches. Further inland the temperature is higher, the extremes greater, and the humidity and rainfall much less. At Worcester, situate about 60 miles from Cape Town, the mean annual temperature rises to 16°.93 C.; the humidity is 54.40 per cent.; and the average rainfall is 12.47 inches. About two-thirds of the whole rainfall takes place during May, June, July, and August; and the months of January to April are usually very dry. The whole rainfall of this region attains its maximum near Cape Town, and diminishes rapidly as we proceed northward up the west coast.

The prevailing aspect of the vegetation of this and the two next Regions, thus of the whole Cape Colony except the Eastern Coast Region, is that of a number of low-growing scattered shrubs of a dark or bluish-green hue. With considerable exceptions this is, nevertheless, the appearance which most commonly meets the eye. Almost everywhere the "bush" is present. There are vast tracts called the "Boschjesveld" (bush country), from the uniformity of this appearance. There the chief bush is the "Rhenosterbush" (Elytropappus rhinocerotis); but these are intermingled with others, and in general they belong to the most various orders. All have usually very small leaves, or of greyish-green colour, or so covered with a dull coloured indument as to produce at a distance a generally sombre aspect. On the coast the bushes are larger, ranging from 4 to 8 feet. The following genera are some of those which by their abundance largely contribute to make up the floral landscape:—Mundtia, Pelargonium, Agathosma, Celastrus, Cassine, Phylica, Rhus, Cyclopia, Borbonia, Aspalathus, Cliffortia, Berzelia, Brunia, Staavia, Tetragonia, Aster, Athanasia, Stœbe, Metalasia, Erica, Simocheilus, Myrsine, Euclea, Lycium, Lobostemon, Salvia, Penæa, Passerina, Leucadendron, Protea, Leucospermum, Serruria, Myrica, &c. Interspersed among these are numerous plants of the orders Orchideæ, Iridæ, Amaryllideæ, Liliaceæ, with scattered tufts of Restiaceæ, sedges, and grasses.

In the deep ravines of the mountain sides are dwarf trees, growing closely, with dark foliage. Few indigenous trees attain a greater height than 25 to 30 feet; and amongst these is the Silver Tree (Leucadendron argenteum), peculiar to the Cape peninsula. Forests are only met with towards the Knysna and Zitzikamma. These are chiefly composed of species of Podocarpus (Yellow-wood), Ocotea (Stink-wood), Pteroxylon (Sneeze-wood), Olea (Olive), Elæodendron (Saffron-wood), Cunonia (Rood Els), Virgilia (Keurboom), Olinia (Iron-wood), Cussonia, Ficus, Grewia, Curtisia, Sideroxylon (Milk-wood), Rhus, &c. Those of which the vernacular names are quoted yield excellent timber. Trees of the Podocarpus occasionally attain a height of 50 to 60 feet; but few of the others exceed 25 to 30 feet.

There is little change in the aspect of the vegetation even at greatly varying heights on the mountains; and near the coast especially it is much less affected by altitude than is the case in Europe. On Table Mountain some species are found from the bottom to the top, having thus a vertical range of 3500 feet; and there are many with a range of from 1000 to 2500 feet.

The flowering season begins about the end of May, immediately after the first winter rains. The numerous species of Oxalis first make their appearance, and these are soon followed by great numbers of Iridæ, Amaryllideæ, Liliaceæ, and other bulbous plants, besides Mesembryanthemums and various Compositæ. On the mountains the flowering begins later and continues longer; but though few plants may be found in flower in March and April, yet they are never wholly absent. The imported Oak has shed its leaves for a period of six or eight weeks only (during May and June) before the new growth begins. Everything points to the fact that the true winter, the period of rest, is here the dry season, viz., March to May; as soon as rain falls even the winter temperature is sufficient, and vegetable life is at once aroused to activity.

A few of the most beautiful, striking, or curious vegetable forms of the region may here be mentioned, the majority of the examples being taken from the highly representative and rich flora of the Cape peninsula, lying on its western extremity. The palm of beauty must be awarded to the Disa grandiflora, the grandest of Southern terrestrial Orchids, as Cypripedium spectabile is of the Northern hemisphere. This is abundant on the streams of Table Mountain, and is found also on the Hottentot's Holland Mountains, thirty to forty miles inland. Other fine Orchids are Satyrium cordifolium, a brilliant orange; S. carneum and S. erectum; Disa longicornis, a lovely blue; D. secunda, the delicate white D. fasciata, and others; Pterygodium acutifolium, a fine deep golden-yellow; Ceratandra chloroleuca, and C. Harveyana; the brilliant blue Disa (Herschelia) graminifolia (long known as H. cœlestis) and the allied D. venusta, and D. purpurascens; and, finally, the small beautifully fringed spider-like Bartholina pectinata and B. Ethelæ. Close upon these presses the so-called "Arum," the Richardia africana, with its pure white spathe—almost as common an ornament of all moist low-lying ground as the common Dock is an accompaniment of English ditches. The Proteas are universal objects of admiration, and few things can surpass P. cynaroides, [with its flesh-coloured involucres, P. speciosa, P. coccinea, and a few others. Next come the Heaths, whose names would be legion. The most beautiful, and those with the largest flowers, are denizens of the mountains lying between the Hottentot's Holland range and the town of Swellendam, being especially abundant about Caledon and Genadendal. On Table Mountain Erica cerinthoides, E. mammosa, E. coccinea, E. spumosa, and E. hirta are among the finest, the latter sometimes making a whole mountain side glow with its warm pink tints. There are probably 350 species of true Heaths found in this region alone. Amongst Compositæ, Gazania has some fine species, while Helichrysum vestitum, Helipterum spp., and Phœnocoma prolifera, are amongst the showiest of the everlasting flowers, the heads of the first-named being gathered, dried, and exported in large quantities to Europe as Immortelles. Dimorphotheca annua has gay white rays, and, with some species of Arctotis, makes the fields look bright in spring. In the large order, Leguminosæ, Podalyria calyptrata, with its large rosy flowers, may, perhaps, lead the list, and Virgilia capensis, Cyclopia spp., Hypocalyptus obcordatus, and the wide spread Sutherlandia frutescens, are amongst the few handsome plants of an order not remarkable for its beauty in this region, but which consists for the most part of inconspicuous shrublets. The Acacias are deficient, only A. horrida occurring sparingly in the drier parts of the region. The Pelargoniums are abundant, and several species, P. cucullatum, P. betulinum, &c., are very handsome. Oxalises with white, red, and yellow flowers, stud the fields in early spring. The numerous species of the tribe Diosmeæ, including Diosma, Barosma (some of which, as B. crenulata, &c., furnish the Buchu of medicine), Agathosma, Adenandra, &c., are mostly confined to this region. The attractive Rochea coccinea is one of the chief

ornaments of Table Mountain; while the Cotyledons contribute some of the most curious plants of the region, especially C. fascicularis, with its smooth, thick, swollen tree-like stem; very abundant in the neighbourhood of Worcester and Hex River. Near the Tulbagh Waterfall occurs the rare and pretty Ixianthes retzioides, and in the same neighbourhood the curious Roridula dentata, a shrubby Droseraceous plant with extremely viscid leaves, which the farmers hang up in their houses in order to catch flies. The showy Polygala oppositifolia and P. myrtifolia are both widely distributed. Plants parasitic on the roots of others take a prominent position in our flora. They include several handsome Harveyas, white, purple, and orange; and in other orders the Cytinus dioicus, the curious Hydnora africana, the foul-smelling Sarcophyte sanguinea, and Mystropetalon spp. Labiatæ are not plentiful, but Salvia paniculata and S. nivea are fine species. Turning to the Monocotyledons, Orchideæ have already been mentioned, Irideæ are abundantly represented in handsome species of Romulea, Geissorhiza, Ixia, Gladiolus, Watsonia, Babiana, &c.; Amaryllideæ in Amaryllis Belladonna, Nerine, Brunsvigia, Vallota, &c.; Scitamineæ in the peculiar and noble Strelitziæ. Liliaceæ are very varied and numerous. The most conspicuous are the Aloes—A. plicatilis with an arborescent trunk, attaining a height on the western mountains of 12 to 15 feet; the beautiful blue Agapanthus, the star-like Ornithogalums, Kniphofia aloides, and many others. Prionium Palmita is a remarkable plant, with the flower of a Juncus and the habit of a Pine-apple, which in some parts fills the beds of certain western rivers, and reaches a height of 8 or 10 feet. Some Restiaceæ and Cyperaceæ attain to 6 or 7 feet, and often form a striking feature in the landscape. Ferns are not very abundant, chiefly occurring in the deep ravines, where the arborescent Hemitelia capensis is found several feet in height; and Todea africana forms a handsome plant. Osmunda regalis is sparingly met with, while Pteris aquilina is more commonly scattered on the open hillsides.

It is in the orders and genera of plants exclusively or chiefly found here that the most striking differences are to be found between this and the other regions of South Africa. An immense mass of observations has been collected, but has not yet been tabulated. It must suffice to say that this region is distinguished by the comparative abundance of the orders: Rutaceæ, Bruniaceæ, Ericaceæ, Penæaceæ, Proteaceæ, Irideæ, and Restiaceæ; by the tribe Stilbeæ of the order Verbenaceæ; and by the large proportionate number of the following Cape genera, of those richest in species, belonging to other orders: Pelargonium, Oxalis, Phylica, Aspalathus, Cliffortia. *From "Sketch of the Flora of South Africa," by Harry Bolus, F.L.S.*

THE LARCHES OF WESTERN NORTH AMERICA.

Two species of Larix inhabit the great Columbian Basin—the region between the Rocky Mountains on the east and the Cascade Range on the west and north of the mass of mountains which under the general name of the Blue Mountains of Oregon, connects with short and often broken chains these two great mountain systems. The best known and most generally distributed of these Larches was discovered on April 19, 1826, by David Douglas, at the Kittle Falls of the great north fork of the Columbia, near what is now known as Old Fort Colville, then a trading post of the Hudson Bay Company. He speaks of it in his journal as Pinus Larix, and therefore, no doubt, mistook it for the European Larch. Certainly he made no effort to introduce this tree into England, as he would have done had he suspected that his discovery was one of the most important and interesting he had ever made, and that he was standing, for the first time, in the presence of one of the great timber trees of the continent.

His specimens showed neither fruit nor flowers, and were therefore naturally referred by Hooker in the *Flora Boreali Americana*† to Larix americana, with a note, however, upon the remarkable length and thinness of the leaves. Two or three years later Nuttall, in his transcontinental journey, detected this species "in the coves of the Rocky Mountains on the western slope toward Oregon;" that is probably somewhere in the region of Flathead Lake. He found the cones half grown, and at once recognised an undescribed species, upon which he bestowed the name of Larix occidentalis.* The next mention of the Western Larch appears in Dr. Newberry's "Report upon the Forest Trees of Northern California and Oregon," published in vol. vi. of the *Pacific Railroad Reports*. He first saw this tree in the valley of the Des Chuttes River on September 3, 1855; and the late Dr. Lyall, the botanist of the British Boundary Commission, found it growing abundantly upon the mountains which stretch along the northern boundary of the United States. Previous to the last five or six years few botanical travellers have explored the mountains of Columbian Basin, which since the days of Douglass, too, has been quite beyond the range of the professional seed collectors. The Western Larch, therefore, although known for more than forty years by Nuttall's description and figures, was never introduced into cultivation until 1880. Mr. Turner Watson, who in the summer of that year made a long journey through the Columbian Basin, for the purpose of studying the forests of that region, sent home to the Arboretum a number of seedlings of this tree. These are now growing here, or have been very sparingly distibuted among a few of the principal European tree collections. Seeds of this species have never, so far as I know, been collected. Parlatore's description in the *Prodromus* leaves little to be said of the botanical character of the species. The young shoots, however, are not always "glabriusculis," but not rarely quite densely hairy pubescent, and the cones appear stipitate upon the primary branches by the lengthening of the spur-like crested secondary branches upon which they are produced. The bark of the Western Larch, upon young trees, that is, up to about 150 years old, is thin, scaly, and dark grey or brown, while upon fully-grown specimens it is often 4 or 5 inches thick, and is broken up into plates 18 to 24 inches long, and 12 to 20 inches wide; it is then bright cinnamon-red, and can hardly be distinguished from the bark of old trees of Pinus ponderosa, with which the western Larch is often associated. This tree often attains a height of 200 feet, with a diameter of trunk of 4 to 5 feet.* It does not form forests, but is found scattered upon dry elevated beaches, or moist mountain slopes, at an elevation of 2500 to 5000 feet. Its usual and most common associates are the Pseudo-Tsuga and Pinus ponderosa.

The wood of the Western Larch is of great value; it is very hard, solid, strong, and durable in the ground. It is much stronger and harder than the wood of either the Eastern American or the



FIG. 145.—LARIX OCCIDENTALIS.

† *Identifications.*—Larix occidentalis, Nuttall, *Sylva*, iii., p. 143, t. 120; Newberry, in *Pacific Railroad Rep.*, vi., p. 59, f. 24, 25; Lyall, in *Journ. Linn. Soc.*, vii., p. 143; Sargent, in *Rep.* 10, *Census U. S.*, vol. ix., p. 216; *Woods of the U. S.*, p. 134. Pinus Larix, Douglas, in *Companion Bot. Mag.*, ii., p. 109 (Nat. L.). Pinus Nuttalli, Parlatore, in De Candolle's *Prodr.*, xvi.², p. 412.

* David Douglas found a specimen at Kittle Fall with a trunk 30 feet in circumference. I have never heard of any other that exceeded half that size.

European species. It is found to be superior to all North American coniferous woods in fuel value, with two exceptions only—those of Pinus serotina and Pinus cubensis, both very resinous woods. It is more elastic than the wood of any other North American tree, and six North American trees only yield stronger wood under transverse strains. Its power to resist longitudinal compression is very great. It is surpassed in this, however, by the wood of the Robinia and the Macluri, by one of the Mexican Acacias, and by the very hard woods of a dozen of the West Indian trees of semi-tropical floras.

The power of the Western Larch wood to resist direct lateral indentation is comparatively not so great. It is surpassed in this quality by the wood of 190 American trees. The Western Larch is one of the most stately and picturesque of American Conifers, and its general cultivation is certainly worth attempting in Northern and Central Europe, on account of its beauty, and for the wonderful qualities of its wood. It may be expected to grow wherever the Pseudo-Tsuga and the Pinus ponderosa flourish, and

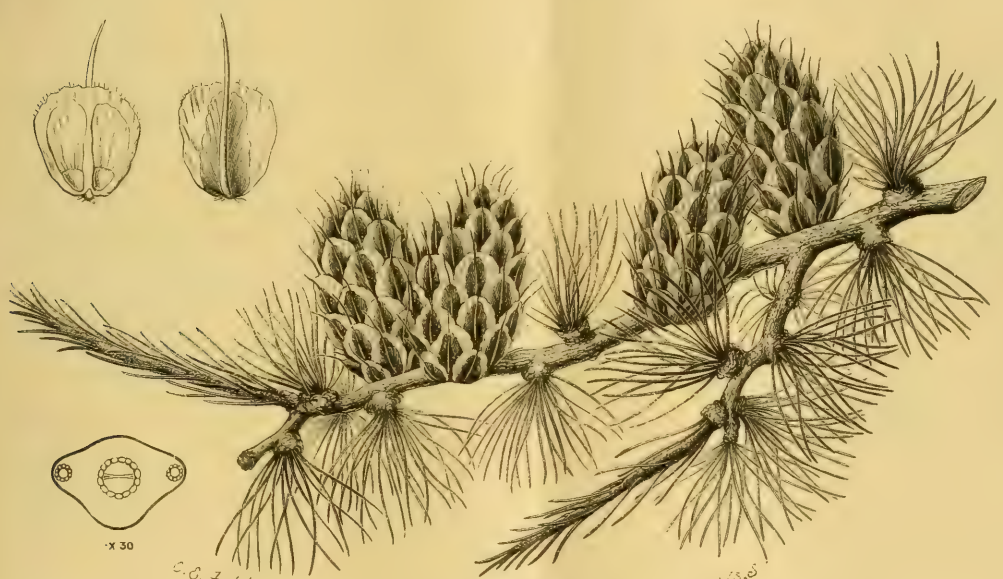


FIG. 146.—LARIX LYALLII.

should be planted in thoroughly drained soil, in as dry a situation as possible.

The second of the Western American Larches, Larix Lyallii,* is a rare and local tree, still very imperfectly known. Dr. Lyall, the botanist of the British Boundary Survey between 1858 and 1861, detected this species growing near the timber line at an elevation of nearly 7000 feet in the Cascade Mountains, and on the Galton Range, which is not laid down upon any map I have seen, but which Mr. G. M. Dawson, of the Canadian Geological Survey, tells me lies just east of the Rootamie River in longitude 115° on the 49th parallel, "a massive range parallel to the Rocky Mountains, with snowy peaks south of the boundary line," and in the Rocky Mountains. It was a long time before this tree was seen again. Mr. Watson failed to rediscover it in his journey of 1880 and three years later.

Mr. Cenby and I hunted for it in vain upon the high mountains and passes of the Rocky Moutains to the north-east of Flathead Lake, close up to the British boundary, where Dr. Lyall's vague indications led me to suppose it was to be looked for. During the same summer, however, Mr. T. S. Brandyce being engaged in studying the forests on the eastern slopes of the Cascade Mountains in connection with the Northern Transcontinental Survey, was fortunate enough to rediscover Larix Lyallii at the timber line upon Mount Stewart, an immense spur of the Cascade Range pushed out to the eastward into the plains of the Columbia. Later in the same summer Mr. H. B. Ayers, of the Transcontinental Survey, collected a small branch of Larch without leaves or fruit in Grave Creek Pass of Northern Montana, which I doubtfully refer to this species. Professor Macoun, too, has, I believe, found Larix Lyallii north of the boundary in British Columbia; but I have not yet had an opportunity of examining his specimen. Mr. Brandyce visited the Mount Stewart locality again in the autumn of 1885, for the purpose of securing a trunk of this tree for the Jesup Collection of American woods in the American Museum of Natural History. In this undertaking, I am glad to be able to report, he has been entirely successful in spite of the lateness of the season and the almost insurmountable difficulties of getting a heavy log out of these steep and very broken mountains into which no trail yet penetrates, and that his fine specimen is now safely in New York.

Larix Lyallii seems certainly very distinct from L. occidentalis, although it is not impossible that a fuller knowledge of these two species will bring forms to light which will serve to unite them. As now known L. Lyallii will be readily distinguished by its shorter quadrangular leaves, stouter secondary branch or spurs, by the dense white tomentum which covers the young shoots and leaf-buds, and by the larger sessile cone, either green or bright red while young. These when fully grown, are from 1½ to 1¾ inch long, by 1⅝ to 1¼ inch wide. The broader scales are ciliatæ in the margin, while those of L. occidentalis are quite naked. The bracts even in old dried cones are dark reddish-purple in colour and much longer in proportion to the length of the scales than in L. occidentalis, truncate or acuminate and ending in a longer and stouter mucro. The cones of L. occidentalis often remain upon the branches until the second or even the third year, while those of L. Lyallii fall early in September of the first year. The true seedlings, and it still remains to introduce Larix Lyallii into cultivation.

The figures upon pp. 652 and 653 (figs. 145, 146) are from drawings made by my associate, Mr. C. E. Faxen. *C. S. Sargent, Arnold Arboretum, March.*

* *Identifications.*—Larix Lyallii, Parlatore, *Ennm. Sem. Hort. Reg. Mus. Flor.* 1863; *Gard. Chron.*, 1863, p. 916; Lyall, in *Jour. Linn. Soc.*, viii., p. 143; Sargent, *Rep.* 10, *Census U. S.*, vol. ix., p. 216; *Woods of the U. S.*, p. 135. Pinus Lyallii, Parlatore, in De Candolle, *Prodr.*, xvi².², 412.

THE TIMBER TRADE.

SINCE last writing on the current prices of timber little or no change for the better has taken place, the prices remaining low, and the demand anything but promising. For clog-wood there is still a steady run, and timber merchants generally are willing to give from 8*d.* to 10*d.* per foot for Alder and Birch. Even those of small sizes—say from 6 yards to 8 yards in length, and sawn to 3 inches diameter in the small end, realise from 3*d.* to 3½*d.* per lineal yard. Sycamore of first-class quality—which, by-the-bye, is now getting scarce in this country—will readily fetch 2*s.* to 2*s.* 6*d.* per foot, while that of ordinary dimensions, say to square 12 inches or 14 inches, brings 1*s.* 8*d.* per foot lying in the wood. Elm and Ash, as well as Oak, are occasionally in demand, but principally by local builders, the two former selling at 1*s.* 8*d.* per foot, while the latter fetches a similar or perhaps usually

rather better price. Lately we supplied some picked trees at 2*s.* per foot, but this is an unusual price. Larch wood has fallen in price considerably of late, the highest we can at present procure being about 1*s.* per foot, unless on certain occasions, when boat-builders are pressed for timber, and offer 2*d.* or 3*d.* extra. Scotch Fir, Spruce, Austrian and other Pines, are hardly saleable at any price, a large quantity purchased nearly a twelvemonth since by a dealer being not yet resold, unless, indeed, a few loads at 5*s.* for firewood. Hardwood props, too, are a drug in the market, those of 6 yards length and smaller being almost unsaleable. Firewood still remains at the usual and fair price of 5*s.* per cartload in the wood, while branches fetch, without trouble, about half that price. Large faggots are disposed of, not publicly, but for home consumption, at 10*s.* per 100; the small, or such as are in use for fire-lighting, the larger being used for oven-heating, at 8*s.* per 100. These prices are, however, too low, but as cost price and not profit is wanted, they remain unchanged.

General Notes on Trees and Shrubs.

Our death rate for the past severe winter, is not, as was expected, large, the Laurustinus alone amongst hardy, or what are ranked as hardy shrubs, having been severely injured. In numerous instances these have been cut to the ground, but this is not a serious nor a permanent injury, for few plants bear hard cutting back better than the Laurustinus. The snowstorm worked some damage amongst choice Conifers, others by snapping overladen branches, but this we partly averted by a timely shaking of the most valuable trees and shrubs. Close-branched, dense-foliaged Conifers fared worst, but in no case has there been much cause for lamentation. The Cryptomerias looked well in their snowy mantle, more particularly C. elegans, the bronzy tint of which contrasted with the snow was strikingly beautiful. How different the drooping foliage of Picea Morinda looks when made fluffy and silky by the frost, compared with its "draggled" appearance after a day's rain. This is observable in no other Conifer—I mean so distinctly—and has on several occasions formed the subject of comment.

We may safely predict that the present season will be remarkable for the quantity of flowers produced by trees and shrubs. The latter in particular—including Rhododendrons, Pyrus in variety, Kalmias, Azaleas, Cratægus, and many others—promise well, the swelling buds betokening extreme floriferousness.

With the Hillsborough Pernettyas we are somewhat puzzled, for although well-berried specimens were at first received and remained on the plants for a considerable time, yet not a fruit has been produced for the last two years. This absence of berries is somewhat difficult to account for.

Those who wish to have well-berried specimens of the Aucuba would do well either to grow male and female plants side by side or resort to artificial fertilisation. *A. D. Webster, Penrhyn Castle, North Wales.*

ORCHID EXHIBITION AT MR. B. S. WILLIAMS'.

The spacious Palm-house at the Victoria and Paradise Nurseries, Upper Holloway, is well adapted for the display of Orchids in bloom, which is now a settled annual event there. The smaller plants being removed from each side, and the fine specimen Orchids arranged in their places, the effect of the flowers and the beauty of the whole display is greatly enhanced by the background of handsome foliage, and the elegant baskets of Ferns suspended overhead arrange well with the long drooping sprays of Odontoglossum citrosmum, the wax-like yellow Cattleya citrina and other Orchids with pendulous flowers hanging among them. In every floral arrangement of this kind some special feature attracts the eye at the first glance, and in Mr. Williams' fine show it is the stately character of the many beautiful and distinct forms of Lælia purpurata, and the equally fine specimens of Vanda tricolor and V. suavis for which this establishment is noted. Of the forms of Lælia purpurata the finest of the dark varieties is L. p. Williamsi, which is wonderfully rich in colour; L. purpurata var., with pure white petals and maroon lip, tipped with rose; and another, an improvement on the variety, named Russelliana, with creamy-white sepals and petals, and rosy labellum veined with crimson. Beside these there appears a very fine new form with rose-veined sepals and petals and crimson lip; the plant in growth and flower is quite intermediate between L. Boothiana and L. purpurata. Of the numerous and well-flowered Vandas, the true old V. suavis and the Dalkeith variety of V. tricolor are at present the best. As might be expected the Odontoglossums play an important part, and the most conspicuous is the favourite O. Alexandræ, which appears in profusion. O. Pescatorei, O. vexillarium, O. tripudians, O. luteo-purpureum, O. Roezlii, O. gloriosum, O. Hallii, O. nebulosum, O. cordatum, a distinct form of O. polyxanthum, &c., are also well represented; and one plant of a very singular species, O. claviceps, with narrow incurved segments, yellow barred with brown; in appearance something like Oncidium phymatochilum, which appears further on.

In bloom among the Cattleyas are some magnificent forms of C. Mossiæ, the one with broad crimson labellum edged with white, named C. M. marginata, being the best as an individual flower; although the old form, of which one specimen has some two dozen flowers, is very handsome. C. Mendelii, C. Lawrenceana, C. Morganæ, and C. Skinneri are also well in bloom.

Very telling in the display are some of Mr. Williams' old exhibition plants. One of them, Dendrobium densiflorum, has about twenty-five spikes; several of D. thyrsiflorum are equally fine; Cypripedium Lawrenceanum has thirty flowers; a dwarf Odontoglossum cirrosum has two fine spikes with six to eight branches; two varieties of O. luteo-purpureum have each six strong spikes in bud; Masdevallia Veitchiana gigantea has over twenty flowers, and so on. Other plants of great beauty and interest in Mr. Williams' exhibition are Cœlogyne Massangeana, with two spikes of twenty fine flowers; the rare and pretty Oncidium tetracopis, O. pyramidale, O. Suttoni, O. concolor, O. Marshallianum, with very fine dwarf heads of bloom; O. Baueri, O. macranthum, O. sarcodes, Cypripedium selligerum majus, C. Warneri, C. superciliare, C. vernixium, C. ciliolare, C. albo-purpureum, Houlletia odoratissima, Lælia elegans, Trichopilia lepida, Masdevallia Chelsoni, M. Harryana lilacina, Miltonia Warscewiczii in fine varieties, Burlingtonia fragrans, B. venusta, Calanthe Dominyana, C. veratrifolia, Saccolabium guttatum, Dendrobium Jamesianum, D. crassinode, and other Dendrobes, Epidendrum paniculatum, E. Stamfordianum, E. vitellinum majus, Lycaste plena, &c.

A rough branch covered with Bromeliads and Orchids in bloom is placed at one end of the house; and a pretty collection of Sarracenias and Ouvirandra fenestralis (Lattice plant) at the other form interesting objects. The whole display at Holloway, of Orchids in flower, assisted by the scarlet spathes of the many fine specimens of Anthurium, the large specimens of blue Francisceas, the curious and handsome Ochna multiflora, and the fragrant plants of white Gardenia, form a sight not to be missed. In the nursery numbers of Orchids are in bud; the house of Pitcher plants, the Amaryllis now in flower, the fine collection of Ferns, the houses of New Holland plants in bloom, are all of special interest.

The Flower Garden.

BEDDING-OUT.

Colour in the Garden.—In arranging plants in beds they should be planted for harmony and also for contrast. Contrasting colours are black and white, indigo and orange, red and blue, and so on. Harmonising colours are those different shades which insensibly blend into each other, as yellow next to white, violet to blue, and orange to red. Crimson, rose, pink, and the different paler shades to white planted in the order mentioned produce harmony. One bed may be so planted as both to harmonise and contrast. Plant the centre with a silver-leaved Pelargonium, then a belt of yellow, then blue, then orange, then Tropæolum magnificum, and an edging of Koniga variegata. In this composition you have both harmony and contrast. The lighter shades of colour are always best planted in the centre of the flower garden, and the fiery colours towards the outside. If the crimsons or scarlets be placed in the centre, the eye is instinctively drawn towards them, and the other lighter tints become in a measure lost. Care must also be taken that the colours are evenly balanced. There must not be a preponderance of one thing here and another there, or else the effect will be spoiled. There must also be due regard paid to height. The taller flowers should be placed in the centre, and there should be a gradual falling towards the outside. Should your garden be a square or a parallelogram the four corner beds would look well planted with Dahlias. Should there be three beds down the sides and ends the centre ones would look well planted as subtropicals. This gives boldness to the arrangement, and will also serve to tone down the masses of colour in other parts.

Planting the Beds.

This may now be safely proceeded with unless in late districts. Let the hardier sorts be put out first. A good old plan is to lay the Pelargoniums on their sides when planting, as this preserves them from being blown about and broken by the wind; unless associated with taller growers, then for uniformity's sake they must be placed in an upright position. Staking will in that case have to be resorted to to keep them safe. Calceolarias, if intended to be pegged down, should also be similarly treated. Where intended for lines alongside of Pelargoniums a good plan is to stick a few pieces of old birch broom around each plant as it is planted. If watering be necessary a good watering before the holes are entirely filled in will be found a good system. Then cover over with dry soil. None of the water thus applied is lost. Verbenas, Petunias, and all the hardier sorts should be got out in rotation, leaving Heliotrope, Ageratums, and tricolor Pelargoniums for mid-season. Avoid treading on the beds if they be in a wet state, and use boards for standing upon always. If the ground be heavy and stiff nothing is gained by putting in the plants too soon. If plants have been turned out into pits as previously directed they will lift with fine masses of fibry roots. In lifting these a steel fork or spade should be pushed underneath their roots, and each plant carefully lifted with the hand. Never allow them to be dug out with trowels. *W. M. Bailie, Luton Hoo Gardens.*

Plants and their Culture.

MISCELLANEOUS PLANTS.

Mignonette should be shifted, and the shoots stopped as may be required for large plants, liberal shifts being given, using rich soil, for if stout, fresh foliage be not retained on the plants, however fine the bloom may be, they never look well. A cool pit, and in which the plants can be kept near the glass, is the best place for them, giving plenty of air, and some weak manure-water when growing. A little more seed of Mignonette should now be sown. Chrysanthemums must be shifted on as they get established, stopping all plants that are required for bush or dwarf training. The plants should now be placed out-of-doors, where they can have a little shelter from winds and late frosts. Carnations also, which have been forced and potted on some time ago, should be placed in the open now, standing them on coal-ashes, but placing cocoa-fibre about the pots. The pits will come in useful for growing Bouvardias, Celosias, Eranthemums, Ferns, Coleus, &c. *A. Evans, Lythe Hill.*

Hardy Fruit Garden.

MORELLO CHERRIES.

These should be disbudded in exactly the same way as has been recommended for Peach trees, leaving only a terminal shoot to keep the fruit swelling, and one at the base to take the place of the now bearing shoot as soon as the fruit is gathered. Blackfly, if not already present on the trees, will no doubt soon put in an appearance, if the trees are not kept well hosed or syringed immediately the fruit is set In this district Morellos give promise of a splendid crop, and may now be considered safe from late spring frosts. It is not often that the soil about the roots of Morello Cherry trees becomes dangerously dry

at this date, grown as they usually are in cool shady aspects; but should the weather continue dry a thorough soaking of water immediately the bulk of the blooms are set will assist the fruit in reaching the stoning stage without dropping off.

Raspberries.

The young shoots at the base of the fruiting canes should be thinned out to the requisite number, according to the method of training adopted.

Strawberries.

On light soil the plants begin to feel the effects of the dry weather, and should be watered if possible. Those mulched early are in a much better condition at the root as regards moisture; this is a practice which should not be overlooked where watering cannot readily be carried out. To obtain fine fruits for dessert from old plants, the flower-spikes should be freely thinned out, so as to limit the number of fruits allowed to develope on each spike. As the fruits commence colouring under the glass lights temporarily placed over plants, in the open to secure an early supply, the frames or hand-lights should be closed in time to catch a little sun-heat, and instead of syringing the plants, close with a dry atmosphere, watering being done during the early part of the day. *G. H. Richards, Somerley.*

Fruits Under Glass.

PINES.

In order to maintain the fruit in an upright position fruiting plants should have two strong sticks, one on each side of the plant, stuck firmly in the soil, and the fruit secured thereto by two sets of ties of strong string fastened above and below the fruit, the top ties being fixed in a downward notch in the sticks at an angle of about 30° from the fruit, to admit of the latter growing erect without being hampered. Remove from Queen plants all suckers but two of the best, which must be retained for stock, leaving all that show on plants of Providence, Charlotte Rothschild, and Cayennes, which varieties are shy in producing suckers; and as soon as gills appear at the base of the fruit they should be removed.

Giving Water at the Roots.—Examine the soil in which the plants are growing every week to ascertain their condition at the roots, and should water be necessary, give sufficient tepid liquid manure to successional as well as to fruiting plants, to thoroughly moisten the soil; at the same time pouring some of it into the axils of the leaves for the nourishment of the young roots coiled round the stem. Where there is not a supply of liquid manure at hand, Beeson's manure at the rate of 9 lb. to 36 gallons of water is a capital substitute; indeed, in my opinion, it is preferable, as it imparts not only a darker green and better texture to the leaves, but also a brighter and richer colour to the fruit.

Ventilation.—It is hard to lay down rules as to the time Pine-houses and pits should have air admitted in the morning or shut off in the afternoon, seeing that so much depends upon the weather and the character of the structures in which the plants are growing. Assuming, however, that the weather be bright and that the houses are of modern erection and air-tight, from this date until the end of June I should recommend putting on a little air in the morning when the thermometer registers 80°, and shutting it off at from half-past 3 to 4 o'clock in the afternoon with plenty of atmospheric moisture at the same time, when the temperature may be allowed to run up to 100° in houses in which the fruits are swelling.

Syringing.—Atmospheric moisture must be applied sparingly while the fruits are in flower, and air admitted more freely during that stage of the plant's growth, so that every pip of the fruit may be properly developed, after which a liberal supply of moisture should be distributed over the plunging material and paths, and about the collars of the plants, on bright mornings, and slightly overhead—the latter at closing time in the afternoon, taking care in doing so to avoid as much as possible letting water from the syringe into the "crowns," as that would cause them to become too large, and thereby detract from the size and appearance of the fruit.

Shading.—Shading being more or less necessary for the well-doing of the plants—providing it be light—from the middle of April to the middle of September, during the prevalence of bright sunshine. We use Eddy's No. 5 shading attached to rollers, so that it can be easily put on and taken off. This should be put on at about half-past 10 o'clock in the morning, and be removed about 3 o'clock in the afternoon.

Vineries.

The month of May is the busiest month in the whole year in this department. The Vines require being looked over twice a week by way of pinching the lateral and sub-lateral growths a couple of joints beyond the branches; and Grape thinning from sunrise till sunset is the order of the day until every bunch has been properly thinned, commencing the operation as soon as the berries are set, and sticking to it until the last bunch is finished. The skilful and careful Grape grower will not allow any superfluous bunches or berries to remain on his Vines one day longer than he is absolutely obliged to do, as it should not be his object to needlessly exhaust their energies.

Grape Thinning.—This operation requires skill and care on the part of the operator, as well as a knowledge of the size to which the different varieties are capable of attaining to. In thinning the bunches the crown berries should be left, and at rather more than 1 inch apart, giving a little more space to those of Gros Colmar, care being taken not to injure those left to form the crop by touching them with the hand or scissors. If Grapes of good finish and the permanent welfare of the Vines producing is the aim of the grower, the first step—assuming that their previous treatment has been good—to be taken with a view to securing such desirable results is—(1), to crop the Vines light rather than otherwise; (2), to keep the roots well supplied with stimulating liquid food; and (3), to keep the foliage clean and give a free circulation of fresh air during favourable weather from the time the ventilators are opened in the morning until they are closed in the afternoon, leaving a little air on at night after the Grapes commence colouring. *H. W. Ward, The Gardens, Longford Castle.*

The Kitchen Garden.

MAIN CROPS.

The thinning out, weeding, and transplanting of the various crops will require attention during moist showery weather, and where blanks occur in such main crops as Onions, Parsnips, or Beetroot, these can be made good by transplanting. In the case of the two last-named, more care will be required to preserve the tap-root intact; therefore this operation is best performed whilst the ground is in a moist condition, and when the young plants are easily drawn from the soil. In planting, a pointed dibber should be used, and a hole made sufficiently deep to allow of the tap-root being placed in a straight downward position, the soil being afterwards made firm around them and watered. As nothing looks worse in a kitchen garden than "gappy" crops, and more especially so when, as is generally the case, the drill system of cropping is adopted, a little extra trouble in this respect is well compensated by the improved appearance. When the young plants are from 1 to 2 inches in circumference is a good time to transplant.

Thinning.

In thinning out the different crops to their respective distances, it is best to begin by removing all the weakly and overcrowded plants until each stands singly; these can be again thinned at a more advanced stage, and again finally later on, the last thinning being in a great measure determined by the condition of the soil, the state and appearance of the crops in reference to the season, and also whether required for any special purpose, or for ordinary consumption. A good distance for the large and main crop of Carrots would be from 9 to 12 inches apart in the rows; Parsnips, 12 to 18; Beetroot, 12 to 15; and Onions, from 6 to 9 inches; but in the case of the latter, a portion at any rate may be allowed to remain much closer together, medium sized Onions for general use being as a rule more desirable than larger ones. Where blanks occur in the Carrot lines, make good by sowing Early Horn.

Runner Beans.

A few seeds of Scarlet Runners sown either in boxes, in heat, or in a warm frame in light soil, will be found useful to make good any failures in the earliest outside sowings. Where these are showing above-ground, the soil should be loosened between the plants by means of a hand-fork, and afterwards earthed up and staked and protected for a time, by having Laurel or Spruce branches placed against the outside of the stakes. If the last sowing of these has not been completed, no time should be lost in doing so.

Asparagus.

This should be cut over regularly, and where the beds are thoroughly established all the grass should be kept cut until it is deemed necessary to desist from cutting for the season. In the case of plantations from two to three years old, a few of the first and finest shoots should be taken only, and the remainder allowed to grow away. Occasional light top-dressings of common salt throughout the season should be given to all Asparagus beds sufficient to keep weeds in check, and to those that are hard cut from, a liberal top-dressing of Jensen's fish manure, or bone-dust, should be applied at the time when cutting ceases, which is generally about the middle of June.

French Beans, Marrows, Carrots, Potatos.

These and other occupants of frames should, on all favourable opportunities, have the lights pulled off them during the day. French Beans, that are swelling their crops, would be benefited by being damped overhead or syringed before closing for the night, and also well attended to by having liberal waterings of tepid liquid manure. Vegetable Marrows will now be coming into bearing, and will require more room; where practicable, the frames should be raised to a convenient height, by placing bricks underneath them, to allow the young shoots to make their way underneath and beyond the limits of the frame. Those being cleared of Potatos can be utilised for pricking out the main crop of Celery, being first prepared by having 4 inches of good rich soil placed on a firm bottom of coal ashes.

General Work

will consist of planting out successional Cabbage, Cauliflower, Brussels Sprouts, Borccole, &c., as they become fit, and opportunities occur; also of sowing Peas, French Beans, Spinach, and Turnips, Radishes, &c. Continual use of the Dutch hoe at this season is both necessary and advisable to keep weeds in check; and to maintain a clean and orderly appearance, no refuse or remains of a previous crop should be allowed to remain on the ground too long, but be either dug in or removed. *John Austen, Witley Court.*

Sir Joseph Paxton. — Some incidents of the Great Exhibition of 1851, during the construction of the buildings, are worth notice. The Duke of Wellington was a constant visitor. The frequent remark made to him was, "The building will never be erected in time," and when said, the Duke would gruffly reply, "It will—I know it will; Paxton has said it will." The Duke had evidence of Paxton's readiness and administrative ability when the Queen made a royal visit to Chatsworth. Paxton had provided a great display of fireworks, which all the county of Derby came to see. Nothing so superb had been seen before. Paxton had decided that, as soon as it was over, at twelve at night, the place should be made tidy, and he brought in an army of 500 labourers with baskets and shovels to clear away the *débris*. When this had been done, the gardeners mowed the lawns and swept up. At 6 A.M., just as the work was complete and all in order, Paxton espied a figure in a large cloak emerging from the house, and he hid himself behind a shrub to watch what happened. The figure came to the spot where the fireworks were let off and looked about, and searched again and again. Paxton appeared, and gave his Grace a bow. "Why, Paxton," exclaimed the Duke with astonishment, "I never saw such a sight in my life. I came out to see the dead and the wounded, and there are none. It's as good as one of my battles." The Duke henceforth became a friend of Paxton, and always vouched for his competency. "*Fifty Years of Public Work*," *by Sir Henry Cole, K.C.B.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 24	Anniversary Meeting of the Linnean Society.
Tuesday,	May 25	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M.; and Show of Pot Roses, Azaleas, &c. Sale of Orchids in Flower, at Protheroe & Morris' Rooms. Sale of Bedding Plants, at the Child's Hill Nursery, N.W., by Protheroe & Morris.
Wednesday,	May 26	Sale of Importation of Aërides Sanderiana and other Orchids, from Mr. F. Sander, at Stevens' Rooms. Sale of the First Portion of the Collection of Orchids formed by Rev. J. B. Norman (continued on Thursday, the 27th), at Stevens' Rooms Sale of Carnations, Picotees, Plants, &c., at Protheroe & Morris' Rooms.
Thursday,	May 27	Sale of Imported Orchids from Mr. C. Patin, Fifty Cypripedium concolor Reginieri and other kinds, at Stevens' Rooms.
Friday,	May 28	Sale of Imported Orchids, at Protheroe & Morris' Rooms.

AT no other season of the year are Coniferous Trees so beautiful or interesting as during the months of April and May, for then the contrast of tint in the fresh green lively shoots of the young and the dark sombre green of the old foliage is strikingly remarkable; and this, coupled with the varying hues in the male or pollen-catkins, ranging from bright yellow to the deepest pink, renders them of particular interest to the arboriculturist. Take as an example the extreme beauty just now revealed in a healthy, well grown tree of Abies Webbiana by the bright violet of the large male catkins and which contrast so favourably with the dark Yew-like green of the upper surfaces, and the bright silvery tint of the under-sides of the leaves.

Again, in A. nobilis and A. Nordmaniana, both of which produce pollen in great abundance, the undersides of the branchlets high up on the trees are glowing with vermilion-red, this being set off to advantage by the bluish-green of the one and the sombre tint of foliage in the other.

The catkins of A. Pinsapo are likewise very ornamental, but present a curious departure from the majority of their kind in being erect, and from which circumstance, although they are produced in greater abundance than those of any other, at least of our acquaintance, are, unless in the case of the lower branches, quite hidden from sight. This is, in one way, to be regretted, as they are certainly highly ornamental, and as they are produced in very large quantities and are of a decided purplish tint the branches when looked at from above, have a unique appearance. The catkins are oval in shape, about the size of a large Pea. Those on A. grandis are in clusters of from twelve to twenty, and are less showy than in the others, being of a dull brownish-green colour, and produced closely on the lower sides of the branchlets, and usually on the third and fourth tiers of branches from the tree's top. They are about half an inch long, or with the slender footstalk exactly half an inch, and much less persistent than in most Conifers, they usually falling away in a few days after the dispersal of the pollen.

The large, creamy-yellow buds of A. Pindrow are just now very striking, and render young specimen plants attractive in a high degree. What a robust grower this tree is, many of last year's shoots being 1¾ inch in diameter, fully 2 feet in length, and when pressed with the thumb and finger somewhat pliable, just as in a stick of vulcanite.

Male flowers of Picea Menziesii are rarely seen—at least in our experience. They are placed on the extremities of the branches, and are of a rich orange-crimson colour, quite different from the nearly allied, and even more beautiful, Picea ajanensis.

The light bluish foliage-tint of Juniperus recurva is nicely contrasted with the brownish-grey of the male catkins which just now hang in numbers from the wavy, pendulous branches. These catkins, which are produced at the extremities of the smaller branchlets are about one-fourth of an inch long, and fall from off the tree during the first breezes after the dispersal of the pollen. Rarely indeed is it that we, in this country at least, have had the opportunity of seeing male and female flowers on the same plant of this Juniper, their non-appearance has given rise to many erroneous ideas regarding this tree and some of its allied kinds. Now, however, that these have been produced on the same tree, we are able to state that the tree is, at any rate in some instances, monœcious and not dicœcious, as has always been recorded in our Pine books, but in truth there is much variation in these matters. What can be more distinct and lovely just now than a large-sized male and female plant of our old English Yew growing in close contiguity? The dark green leaves and the abundance of sulphur pollen—sulphury both in appearance and colour—of the former, and the light green tint of the latter being contrasts of the finest description.

We need say nothing in this place as to the exceeding botanical interest attaching to the flowers of Coniferæ, except to point out that our knowledge is in many cases very incomplete, and especially as regards the male flowers or catkins, specimens of which are relatively uncommon in herbaria. The best illustrations also are frequently rendered incomplete from the absence of any representation of the catkins. Correspondents having access to the male flowers of any but the commonest and best known species would, therefore, confer an obligation on us if they would kindly send us small specimens by post for examination and illustration. A single catkin would often suffice.

—— West Indian Ferns.—We hear from one of our correspondents that R. V. Sherring, Esq., of Hallatran Court, near Bristol, is making a tour of the West Indies for the purpose of collecting specimens of the Fern flora of these islands. We understand that he has been very successful, several new species being discovered in Jamaica alone, with many of rare and interesting character which have not been seen for many years. Mr. Sherring is well known as an enthusiastic collector, who well deserves the success he has attained.

—— Société Royale d'Horticulture de Waas.—We are informed that a special show of the above Society will be held this year in the town of St. Nicolas, from June 27 to July 1. On this occasion a gold medal has been offered as a prize by His Majesty the King of the Belgians for the best collection of twenty exotic Orchids in flower. For the most extensive and most remarkable collection of cut Roses (distinct) there is a similar prize offered by the ladies of the Society.

—— Orchids, their Structure, History, and Culture.—A new edition of Mr. Lewis Castle's (*Journal of Horticulture*) *Treatise on Orchids* will be published in a few days. It has been considerably enlarged, contains a chapter on cultivation, with other additions, will be bound in cloth, and sold at the same price as the preceding issue.

—— Royal Horticultural Society.—At the Great Provincial Show, to be held at Liverpool from Tuesday, June 29, to Monday, July 5 (inclusive), a boiler contest will be held, of which the following are the conditions:—

1. Competitions will be in the three classes, viz.:—Class 1, 2000 feet; 2, 1000 feet; 3, 500 feet.

2. Each competitor to supply and fix his own piping and boiler, with all necessary fittings complete, at his own expense.

3. The Royal Horticultural Society will supply the fuel and the thermometers required for the contest.

4. All the hot-water piping to be 4-inch (inside size). The chimneys not to exceed 20 feet in height, above the ground level.

5. The height of flow-pipe above top of boiler not to exceed 24 inches (over all) at boiler, not to rise more than 6 inches in 100 feet.

6. Each boiler to have not more than one flow and two return connections.

7. The piping to be fixed as under:—In the 500 feet, three flows and three returns, two deep; in the 1000 feet, five flows and five returns, two deep; in the 2000 feet, ten flows and ten returns, two deep; with three, five, or ten syphons or boxes respectively at extreme end.

8. The total amount of piping in each case not to be less than specified.

9. The competition in each class will begin simultaneously, about mid-day, and last for twenty-four hours. That for the 2000 feet on the first day of show; for the 1000 feet on the second day of show; and for the 500 feet on the third day of show.

10. In the case of boilers set in brickwork, they must be fixed, and the brickwork dried by firing, and thoroughly cooled down again by the time of competition beginning.

11. Each competitor must be prepared to fix the thermometer on the part of the plain piping where directed, on the morning of the competition.

12. Every point for and against each boiler can be pointed out, and will be carefully considered by the judges, and may be embodied in the report of the contest, so that competitors should carefully avoid anything that might tell against them.

13. Intending competitors must send in, at time of entry, full particulars as to heating power, &c., of their boilers, with price at which they are prepared to supply the public, which will be published.

14. One or more medals will be given in each class, if the judges consider the competition worthy of such an acknowledgment.

Applications for space should be made on or before Saturday, June 12, to Mr. A. F. Barron, Superintendent, Royal Horticultural Society's Gardens, Chiswick.

—— Flowers in Season.—We are indebted to the kindness of Mr. O. Thomas, of Chatsworth Gardens, for a spike of bloom and one of ripe berries of Adamia cyanea. He says that the plant is now in great beauty there. The flowers are pinkish-white before fully opening; afterwards displaying anthers of a beautiful tinge of blue; the berries are of a dark metallic blue colour, and are freely produced. Although introduced from Nepaul so long ago as 1829, it is still rare in gardens. It grows well in peat and loam, requiring in this country, except in quite southern localities, the shelter of a greenhouse.

—— Royal National Tulip Society.—The annual exhibition of this Society is fixed for Saturday, June 5, and will take place, as usual, at the Botanical Gardens, Old Trafford. Judging from a communication just received from Mr. Samuel Barlow, some of the Northern flowers will be unusually late, notwithstanding the late fixture of the show, for he states:—"I see no prospect of my Tulips being in bloom on June 5; I am quite as late as I was last year—I think later." The recent boisterous weather, accompanied by heavy rains and a low temperaure, which all last week prevailed over the Lancashire district, have had a very retarding effect, as might be supposed.

—— The Snowy Mespilus.—The most florid description would fail to do justice to this North American tree, as it can be seen in the Sydney Gardens at Bath. The specimens are so fine, and so laden with its racemes of white flowers "heaped up in happy plenteousness," that one can well understand the fitness of the designation—the Snowy Mespilus. In the fulness of their beauty the trees looked as if the soft, silent snow had fallen, and lodged in their branches. Possibly soil, situation, and climate alike suit it at Bath, for it was in such form as is seldom seen, though reputed to be quite hardy, and wonderfully free of bloom. But it is not often met with. Nor is its floral service the only one rendered: in autumn its leaves assume a fine reddish-yellow tint.

—— Horticultural Club.—The usual monthly dinner and *conversazione* of this Club took place on Tuesday, the 11th inst., when there was a good attendance. Amongst those present were Messrs. Philip Crawley, J. L. Cousins, C. T. Druery, —Wheatstone, J. Pearson, C. Pearson, George Paul, T. W. Girdlestone, J. D. T. Llewelyn, and Prof. Saunders (of Ontario, Canada). The discussion was opened by Mr. George Paul in an interesting paper on the "Bog Garden," in which he detailed the result of his experience at High Beech, and gave many illustrations of the method of forming them, &c. The discussion was continued by Messrs. Llewelyn, E. Jenkins, Cousins, &c., and many interesting facts were elicited.

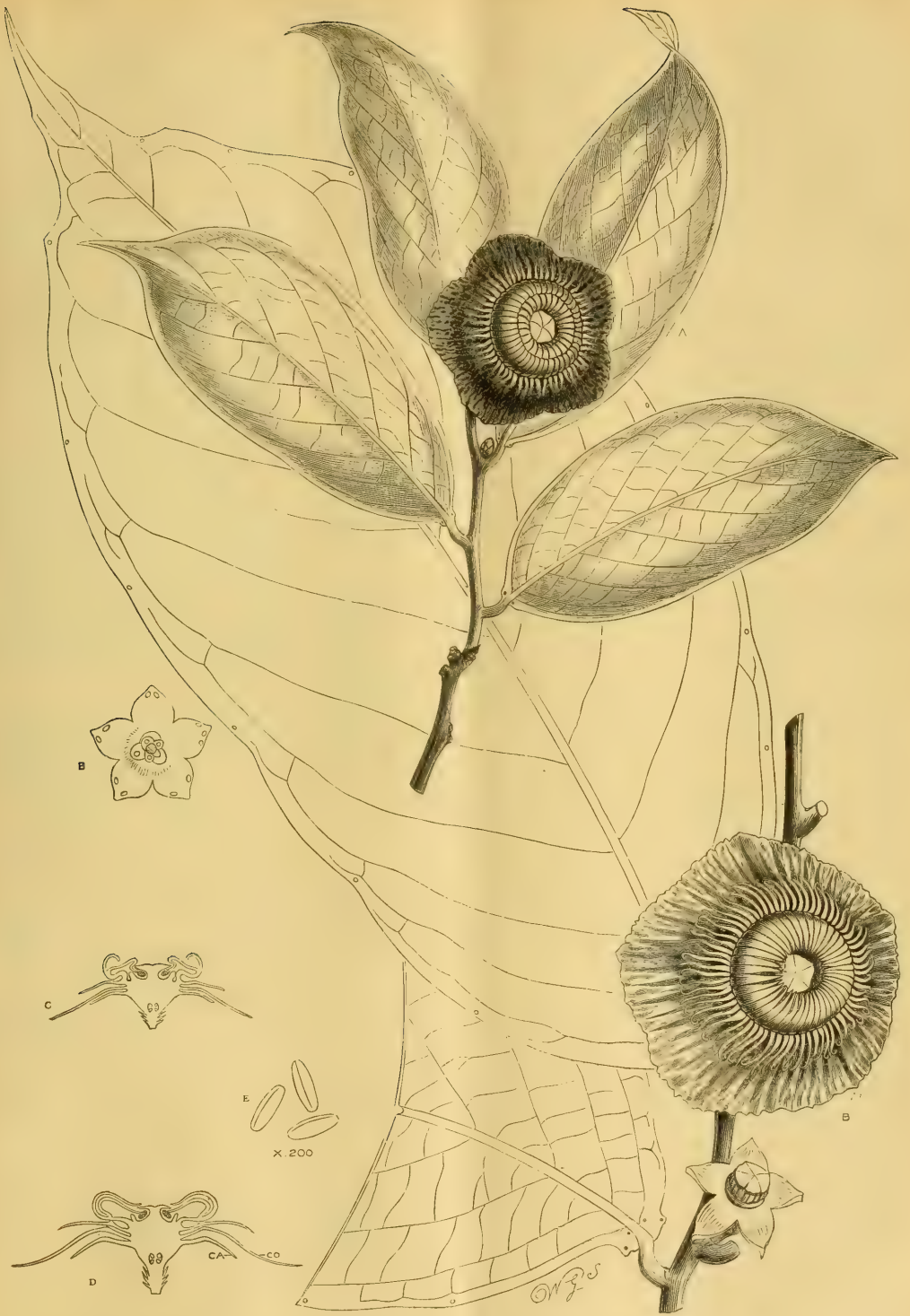


FIG. 147.—NAPOLEONA. (SEE P. 659.)

A, Napoleona imperialis, hort.; leaves dark green, leathery; flowers deep crimson and cream-coloured. B, N. cuspidata, Miers; leaves pale, membranous; flowers cream-coloured and pale crimson. Vertical sections of flowers:—C, N. imperialis: D, N. cuspidata. E, Pollen grains.

—— PHALÆNOPSIS SUMATRANA. — A very fine variety of this rare species with distinct and well defined markings is now flowering in the East Indian-house at Kew. It is closely allied to P. violacea and P. Luddemanniana, especially the latter, but is abundantly distinct from either for horticultural purposes. The plant figured in the *Botanical Magazine*, was executed from a plant which flowered in Mr. DAY's collection. This was in the spring of 1865, and was the first time it had done so in this country although it had bloomed some nine years previously on the Continent. A flower is figured in the *Gardeners' Chronicle*, 1865, p. 507, and a description of the plant given by REICHENBACH. The individual flowers are larger than those of P. Luddemanniana, and have pale yellow sepals with a white base and heavily blotched with deep rich brown on upper two-thirds. The petals are similar, but have only a few large brown blotches about or above the middle. The markings on the same parts of P. Luddemanniana are much smaller and paler, while the bases of both sepals and petals are transversely barred with violet. The labellum of the species under notice is a special feature, with red and brown lines on a white ground, on either side of a central ridge heavily bearded with white hairs. The colour of the labellum is different in the other two species, and P. Luddemanniana is lightly bearded, while P. violacea has a smooth labellum. The minute structure of the lateral lobes and the crest is closely similar in all three species—demonstrative proof that they are botanically closely allied.

—— EXHIBITION FIXTURES.—The following is a list of the chief provincial shows to take place in June :—On the 1st the Reading Horticultural Society's spring show. The Bath and West of England Society will open its show at Bristol on June 2, and continue till the 7th. National Horticultural Exhibition will open at Manchester on June 11, and remain open until the 18th. On June 18 the Scottish Pansy Society will hold an exhibition at Edinburgh. The York Gala (three days) will open on June 23. On June 29 the Lewisham Horticultural Society's show will be opened (two days), also the Twickenham Horticultural Society's exhibition, and the great provincial show of the Royal Horticultural Society will be opened at Liverpool, and remain open till July 5. On June 30 will be held the show of the Farningham Rose Society, and the Leeds flower show (three days) will be opened.

—— AGRICULTURAL AND HORTICULTURAL SOCIETY OF INDIA. — The annual show of flowers, fruit, and vegetables was held at the Society's garden, Calcutta, on Wednesday, February 10. The sum offered in prizes was 942 Rs., including 100 Rs. placed at the disposal of the Society by the President, to be given in prizes for rare or well grown plants not mentioned in the schedule of prizes. Of this sum 778 Rs. in all were disbursed among 62 winners of prizes out of 119 exhibitors. The splendid display of plants made by the Royal Botanic Garden, not for competition, requires especial notice, for there were included some rare and beautiful specimens recently received from the Malayan peninsula, many of which have not yet been identified; most of these were arranged in a group. Among other better known plants were Aralia elegantissima and splendens, Davallia tenuifolia, Alocasia singaporensis and Lowii, Onychium auratum, and well-grown specimens of Adiantum Farleyense, tenerum, scutum, Bausei, Lathomi, amabilis; Anthuriums Lievenni triumphans, macrophyllum; Palms, Tree Ferns, and Pandanads from Malay, as well as numerous Marantas, Schismatoglottis, and Aglaonemas, Nephrodium Rodigasianum. Besides the group, the Royal Botanic Gardens filled several benches with fine plants; an Anaectochilus in flower, Maxillaria aromatica, a fine Saccolabium giganteum, and many others, making in all a collection such as has never before been exhibited in Calcutta on like occasions. In classes forty-four to forty-seven (cut Roses) there was considerable competition. A native gentleman, a member of the Society, himself brought his collection nearly 400 miles by rail and road from Tirhoot, and the flowers that won the 1st prize came even further, viz., from Arrah. A new class—that for the best specimen Rose—though well filled, did not call forth the number of exhibitors expected, owing, no doubt, to its not being yet a well-known one. On the whole there was no falling off in the quality of the exhibits observable; on the contrary, the standard of excellence seemed somewhat higher this year, and the plants exhibited gave evidence of careful culture which left little to be desired. There was a good show of annuals, the Pansies being excellent in quality and variety; decidedly better than anything hitherto exhibited.

In the section for vegetables there was very great improvement, the more marked as the quality of last year's display was not very good; but this year has shown what can be done in the way of vegetable growing by the Calcutta market gardeners, as it is that class which is the largest exhibitor of vegetables. A special prize was awarded to Mr. W. H. NEWTON for a fine basket of Mushrooms he exhibited; they were much admired, and excited considerable inquiry, and it may be hoped that Mr. NEWTON's example will be largely followed.

—— ORCHID PRICES.—At a sale by Mr. STEVENS, at his rooms in King Street, Covent Garden, on May 12, a plant of Cymbidium Lowianum, a fine specimen, with thirteen leading growths, five spikes, and ninety-five flowers, fetched 200 guineas; Dendrobium Falconeri, a fine mass, brought 15 gs. A few Odontoglossums realised good prices; a fine dark variety of vexillarium selling for 21 gs.; another fine variety, 24 gs.; and Cattleya Mossiæ, 12 gs.

—— MAHWA FLOWERS. — The export trade in Mahwa or Mowha (Bassia latifolia) flowers to Europe for distillation, which attained such large proportions a few years ago, seems to have suddenly ceased. In 1884, 269,329 cwt., valued at £67,066, were shipped from India; in 1885, 30,372 cwt., valued at £6091, were shipped; now the export has stopped. These flowers constitute an important article of food among the natives.

—— BIRMINGHAM GARDENERS' SOCIETY. — There has been recently established a Gardeners' Mutual Improvement Society in Birmingham that bids well to be a great success. It now numbers 200 members; and the number of attendances at the lectures have varied from 90 to 120. Permanent quarters have been secured in Paradise Street, where there is an excellent room for meetings; but the greatest attraction will be the library, which the Association is trying to establish, but as this would be the work of many years for the gardeners themselves to establish at their own cost, an appeal has been made to the generosity of employers of gardeners, and other gentlemen interested in horticulture, to assist in this important work. Any of our readers who may have works of real utility bearing on horticulture might send such to Mr. J. HUGHES, South Bank, Edgbaston, who would gratefully acknowledge their receipt.

—— PARKER'S NURSERY, TOOTING. — Mr. J. W. SILVER, late Head Gardener to the Right Hon. Lord TREVOR, Brynkinalt, Chirk, has taken the Norbury Nurseries, South Streatham, where he purposes carrying on a general nursery, florist, and seed business, together with that of hardy herbaceous plant grower.

—— LEWISHAM AND DISTRICT FLORAL SOCIETY.—The above-named Society for the promotion of horticulture, which was established last year, is quite distinct from the Lee, Lewisham, and Blackheath Society, an old-established affair. We hope the new Society will meet with energetic support from the employers and gardeners of the neighbourhood. Amongst the prizes offered at the forthcoming show, to be held on June 30 and following day, is one of £5 for the best forty-eight cut Roses, with proportionate 2d and 3d prizes, open to all comers.

—— STRUCTURE OF PRIMROSES. — M. VAN TIEGHEM has subjected to anatomical scrutiny several of the new Primroses derived from Yun-nan by the Abbé DELAVAY. The anatomical structure of Primroses, it appears, varies considerably in different species. The differences occur especially in the stem. It has long been known that in some Primrose stems the bundles are arranged in the usual way in concentric rings around the pith, while in others they are scattered irregularly, as in a monocotyledonous stem; and other variations of detail have been observed. In some cases, as in P. sinensis, the stem is normal, with a central pith; while in others, as, for instance, P. Auricula, there is no pith. Some produce adventitious roots, others do not. M. VAN TIEGHEM's observations will be found in the *Bulletin* of the Botanical Society of France, 1886, vol. xxxiii., p. 127, &c.

—— EXHIBITION OF TULIPS AT HAARLEM. — At the present time there is opened in the nursery grounds at Kleinen by Houtweg, Haarlem, by Messrs. E. H. KRELAGE & SON, a splendid exhibition of late Tulips, which will last probably in flower to the end of this month, and perhaps longer. In a spacious tent two show-beds of Tulips are planted containing all the best old Dutch sorts of late Tulips (violettes, roses, and bizarres), 700 bulbs in each bed, all of different sorts. The tent is well decorated with flowering and ornamental plants, and makes a splendid show. By a gallery this tent is connected with another, containing the collection of Flemish late Tulips (only violettes and roses) bought last year by Messrs. KRELAGE from M. JULES LENGLART, of Lille (the last good collection there existing). Here are likewise two beds arranged like the other and each containing 840 sorts. Probably never has so large an exhibition of late Tulips been seen at any one place. In 1885, after an interval of more than twenty-five years, Messrs. KRELAGE again opened their Tulip show, which is repeated this year in a much more complete manner.

—— METROPOLITAN BOULEVARD ASSOCIATION. —This Association, under the presidency of Lord BRABAZON, is still carrying on its work of laying out disused churchyards and burial-grounds. Lady HAMILTON, on Wednesday last, opened a yard of this kind situate in Russell Court, Catherine Street, Covent Garden. It was sadly wanted in that quarter, which is in close proximity to Drury Lane, and the one fault is that it is not large enough. The space in question is the disused burial-ground of St. Mary-le-Strand, and is stated to be identical with "Tom All Alone's" in *Bleak House*. The ground has been levelled and asphalted all over with the exception of three small spots, where trees and flowers are planted; they add a certain liveliness, which is desirable as the ground is hemmed in on all sides by the sombre walls of large buildings.

—— PRESENTATIONS. — On Tuesday, May 11, Mr. JOHN MCLEAN, head gardener to JOHN WATSON, Esq., Earnock, on the occasion of his leaving the district, was presented, at Hamilton, with a valuable gold watch, and, on behalf of Mrs. MCLEAN, with a gold brooch set with pearls and brilliants. Mr. MCLEAN has entered the service of W. PEARCE, Esq, M.P. for Govan, as head gardener, at his residence, Wemyss Bay.—On Tuesday evening last the *employés* of the Royal Horticultural Society at Chiswick presented Mr. W. P. THOMSON, foreman of the plant department, in view of his approaching marriage, with a handsome timepiece, bearing a suitable inscription. An address accompanied the gift. Mr. BARRY, in appropriate words, made the presentation on behalf of the subscribers. Mr. THOMSON replied in suitable and grateful terms. It is pleasant to record this feeling of good-will among the men and their foreman.

—— LINNEAN SOCIETY.—The anniversary meeting will be held on Monday, May 24, at 3 P.M., when the election of Council and officers will take place. The President's address and the postponed communication on "Forms of Seedlings and the causes thereof," by Sir JOHN LUBBOCK, will be read.

—— GARDENING APPOINTMENT. — Mr. W. WENMAN has been appointed Gardener at Hickleton, Doncaster, in the place of Mr. HARRIS, under whom, for six years, he had been Foreman.

PLANT PORTRAITS.

BOMAREA OCULATA.—One of the smaller-flowered species, with tubular or funnel-shaped crimson flowers of great beauty. *Garden*, March 20.

CATTLEYA SANDERIANA, *Orchidophile*, December.

FREMONTIA CALIFORNICA, *Garden*, January 2.

MICROSTYLIS BELLA (Orchidaceæ), Sonda Isles, *Illustration Horticole*, t. 581.

PORTULACCA GRANDIFLORA VAR. REGELI, *Gartenflora*, t. 1209.

PULMONARIA VIRGINICA, *Garden*, December 28.

SALVIA INTERRUPTA, *Gartenflora*, t. 1210.

SCABIOSA CAUCASICA VAR. ELEGANS, *Gartenflora*, t. 1212.

NAPOLEONA.

THE species of this genus are stove shrubs seldom seen out of botanic gardens. They are not suitable for decorative plants, or as cut flowers, and hence they are not esteemed by gardeners in general. To those who love plants for their own sake, however, the genus Napoleona has special interest. Apart from the great beauty and singular appearance of the flowers, their structure is so peculiar that scarcely any two botanists have described it in the same way or come to the same decision as to the lineage and affinities of the genus, and consequently as to its proper position in the system. It is not necessary to go into detail here upon these subjects, the botanical reader will find the subject treated of pretty fully in a paper by the writer of this note in the tenth volume of the *Journal of the Linnean Society* (1869), p. 492, and, subsequently, by the late Mr. Miers in the *Linnean Transactions*, ser. 2, vol. i, 1875, p. 1. If there is all this amount of uncertainty about the genus in the aggregate, it is no wonder that there should be as great difference of opinion in regard to the number of species. Where some make only one widely distributed species, varying greatly, others, like Miers, make seven species, each inhabiting a different region, though all confined to Western Tropical Africa, from Senegambia in the north to Angola in the south. To determine this point satisfactorily the material in the herbaria is not adequate; the only chance that the home botanist has of arriving at a satisfactory conclusion is to examine the cultivated plants when opportunity presents itself. Such an opportunity has recently been afforded us in the case of two of the species through the kindness of Mr. Lindsay, of the Edinburgh Botanic Garden, and Mr. Watson, of Kew. From Edinburgh we received the plant figured at A, fig. 147, p. 657, under the name of N. imperialis, and through the kindness of the authorities at Kew we were enabled to ascertain that the plant is cultivated there also under that name. A full description of the Kew plant is given in the *Journal of the Linnean Society* before cited, and need not be here repeated. This plant is certainly the N. imperialis of gardens, and probably of Palisot de Beauvois, though his descriptions and figure, which are obviously in many particulars incorrect, do not enable one to decide for certain whether the cultivated plant called imperialis is what Palisot intended. We cannot say more than that it is so probably.

As will be seen from our illustration the leaves are very much smaller, and they are, moreover, thick, leathery, and dark shining green, at least above. The flowers measure about 1½ inch in diameter, are surrounded at the base by small, ovate, concave scales, like those at the base of a Camellia flower, but provided with a large gland at each side. The plicate corolla is of a deep dull crimson, edged with a narrow cream-coloured border. Then comes a triple corona, the outer row of numerous spreading, linear-lanceolate segments not much more than a fourth of the length of the corolla; the second row consists of a large number of crimson processes infolded at the tips, but only partially overlapping the third row, whose segments, also crimson, are inflexed, and some of which bear one-celled anthers carefully tucked away under the plate-like, five-angled stigma, so that cross fertilisation would seem to be necessitated, especially as the anthers open away from the stigmatic surfaces on the lower side of the plate. The pollen, observed by Mr. Worthington Smith, is of very simple character, consisting simply of long elliptical smooth grains, with a single furrow.

Without going into further details, which may be found in the work already cited, as to this plant, we may now call attention to the second species (B, fig. 147).

The inspection of fresh specimens sent by Mr. Lindsay showed us that we had to do with a different species from the preceding one, and on reference to the herbaria there was no difficulty in assigning the plant to N. cuspidata of Miers. Mr. Miers' description, taken from the dried specimens collected by Mann in Old Calabar, is given in the *Linnean Transactions* above cited, p. 11.

The fresh specimens from the Edinburgh Botanic Garden are remarkable for the large size of the leaves, their comparatively thin texture, pale colour, numerous marginal glands, and other characteristics which are sufficiently shown in Mr. Smith's illustration. The flowers measure 2½ inches across, the calyx segments are ovate acute, the corolla plicate, cream coloured, and crimson at the base, the outermost corona of numerous free-spreading, linear lanceolate threads, half the length of the corolla. The second row of the corona is crimson, inflexed, and almost completely covering over the third row, some of which bear anthers. It is quite evident that Mr. Miers was justified in considering this as different from the preceding, athough we cannot attribute so much importance as he does, either to the colour of the flowers or the number of the coronal threads, in both of which points the cultivated (like the dried) plants exhibit much variety. Whether there are any other forms in cultivation in addition to these two we do not know. We hope there may be, for the flowers are singularly beautiful, and one described as having pure white flowers should be specially inquired for.* *M. T. M.*

Notices of Books.

British Fungi (Hymenomycetes). By Rev. John Stevenson. Vol I. (Blackwood & Sons, 1886.)

This is the first of two volumes dealing with the British Hymenomycetes, that group of fungi which, generally speaking, goes by the popular names of Mushrooms, Toadstools, &c. The indigenous literature of the subject is a large one, and it possesses an interest to an increasing number of special students of the group. Though disease-producing fungi appeal more directly to the interest of horticulturists, yet the Hymenomycetes, like other inhabitants of the garden and the field, are always objects of interest to lovers of plants.

Mr. Stevenson tells us in his preface that "there is no royal road to the knowledge of fungi"—though all artificial systems are more or less "royal roads"—a disloyal way of referring to the "ways of the sluggard." The genus of Hymenomycetes which presents greatest difficulties to the student is Agaricus, the classification of which is tainted with artificialism. In respect, however, of descriptive terms, this branch of mycology is infinitely in advance of the disreputable state of Lichenology. When primitive man began to describe things and had few words by him, he conveyed the appearance of any given article by saying that it was like certain others. This habit has survived in a variety of ways—the ass still serves man as a standard of comparison for his fellows—but the lichenologist has made least advance among descriptive writers and frequently describes one lichen by stating in what respects it resembles other lichens, *i.e.*, by the use of such words as "lecanorine," "biatorine," "endocarpoid," "lecideine," &c., instead of by such definite descriptive terms as are employed in other branches of descriptive botany. Thus the beginner must be familiar with the appearance of many lichens, it may be before he can fully appreciate the description of one! Mycology has had more obscure forms to arrange than any other branch of botany, but in the art of describing it is far ahead of the archaic form still practised by many lichenologists.

Since the publication in 1871 of Dr. Cooke's *Handbook of British Fungi*, which included all the fungi then known to occur in Britain, there have been added to the list a large number of species, some of them wholly new to science, others newly discovered in this country. These have been recorded in various journals and Mr. Stevenson's object has been to bring our knowledge of the Hymenomycetes up to date, and at the same time to furnish us with better descriptions of a number of previously known forms. It is a pity he did not see his way to include all the fungi in his work, since a fresh treatment of the microscopic forms is urgently needed, the old classification used by Dr. Cooke in the *Handbook* being far behind the times. However, we must be content for the present. The volume which Mr. Stevenson has given us fulfills the expectations formed of it. His descriptions, many of which we have tested, are lucid and full, and his citations of authorities accurate, though not so ample as might be wished. A more liberal citation of authorities would have been an undoubted benefit in a book which will be our standard work on the subject for a number of years. The value of having one's references all together is greater than Mr. Stevenson apparently understands. However, so far as authorities are cited, the thing is done correctly in our experience of the book. But for a few minor mistakes, such as the absurd one of "antheridia" for cystidia (we presume) on p. 213, the book is a model of careful revision, as well as a work of excellent judgment. Few mycologists will disagree with Mr. Stevenson's opinion, that "the pruning knife must be unsparingly used" in the extermination of bad species, and it is to be hoped that the pruning will be a root and branch business in vigorous hand; but the statement that "this must be the work of a congress of cryptogamic botanists, not of individual authors," is surely too hopeful. A congress is never likely to undertake the work, and if it did the members would never work together, and would probably hopelessly disagree, and leave matters worse than they found them. It will have to be done by individual authors, and it is a pity Mr. Stevenson has not begun the good work in the present volume.

In the last paragraph of Mr. Stevenson's preface he writes:—"In interpreting the mind of Fries serious differences will be found between the descriptions contained in the present work and many which have been published in *Grevillea*. I can only request that before deciding between them scholars examine and compare the descriptions of Fries in the original language." With regard to this we venture to think Mr. Stevenson would have acted not only in better taste, but more wisely, by omitting all reference to it. The statement would otherwise have been made for him more strongly and more effectively by independent hands. Mr. Stevenson has, however, chosen to speak for himself.

The woodcut illustrations, by Mr. Worthington Smith, are all that can be desired, and the book is undoubtedly an indispensable one to all who study our British Hymenomycetes.

SCOTCH NOTES.

INTERNATIONAL EXHIBITION, EDINBURGH.

THE West Meadows in which the exhibition buildings are erected form one of the most pleasing breathing spaces in Edinburgh. Situated in a high position in the southern part of the city it commands fine views of some of the most striking points of the suburbs and environs as well as of the city itself. The space enclosed comprises over 30 acres, and is so well-wooded with well developed trees, that but for the enclosing hoarding that surrounds the grounds it might be likened to a section of an extensive private park of some antiquity rather than a recreation ground in the midst of one of the most modern parts of this ancient city. All that it was possible to do in connection with the extensive buildings to secure ample space for promenades, combined with ornamental effect in laying out the grounds, has been done in a masterly way by Mr. Todd, in conjunction with the Horticultural Committee, which consists of Mr. John Methven (of Messrs. T. Methven & Sons), and Mr. McLeod, superintendent of the city gardens. The plan of the grounds is simple and well conceived for the purpose of accommodating the many thousands of people that are daily visitors to the exhibition and grounds. The principal feature is the spacious promenade, over 700 yards in length, and 40 feet wide, which extends along the north side of the exhibition buildings, terminating at the western end in the grand esplanade which lies between the entrance-gate and the west or principal front of the building. Both sides of this esplanade are richly ornamented with a varied selection of Coniferæ, Hollies, Rhododendrons—the latter not yet in bloom but bristling with buds that promise a brilliant display very soon—deciduous ornamental trees, ornamental Ivies, &c., arranged with fine effect, the whole supplied and exhibited by Messrs. T. Methven & Sons, Edinburgh. The great promenade is laid out on either side in large beds of semicircular form of three together, in which the nurserymen have grouped their various exhibits. These exhibits are chiefly composed of home-grown samples of Conifers, deciduous ornamental trees and shrubs, and general hardy nursery stock, yet are each individually

* The species enumerated by Miers are:—N. imperialis, Palisot (Benin); N. Heudelotii, Jussieu (Senegal); N. Vogelii, Hooker and Planchon (Gold Coast); N. Whitfieldii, Lindley, in *Gard. Chron.*, 1844, p. 780 (Sierra Leone); N. cuspidata, Miers (Old Calabar); N. Mannii, Miers (Old Calabar); N. angolensis, Miers ex Welwitsch (Angola).

so distinct in the composition and grouping as to form a varied and pleasing series of objects from end to end of the promenade.

Extending from the grand promenade to the north boundary of the grounds is a spacious lawn, intersected by gracefully winding walks leading to kiosks, conservatories, greenhouses, hot-water boilers, garden frames of various makes and patterns, mowing machines, garden seats, and other garden furniture, interspersed with groups of shrubs and trees, the further exhibits of nurserymen.

The first group of trees and shrubs from the west entrance on the promenade is planted by Messrs. Laird & Sons, of Edinburgh and Dundee, and consists of a neat selection of medium sized plants of variegated Hollies, Coniferæ, Ivies, Aucubas, &c., neatly arranged, and in combination producing a pretty effect.

On the right, in a recess in front of the band-stand, near the post-office, Messrs. Ireland & Thomson, Edinburgh, have a large exhibit of choice specimen Conifers, species and varieties of Agave, splendid specimens of Laurus nobilis, and Phœnix sylvestris, Bambusa metake, &c., a strongly contrasted and varied collection, both as regards form and colour, which would have had a better effect if it had been placed in a less artificial position, but on this point the exhibitors had no choice. As it is, the individual plants are exceptionally fine, and stand the test of their awkward grouping well, each one being an object of beauty complete in itself.

In the rear of the band-stand, to the north, are two groups of well grown Conifers, Hollies, Rhododendrons, deciduous ornamental trees and shrubs, from the Lawson Seed and Nursery Co. (Limited), Edinburgh. In point of variety this is the most extensive group exhibited, and there are a number of somewhat rare Conifers and shrubs included which will give additional interest to those who are on the outlook for specialties in these lines.

The next group on the grand promenade eastward from the band-stand, is from Messrs. Cunningham, Fraser & Co., Edinburgh. It is composed chiefly of specimen Hollies in great variety, and which are the finest samples of the kind in the exhibition, every specimen being excellent in form and in splendid health and colour.

Messrs. John Lamont & Son have one of the neatest and most tasteful groups of Conifers exhibited. The plants are small, but good in form and rich in colour, and the variety is considerable. Interspersed among the Conifers are some bright coloured Yucca aloifolia variegata, Hedera algierensis variegata, and Phormium tenax, which add a pleasing impression to the group.

Near this group is one from Messrs. Dickson & Co., Edinburgh, consisting chiefly of some fine specimen Hollies; and near by, the same firm have an exhibit of deciduous trees and shrubs, which is of especial interest, but on which, owing to the late period at which the group was planted, and the bleak weather that has prevailed since, it is yet too early to make any comment.

Messrs. Little & Ballantyne, of Carlisle, have a group of specimen Conifers near the station of the electric railway. Every plant is a model of its type, and the growth and condition of all are perfect. *X.*

BEFARIA GLAUCA.—A specimen of this graceful flowered greenhouse shrub bloomed a short time ago in the temperate-house department of Kew. It closely resembles an Azalea, or in other words a small leaved form of the large and varied genus Rhododendron, and is in fact closely allied to the latter. The deeply seven-parted corolla has narrow spreading segments of a pleasing rosy-purple colour, and the flowers are produced in terminal and axillary simple or compound racemes. This species is a native of South America at elevations of 4000 to 6000 feet on the mountains of Venezuela, above which its place is taken by B. ledifolia, Gaylussaccia buxifolia, Vacciniums and other mountain loving plants of a similar nature. In open exposed places and in this country it forms an erect growing shrub, attaining a height of 3 to 6 feet, but in the shady forests of its native country it is said to form a small tree 15 to 20 feet high. That being so, in order to do it justice, planting out in a cool conservatory would be more in accordance with its requirements and give it a chance of developing its natural habit and true characters as an ornamental subject. A coloured plate is given in *Annales de Gand*, 1845, t. 7, which shows the inflorescence and the medium sized leathery leaves, deep green above and glaucous beneath. Befaria is a corruption of Bejaria, the genus being named in honour of a Spanish botanist, Bejar.

VINE MILDEW.

(Concluded from p. 622.)

NOTE.—By an inadvertence a wrong block was inserted under Fig. 138 in our last number. The accompanying illustration is Fig. 138, and the paragraph towards bottom of first column on p. 622, beginning "In fig. 138," and ending with "Mont.," refers to the illustration given below:—



[FIG. 138.]—OIDIUM, AND PYCNIDIUM DISCHARGING STYLOSPORES OF ERYSIPHE COMMUNIS: ENLARGED 400 DIAM.

It will also be necessary to note that at p. 621, sixteen lines from bottom of col. 3, "138 B" should be "137 B."

UNCINULA SPIRALIS, B. and C., seriously injures Vines in America, where, however, it is not so common as Peronospora viticola, B. and C. It has worked great ravages in Massachusetts, but it appears to prevail more in California, than in other parts. The wild as well as the cultivated Vines are attacked, and the mildew grows more luxuriantly on the upper than the under surface of the leaves. In bad cases the leaves, stalks, and berries are entirely covered with mildew. As in Oidium Tuckeri, Berkeley,



FIG. 148.—ERYSIPHE COMMUNIS, AND SECTION, ENLARGED 100 DIAM.

the mycelial threads of the Uncinula are furnished with very minute suckers, by which the fungus fixes itself to the leaf. The spores or conidia of the Oidium are produced as in O. Tuckeri, Berk., by numerous constrictions or septa being formed in the shaft of the club; these constrictions give a necklace-like appearance to the Oidium club, and at maturity the spores drop off like individual beads set free from a necklace.

The perithecia or black spore boxes of the Uncinula are formed on both surfaces of the leaves late in the autumn and become ripe in October. These perithecia or conceptacles are sometimes more easily seen on the smooth upper surface of the leaf, as the under-side of the foliage of American Vines is generally so much covered with leaf-hairs that the little black perithecia are more or less hidden. The perithecia are, however, much more abundant on the lower surface.

The central mass of the Uncinula is a pale brown, at length almost black, opaque sac, with a cellular wall, from which is given off the peculiar appendages already described. The spiral twist is sometimes obliterated in dry examples, but it is restored on the application of moisture. The appendages are generally very numerous, from fifteen to thirty-two in number, and are from three to five times as long as the diameter of the perithecium itself. There are several, sometimes many, cross partitions in the appendages, and they occasionally branch. They are oval, or flattish in section, not round, and sometimes they are more or less twisted like a screw. At the base they are brownish-yellow, but grow lighter in colour towards the ends, which are quite hyaline. In removing the perithecia from the leaf the appendages are frequently broken off in the middle, so that a true Uncinula often looks when injured like a species of Erysiphe. The Uncinula is practically more dangerous than the Peronospora, as the former attacks the fruit, whilst the latter does not. None of the American species or varieties of Uncinula have yet appeared in Britain.

Three different species of Uncinula, however—viz., U. adunca, Leveillé; U. bicornis, Lev.; and U. Wallrothii, Lev.—grow on the Willows, Poplars, Birches, Maples, and Sloes of Britain.

Erysiphe communis, which grows on Vines in America, and which is the probable perfect state of our Oidium Tuckeri, Berkeley, is extremely common on many wild plants in Britain, but has never yet been detected on European Vines. It is very frequent on various natural orders of plants, as the Rosaceæ, Verbenaceæ, Polygonaceæ, Labiatæ, Compositæ, Cruciferæ, Leguminosæ, &c., in Europe; and it grows on all these natural orders, including Ampelopsidæ or Vitaceæ in America. It is also believed to grow on and greatly injure Oranges and Mangos in the Neilgherries. There is no other species of Erysiphe which has an equal range with this one, and my belief is that the Erysiphe or perfect condition of the mildew of Vines is certainly no other than our excessively frequent Erysiphe communis.

I have engraved an illustration of Erysiphe communis, enlarged 100 diameters, with a section in fig. 148 The tentacles are not hooked or coiled as in Uncinula, but rigid and sepate. They vary in colour from hyaline to dark brown; the central body or perithecium is dark brown, and encloses from four to eight transparent asci, each ascus in turn encloses from four to eight spores. The perithecium in the act of bursting and discharging its asci and spores is illustrated, enlarged 500 diameters, in fig. 149; one spore at the top right-hand corner is shown in the act of germination.

Gardeners will understand that these brown boxes or perithecia belonging to Erysiphe and Uncinula are invariably produced in the autumn, whilst the Oidia grow in spring and summer. The perithecium is distinctly a provision of Nature against the severities of winter. The enclosed spores are almost identical with Oidium spores, they are, however, not free, but enclosed in bladders, and the bladders in turn are packed in comparatively thick air and water-tight cases. These cases or perithecia remain intact during the winter, and only burst open during the sunny showery weather of spring. The spores which escape from the brown perithecia sail about in the air, and when they germinate on suitable plants they produce Oidia. The Oidia grow all the summer, and at length produce pycnidia with millions of little stylospores; these latter spores greatly extend the growth of the Oidium, and at length, as the autumn approaches, the perithecia with the long tentacles are again produced. In some instances the Oidia occasionally grow in a necklace-like manner inside the perithecia. It is quite possible and reasonable to suppose that the Oidium of Vine mildew can only produce its Erysiphe on certain plants; that the Erysiphe is only very rarely produced on Vines in America and never in Europe, that the Erysiphe can only grow in the eastern hemisphere on Buttercups and the numerous others wild host plants on which Erysiphe communis, so commonly grows.

I will only say, in conclusion, that I have for many years made observations on Oidia, and especially the Oidium, or Oidia, of the Vine, and I have found the

latter to be extremely variable in character, the spores varying greatly both in form and size; in some cases they have been almost round, in others very long, and in some instances twice the size of others, and sometimes with necklace-like habit of growth and sometimes not. If, therefore, my illustrations are not like the stock illustrations to be found in books, it must not be decided against me that I do not know how to draw. I never attempt to make my illustrations look like other people's, and the more mine differ the better I like them!

In the autumn of 1884 another species of Oidium, named O. Balsamii, Mont., made its appearance in one of the vineries in the garden of the Royal Horticultural Society at Chiswick. The disease was specially noticeable in the Black Alicante and Gros Colmar varieties, and was sufficiently bad to attract marked attention, and to injure the sales. The fungus at first attracted attention by its position at the base of the main stem of the fruit panicle. In this position it produced a broad greyish ring, or gouty swelling. In some examples, the Oidium grew on all the branches and branchlets of the fruit panicle.

On a close examination of the leaves I found abundance of O. Balsamii, Montagne, growing in company with O. Tuckeri, Berk. When one's eyes got used to the difference in habit of the two species, it was easy to distinguish one from the other. I have illustrated Oidium Balsamii, Mont., enlarged 400 diameters (fig. 150), to show the smaller and more elegant growth of the fungus as compared with O. Tuckeri, which is engraved to the same scale. See *ante*, p. 620.

Although O. Balsamii, Mont., is smaller in size, the growth of the latter is always much the more profuse of the two. To such an extent is this the case, that at Chiswick some of the Gourds were covered with such a prodigious growth of O. Balsamii, that the leaves appeared to have been thickly whitewashed. This seldom occurs with typical O. Tuckeri. It is remarkable that none of the American Vines at Chiswick, although growing in the same house with the infected Gourds, were invaded by this second Oidium. It is also remarkable that Balsamo, who was the first person to notice this fungus in Turin, found it on Vines, and he sent it to England as O. Tuckeri, Berkeley, which is, as the present illustrations show, a totally different plant. When O. Balsamii, Montagne, was first detected in Britain it attacked Mullein; it then spread to Strawberries; it was afterwards recorded from Turnips, Cabbages, and Sainfoin. Sometimes Turnips are so badly covered with this fungus that one cannot walk amongst the infected plants without getting one's clothes and boots thoroughly whitened, and when Sainfoin has been harvested the men have complained of being half choked by the enormous number of spores sometimes set free from the mildew.

It is probable that O. Balsamii, Montagne, will succumb to the sulphur remedy as readily as does O. Tuckeri, Berkeley. It is the "Strawberry mildew" of gardeners.

In Mr. Berkeley's account of the Vine Oidium he wrote that another form or species with still larger spores occurred on Chrysanthemum indicum; by this remark Mr. Berkeley seems to have once thought that the form of Oidium of Chrysanthemums, O. Chrysanthemi, Rab., might be a mere form of O. Tuckeri, Berk. It is, however, a very different fungus; it was illustrated and described in the *Gardeners' Chronicle* for November 29, 1884, p. 685.

Mr. Tucker, of Margate, the admirable gardener who was not only the first man to detect the fungus in Britain, but the first to point out an effectual remedy, used the mixture of sulphur and lime already mentioned, with which he washed or sprinkled his diseased Vines, and to this day the remedy has held its place as the best. Sulphide of calcium by means of syringes was used by Grison, a gardener of Versailles. This was tried with success in an open vineyard of Toulon 10 hectares in size. Dr. Montagne says it removed the Oidium "as if by enchantment," but Oidium spores came from other vineyards, and caused the reappearance of the pest. Sulphide of potassium has also been used; its chemical principle is the same with the last, the object attained in both cases being the production of an extremely fine impalpable precipitate of sulphur. In open vineyards the cost of sulphuring is too great to be of the least value. Mr. Alfred Smee, F.R.S., sometimes burnt bi-sulphide of carbon or used bi-sulphide of lime, which being liquid, he simply placed in a saucer.

It is often sufficient to sprinkle flowers of sulphur on the hot-water pipes, and maintain a gentle heat, or sulphur may be mixed with water, or with water, soft-soap, and earth, till it acquires the thickness of paint. This mixture may then be painted on the pipes and stems of the Vines. Flowers of sulphur may also be mixed with water thoroughly stirred, and then used with the syringe. After a day or two pure water must be used

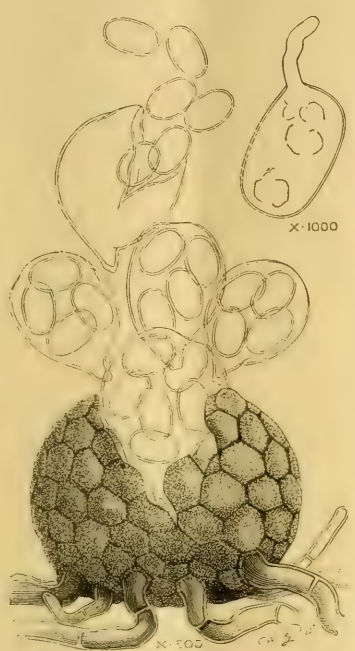


FIG. 149.—PERITHECIUM OF ERYSIPHE COMMUNIS, IN THE ACT OF DISCHARGING ASCI AND SPORES,

Enlarged 500 diam.: one spore germinating, enlarged 1000 diam.

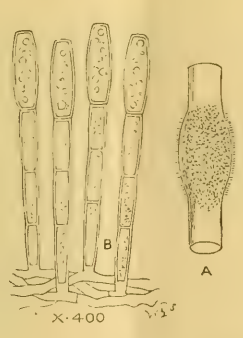


FIG 150.—OIDIUM BALSAMII, MONT., FROM CHISWICK GRAPES: ENLARGED 400 DIAM.

to remove the sulphurous deposit. If sulphur is burnt or used to excess there is great danger of destroying the Vines. Or powdered sulphur may be tied in muslin bags, the leaves dusted, and the sulphur washed away a day or two afterwards with rain-water.

The following has been recommended:—"Six ounces of soft-soap to a gallon of water, and syringe, then paint pipes with sulphur; pipes should be hot—*i.e.*, thermometer at 90°, or water in pipes 165° to 170°." *Worthington G. Smith, Dunstable.*

Home Correspondence.

Cultivation of Tobacco in Great Britain.—As considerable interest is being taken in this subject at present, it may be interesting to agriculturists to know that about the year 1800 an attempt was made to cultivate Tobacco in Scotland, and it is recorded in the *Statistical Account of Roxburghshire* that "In one season a tenant-farmer in the parish of Crailing (about 6 miles west of Kelso) drew £115 for Tobacco plants, and afterwards grew acrop of between 12 and 13 acres, which he sold upon the ground for £320, but an Act of Parliament intervening, the purchaser was unable to fulfil his bargain, and the farmer was compelled to dispose of his Tobacco to the Government at only 4*d.* per pound, at which rate it brought him only £104." And it is further remarked:—"It appeared from the trials made at that time that Tobacco would thrive well in the southern parts of Scotland." It was also grown largely in fields a little to the east of this town (Kelso), part of which is now a cemetery. A road at the west end of the cemetery is still called the "Drying-house" Lane from the fact that the house where the Tobacco was dried stood there. Mr. Brotherston, botanist here, informs us that between twenty and thirty years ago he used to grow regularly in his garden at Ednam (about two miles north-east of Kelso), as much as furnished him with smoking Tobacco; and at the present time we know of its being regularly grown in a nobleman's garden for the purpose of fumigating the greenhouse plants, the sort generally grown being the Virginian, a variety of Nicotiana tabacum, though there are many other sorts in cultivation, one being Nicotiana rustica, the common or green-flowering variety, which is much hardier than virginica, and, we believe, the first to be cultivated in this country, though the Virginian was introduced fully 130 years earlier. We may say, that for this country the young plants require to be raised in a hotbed, and planted out about the end of May in deeply trenched soil heavily manured. The greatest enemy the plants have to contend with (but only in their young state) is the slug. We have no doubt whatever that Tobacco could in most seasons be profitably grown in this country, provided Government will be somewhat lenient as to the conditions and taxation. If we mistake not, the parliamentary Act referred to was passed almost solely for the benefit of encouraging the growth of Tobacco in the colonies; and surely our colonial friends have had a fair monopoly of its growing, and it is to be hoped that the Government will allow our farmers at home (who may wish to grow it) permission to do so on reasonable and encouraging terms. *Laing & Mather.*

—— Allow me to say a few additional words on the cultivation of yellow Tobacco, which I omitted for the sake of brevity in my last communication. To a certain extent the writer of the pamphlet quoted by me is at one with Colonel Trevor Clarke, "that the colour of the ultimate product is due to soil and conditions of cultivation." Like Colonel Clarke, he deprecates the use of farm manures, but strongly advocates the use of prepared fertilisers. Thus he says:—"Eleven years' experience in the use of the Anchor Brand Tobacco Fertiliser, manufactured by the Southern Fertilising Company, Richmond, Virginia, has convinced the writer that it is the planter's best aid in the production of rich, silky, bright yellow Tobacco. Lands capable of producing yellow Tobacco need just such help as is furnished by this fertiliser in hastening the growth and giving size, substance, and early maturity to the plant. From 100 to 300 lb. per acre of the fertiliser may be profitably used." Regarding the black colour of Latakia this is due to a great extent to the system of drying over the smoke of burning Oak-wood, by which it also obtains the smoky flavour characteristic of this Tobacco. I am fully aware of the difference in the flavour of Tobaccos that have been fermented and those that have not, or only slightly so, and I prefer the later because they are lighter and more fragrant. *John R. Jackson, Museum, Kew.*

Parrot Tulips.—What we in this country call the Parrot Tulips appear to belong to T. turcica, the striped Tulip of Turkey. Some have supposed them to be simply monstrosities thrown off by the early flowering varieties, but Messrs. Vilmorin & Co. and others group them under the heading of T. turcica. There does appear, on examination of the bulbs, in its method of growth, and in the characteristics of the flowers, certain specific differences — besides, the varieties are intermediate in regard to flowering between the early flowering and late flowering varieties. The species have one fault—the plants are weakly in growth even when well cultivated, and their flowers being large, over-weight the stalk and bend it down. The petals are irregular, with white irregular and deeply serrated edges, but they are singularly eccentric in marking and colour, and highly attractive. The Parrot Tulips are especially remark-

able for their large and curious flowers of an elongated oval shape before they expand, and when fully expanded, very spreading. The flowers of the same variety will vary in character, sometimes they are deeply slashed into unequal thongs; sometimes simply torn at the edges; sometimes much wrinkled. The colours of the varieties vary from the brilliant red of Feu Brilliante to a clear and dark yellow, sometimes self coloured, sometimes variegated, bordered or flamed with one of these two shades, or of bright green, yellowish, or orange, according to the variety. The arrangement of colours and the form of the flowers imparts to the blooms a singular appearance: and they are well named Parrot Tulips because they have been compared to the plumage of these birds, or to the fantastic forms of the dragons of mythology, hence they are also known as Dragon Tulips. The leading varieties are Feu Brilliante, brilliant scarlet; Monstre Rouge, crimson, large and striking; Mark Graaf, yellow, scarlet, and green; Monstrosa, yellow and red; and Perfecta, striped red and yellow. They are easily grown in pots, and this is perhaps the best way to cultivate them because the flowers can be staked, which is necessary in consequence of their tendency to hang down. If planted in the open border, some such support must be given them, or they will be beaten down by rain and wind, splashed with mud, and otherwise injured and their beauty defaced. *R. D.*

Colletias.—One of the largest specimens I have ever seen is at Sea Grove, Dawlish, South Devon (T. Lea, Esq.). Its strong, acute, fierce-looking spines give this remarkable shrub a very formidable appearance. Of this feature I speak feelingly and shall never knowingly get too near a Colletia again. The specimen under notice is a fine example of the Colletia bictoniensis, and came originally, I understand, from the Bicton Gardens, on the opposite shore. Be that as it may, it is quite 8 feet in height and some 6 feet wide, but, like many things, lacks symmetry, in consequence of being crowded and jammed between others. It is thus growing within a stone's-throw of the sea, on the side of a cliff, and every year about the end of summer this produces a profusion of small but pretty creamy white flowers, and then is particularly ornamental and calculated to excite the inquisitive. To connoisseurs and possessors of rare and curious plants the Colletias should be most welcome adjuncts, and where genial, sheltered positions can be secured doubtless the plants would flourish. *W. Napper, Alphington Cross.* [A fine specimen, 6 feet high, of this plant flourished at the nursery of Messrs. Osborne, at Fulham, as many gardeners may remember; it grew in a border, near the old-fashioned show-house, and quite near the high road. Many other rare and singular plants disappeared when the builders got hold of that old nursery garden. The plant was killed by frost near London in the winter of 1879—1880. ED.]

Scutellarias. — This genus of Labiatæ contains several pretty species which are extremely useful and showy. They are soft-wooded, and rapid growers, and very apt to lose their lower leaves, so that some considerable attention is required to grow them into fine specimens. They should be potted in peat of good quality, leaf-mould, and loam, in about equal parts, with an addition of silver sand. By successional pottings and pinching at various times the plants can be had in bloom during the greater part of the year. A span-roofed pit or small house with an intermediate temperature suits them best, where a genial moist atmosphere is kept up. They are subject to red-spider, and more especially black-fly; but if kept growing freely, these insects will give very little trouble. An occasional syringing with tobacco-water keeps the plants clear of the fly. S. Mocciniana is a great favourite with me. In this species the racemes are large and dense, the individual flowers about 2½ inches long, the tube of a bright orange-scarlet, and the limb deep yellow. It is a very free bloomer, and one of much value as a cut bloom, or as a decorative plant for the indoor decoration. S. Costaricana, is a species with fine smooth dark green leaves, and dense terminal raceme of bloom crimson and orange-yellow. This variety is particularly well adapted for cutting, and blooms during the greater part of the year. S. aurata has foliage of a bright shining green, and the flowers, of light yellow and orange, are produced on long terminal racemes. S. aurata sulphurea is a variety of the last named, but, as its name implies, it is of a pale yellow colour. S. Ventenati makes a nice contrast with the two last varieties, the flowers being of a brilliant crimson and of long duration. *A. Evans.*

Yellow-ground Carnations Perfecting Seed in the Open Air.—These are much more tender and difficult to flower in the open air than any other of the named varieties, Pride of Penshurst—certificated to Mr. Cannell, of Swanley—being the most robust with me. Last year a seedling, yellow ground, flushed with crimson-purple, not very vigorous, produced two pods of seed for the first time, so far as I know, in the open air in the South of Ireland. Would you or any of your readers say if you know any similar instance of yellow Carnations perfecting seed in the open air? Any seed I have had—and I raise some every year—has been hitherto from the South of France. *W. J. Murphy, Clonmel.*

Wistaria sinensis. — This beautiful hardy creeper deserves to be universally planted. This year its pale blue flowers are quite abundant on sunny aspects, and flowering so early in the season it is doubly welcome. There is a very good example of it at the "Mitre" Hotel, near Hampton Court Bridge, which covers the greater part of that front of the building, that facing south-east. Doubtless the late dry and warm summers we have had ripened the wood, and thus induced greater floriferousness. It should have a rich sandy soil, and its leaders should be trained horizontally about 9 inches apart and be spurred in after the manner of a Vine. If too much young wood is laid in, it does not get well furnished with foliage and flowers. *H. Hawkes.*

Floods in Worcestershire.—I send you a copy of the record of the extraordinary rainfall of last week, as registered by one of Negretti & Zambra's 8-inch funnel guages, taken at 9 A.M., and recorded as the previous day's rainfall (Professor Symon's plan):—

		Inches.
Monday,	May 10	0.28
Tuesday,	,, 11	0.31
Wednesday,	,, 12	1.98
Thursday,	,, 13	1.76
Friday,	,, 14	0.01
Saturday,	,, 15	0.03
Sunday,	,, 16	0.12
		4.49

The rivers Severn and Teme have greatly overflowed their banks, their respective valleys resembling huge inland lakes. Railway and highway bridges have been swept away, houses destroyed, roads rendered impassable for weeks to come, communications completely intercepted, much property destroyed, and many animals have perished. To-day (May 17) many gardens and fields of Potatos are still under water. These are the highest floods of the present century. We are about 135 feet above the sea level. *W. Crump, Madresfield Court, Malvern.*

Choisya ternata.—We send you herewith two or three branches of this plant taken from bushes of 4 feet high by 4 or 5 feet through, and which have been growing right out in the open in our nursery at Exminster (near Exeter), all winter. As you will see, it has much to recommend it—an agreeable aromatic perfume savouring of Myrtle and Hawthorn, fine white blossoms not unlike Orange, and bright, glossy-green leaves. *Robert Veitch & Son.* [Strong corymbs of pure white blossoms, and healthy foliage. We rarely see the plant about London in such good condition. ED.]

The Rose-bud Worm.—I observe, on p. 630, a recommendation to pick out Rose-bud worms with a needle as soon as they can be recognised. Is it not a better plan to pinch off the whole shoot, and let new buds form? Has any one ever known a perfect flower produced by a Rose-bud in which a grub has been hatched? The same question may be asked about the blight so prevalent in the bud of the double Rocket, and indeed in many other buds this year. However satisfactory it may seem to do our best to keep these marauders in check, the proportion we can destroy is so small that it is mere waste of time to attempt it; and philosophical resignation to the loss, with the hope that atmospheric conditions another season may be less favourable to the increase of insects, is probably the best course. Perhaps the same may be said of queen wasps; those who pay rewards for every one of these killed in spring, under the mistaken belief that they have destroyed so many nests in prospect, should be told that of the queen wasps which survive the winter, not one in 200, even if they are all left to themselves, succeeds in maturing a nest. *C. Wolley Dod, Folkestone, May 18.*

Cypripedium Hyeanum. — In answer to the enquiry of M. L. Masereel, in your issue of May 8, respecting the Cypripedium for which Mr. White obtained a First-class Certificate at the Royal Horticultural Society, I beg to state that Mr. White's Cypripedium was bought of Messrs. H. Low & Co., of Clapton. It appeared among the Cypripedium Lawrencianum, and consequently has exactly the same origin as M. Hye's plant. There can be no doubt that it is a distinct and chastely beautiful variety. *W. Gilbert, Earlsfield.*

Flowering of Araucaria imbricata.—In case it should be a matter of interest to any of your readers I beg to say that an Araucaria imbricata in my garden is flowering. I am told that it is of rare occurrence. *Frances Anne Starkey, Capthorne, Fawley, Southampton.*

Anemone apennina for Pots.—During a recent sojourn at Dover I was gratified to observe each morning at a bouquetists a quantity of Anemone apennina growing in 32-sized pots arranged in a row in the front of a large window. They displayed something more than the ordinary feature of pot culture such as we have lately seen at metropolitan shows, but the most vigorous of growth and the largest of their lovely blue flowers so closely packed together as to give one mass of delicate colouring such as is difficult to describe. Though I endeavoured to obtain information as to the way such gorgeous pots of bloom had been produced I was not successful. Certainly a prettier addition to flowering plants could not be imagined. Could they have been potted up from some locality where these plants grow naturally more robust than elsewhere? This question seemed to have been answered in the affirmative the following week, as side by side with these lovely blues there were ranged the commoner white wood Anemone, the latter, however, more thinly potted, and wholly wanting those meritorious points found in the former. *W. Earley, Ilford.*

Pelargonium Variegated Chelsea Gem. — When Mr. W. Bull sent this out he distributed a thoroughly good thing. For pot culture and bedding, and indeed for any purposes of a decorative character, that Pelargoniums can be made to serve, this is one of the best varieties that can be employed. It has variegated foliage and double flowers—two characteristics not often found in combination. The leaves are bright green, with a broad marginal variegation of pure white, and trusses of bloom are full of double flowers of a charming rosy-pink colour. The habit is perfect, compact, and free, the plants throwing out plenty of shoots near to the ground. It would be interesting to know how this variety originated. *R. D.*

Plants in Flower.—The following plants are now in flower at Ryton-on-Dunsmore, Coventry:—Fabiana imbricata, in bud; Coronilla glauca, in flower; Eugenia Ugni; Maréchal Niel Rose, in bud; Myrtles, Primula farinosa, Laurus nobilis, Verbena triphylla. All the above plants have lived through last winter on a south wall, with only a slight protection of stable straw and old Asparagus stems. *Mary Freeman.*

The Victoria Plum.—I sat lately looking out upon a plantation of 200 Victoria Plum trees, young half-standards, averaging 8 to 10 feet through, that were covered with blossom. They looked just as they did in February last, when early one morning they were found to be covered with the fine feathery flakes of the soft silent snow, and then they looked as if a miracle had been wrought, and in the middle of winter they had suddenly been transformed into blossoming branches. All this forecast has been realised with remarkable fulness. Last year these trees were breaking down with their weight of fruit, and there is now every indication this fruitfulness will be repeated. It is the month of May and particularly the second and third weeks of that month, that fill gardeners with such grave concern. There are tokens of abundant fruitfulness on every hand, if only Nature but smile upon the efforts of man. *R. D.*

THE THOMERY VINES.

ONE of the most remarkable illustrations of the high point of perfection to which the growth of fruit and vegetables has been carried in France is afforded by the Vines at Thomery, which have been much extended during the last quarter of a century or so, and not the least interesting section of the Agricultural Exhibition held at Paris every year at the Palais de l'Industrie is that of fresh fruits in which M. Etienne Salomon and M. Rose Charmeux, both of Thomery, invariably reap the most laurels. Thomery is the place at which, as so many of your readers may be aware, the Grapes known as the Chasselas de Fontainebleau are principally grown. Upon the borders of the forest of Fontainebleau, about 4 miles from that town, and upon the banks of the river Seine, Thomery is so situated that it is sheltered from the wind upon nearly every side, the temperature being never very low in winter, or very high in summer. The Department of the Seine-et-Marne is not one of those in which a very large quantity of wine is made, but for all that 50,000 acres are planted in Vines, of which at least a third are in the vicinity of Fontainebleau. But at Thomery itself, where Grapes for the table only are grown,

there is not more than 500 acres of land under vine-yard cultivation, and it is a well ascertained fact that the first stock of Vines was not planted until 1730, when M. Charmeux, an ancestor of the present grower, had to obtain permission from the Crown to build a wall, this permission being only accorded him upon condition that he left a passage open for the king's hounds to get through when hunting. The character of the soil was soon found to be eminently suitable to the growth of Grapes, and after the Revolution had led to a division of property, the cultivation of the Chasselas assumed very considerable proportions.

The mode of cultivation at Thomery is much as follows:—The land which it is intended to use for Grape growing is intersected with walls about 30 feet apart from one another, and about 10 feet high. The walls are of the simplest construction, but they are carefully plastered and whitewashed, and are then pallisaded with galvanised iron wires about 10 inches apart. The top of the wall is covered in with tiles placed in the shape of a V reversed, and coming down about 10 inches on each side. Iron prongs about 30 inches long are placed underneath to hold the wooden or canvas frames, which are used to protect the Grapes from frost in spring and rain in autumn. These walls are built as far as possible north-east or south-west, as it is considered that a south-easterly aspect is the one most favourable for the proper ripening of the Grapes, though the opposite side of the wall is also utilised for the growth of Grapes which ripen later, or for fruit trees of various kinds. The intermediate space between the walls is also used for the growth of Grapes upon low espaliers, but these are of secondary quality, and the chief attention is bestowed upon the Vines facing south-east.

With regard to the selection of plants the Chasselas de Fontainebleau was at one time the only variety, but of late years the Frankenthal, from the Rhine vineyards, the Bondalès, bearing a black Grape of very fine quality, and one or two others, have been introduced; and M. Salomon alone has in his nurseries 1400 varieties, including the Vines for wine-making Grapes, he having for some years been endeavouring to discover a stock which, blooming late and maturing early, would be suitable for growth in the central and eastern vineyards, where cold weather sets in so early.

The vineyard requires very little labour, so far as the ground is concerned, a hoeing in April, and one or two light hoeings in the summer to destroy weeds, sufficing to keep the ground clean. But the Vines themselves have to be constantly watched from the time the sap begins to come up until about May 20, so as to put up the shelters against the walls in case of frost. The risk of that has disappeared by about May 20, and then follows the careful elimination of defective or barren blossoms, and the removal of the various forms of vegetation which are useless to the plant and injurious to fructification. Then an incessant war has to be waged against all the enemies of the Vine—the vegetable parasites and the insects in their various transformations, as also against the field mice and other animals which prey on Grapes when they get the chance.

As soon as the Grapes have reached the size of a Pea all the small and shrivelled ones are removed, while, if the branch is deemed to be too long, it is shortened. When the Grapes begin to ripen, the process known as the *effeuillage*, or removal of the leaves which would prevent the bunches from receiving a due amount of sun, is carried out; and finally, the shelters are put up when, as generally occurs, the autumn rains set in before the Grapes are gathered. The gathering takes place towards the end of September, and the bunches nearest to the ground—and, therefore, most exposed to the damp—are removed first, the bunches being placed in small baskets, which are themselves placed in a large receptacle divided into compartments. When they have all been picked they are classed in three separate sections—those of the best quality being packed in boxes holding 2 lb.; those of the second quality in boxes holding 5 lb.; and those of the third quality in cases of from 15 to 20 lb. The town of Fontainebleau with its 15,000 inhabitants, and many season visitors, consume a great many; but the bulk of the Grapes are sent off from Thomery station; the average quantity despatched from there being 1200 tons per annum.

Before saying a word or two about the mode in which the Grapes are preserved and about the forcing-houses at Thomery, it may be interesting to point out the financial aspect of Grape culture at this favoured spot, though the difficulty of doing so is increased by the fact of the culture being upon so small a scale. Very few of the lots are as much as a hectare (2½ acres) in extent, but M. Salomon, whose opinion may be accepted as infallible upon this head, estimates that a capital of £700 is necessary for the cultivation of an acre, out of which £80 represents the purchasing value of the land, £50 the preparation of the soil and the plantation; and the remaining £570 the cost of erecting 1320 yards of wall. The annual interest upon this, allowing for depreciation of the value of the property, must be taken at 11 per cent., or £77 per acre, while further allowance must be made for the loss on the money invested during the first four or five years, when the Vines are not yielding anything. In all, the annual cost of an acre is about £100, while the produce of an acre is reckoned as follows:—

	£	s.	d.
The fruit walls (espaliers) yield 2 tons of Grapes at 6d. per pound	80	0	0
The intermediate lines of espaliers yield 2 tons of Grapes at 3/ per pound	48	0	0
The fruit trees, &c., between the walls	8	0	0
	£136	0	0

It will be seen that the very large capital invested is owing to the necessity of erecting the walls, and this is also why the property is so much divided that many persons have a bit of wall in three or four different parts of the parish. But notwithstanding all this there is, taking one year with another, a very handsome profit of something like £36 per acre upon the Grapes alone.

The preservation of the Grapes intended for use in the winter and spring is effected in two different ways—one known as the dry and the other as the green process. In both cases the bunches that are highest on the wall (and therefore least exposed to damp) are selected, the gathering taking place towards the end of October. The Grapes intended to be preserved by the dry process are placed in boxes with no bottoms to them, but covered with Ferns or oaten straw, and the boxes are then laid upon sloping shelves, so as to facilitate the inspection of them from time to time. In what is known as the green process, the Grapes are left upon the stem, which is cut off about 4 inches from the top of the bunch and placed in a phial filled with water in which a small spoonful of coal dust has been distilled. These phials are all hung up upon shelves erected in a room which is absolutely free from heat, cold, or damp. The heat would dry them up, the cold would destroy their flavour, and the damp would make them rot. What is required is a temperature just above freezing point, and a room from which light is excluded as much as possible. M. Salomon, whose establishment is well worth inspection, and will be shown to any visitor, has realised this apparent impossibility, and the way in which he can regulate the temperature, by means of iron reservoirs, into which a current of cold or hot water can be injected as required, is most ingenious. He exhibited at Paris in February last year a basket of Peaches which had been gathered in the previous September, and still looked as fresh as if they had just been picked. There is, of course, a certain amount of loss from deterioration and decay, but the business is, upon the whole, a very profitable one. With regard to the forcing-houses, I do not know that I need say much, for there is nothing in their construction or management from which English horticulturists have anything to learn, except that several growers at Thomery, instead of having a permanent forcing-house, erect a movable one by placing frames against the walls upon which their best fruit trees are growing, and thus obtain some very satisfactory results. A sight very well worth seeing, too, at Thomery is that of the nurseries in which the Vine plants are grown either for use in the parish itself or for sale, there being a great demand for Thomery grafts. The propagation of the grafts is effected in a mode which is, I am told, peculiar to Thomery. The Vine branches selected, which are generally taken from the lower lines of the espalier as being the most vigorous, are placed in a wicker basket filled with earth and having very wide interstices. This basket is buried in the ground at a depth of 4 inches under the Vines, and the young shoots thus acquire such force that they are fit to be transplanted by the following autumn. In another year they are full of vigour and ready to be sent to their destination, however remote, without being taken out of the basket. This would be too expensive an operation to apply to an ordinary vineyard, which has something like 4000 plants per acre, but it answers very well for wall plants, and ensures a prompt and healthy vegetation. It is an operation, too, which increases the Vine grower's profit, and I should not be at all surprised if M. Salomon were within the mark when he estimates that about £80,000 is invested in the 550 acres of land devoted to the growth of Grapes and choice fruits in the neighbourhood of Thomery, Fontainebleau, and Moret. Certain it is that in no village throughout France does one see neater cottages, better kept roads, or more smiling and contented faces. Then, again, the situation is very picturesque, and one can fancy that the village does really derive its name, as reported, from the exclamation of Henry IV., who, coming over to it for the first time, exclaimed, "*Ici tout me rit.*" *C. B. P.*

ORCHIDS AT THE WOODLANDS, STREATHAM.

To meet the requirements of the rapid growth of his collection, and for the accommodation of the many large specimens of Lælia, Cattleya, Aërides, Saccolabium, &c., which he possesses, R. H. Measures, Esq., since our last notice, has increased the number of his Orchid-houses to twenty, besides the other plant-houses, which are occasionally used for special Orchids, or for resting specimens. In consequence of the better accommodation the whole collection, previously good, has greatly improved in condition, and the plants are better displayed. The plan of arranging the flowering plants at the Woodlands, is to let each of the houses retain enough of their occupants in bloom to make them bright and interesting, and to make special displays in the three or four ornamental structures which are built at intervals in the ranges. These arrangements of flowering plants are very skilfully carried out, and are assisted in no small degree by the fountains, vases, and pedestals provided in each of them. Some idea may be formed of the charming appearance of these floral arrangements if we note the contents of three of the houses.

Perhaps the most remarkable of them all is that with a fountain in the centre, and the side stages devoted to Cypripediums, among which are in flower C. Lowii, C. Haynaldianum, C. vexillarium, C. selligerum majus, C. Boxalli, C. niveum, C. Warneri, C. barbatum biflorum, C. Harrisianum, C. Lawrenceanum, C. ciliolare, C. Sedeni ×, a specially fine C. caudatum, &c. But the charm of the display consists in the whole of the roof being covered with Odontoglossum citrosmum, sending down their lovely spikes of flowers, often 3 feet or more in length, and varying in colour from pure white to bright rose. There is no doubt that this is the proper way to grow O. citrosmum, and its beauty is great when seen throwing down its massive but slender stemmed inflorescences in this manner.

Another flowering plant-house has for the middle plant in the centre vase a Dendrobium Jamesianum with over forty flowers, surrounded with the long arching spikes of Odontoglossum Alexandræ, relieved with the coloured foliage of the Crotons and edged with Isolepsis gracilis—the side stages and roof bearing fine plants in bloom of Oncidium Marshallianum, O. sarcodes, several O. ampliatum majus, O. concolor, Dendrobium Schrœderi with four fine spikes, many good examples of Cattleya citrina, C. Skinneri, C. S. alba, C. Lawrenceana, C. Mendelii, &c.

The third arrangement of plants in flower is in the first Odontoglossum-house, along the middle of which run seven tall pedestals bearing vases each containing immense plants of Cymbidium Lowianum, some of them furnished with four or five grand spikes of bloom which they here display to great advantage. The side stages have a good show of Odontoglossum Alexandræ, O. Pescatorei, O. Haliii, O. nebulosum, O. maculatum, O. Andersonianum, O. polyxanthum, and some very lovely forms of O. cordatum, with brightly coloured golden tipped flowers. These three houses are enough to compensate any one for a visit to the Woodlands, but they do not contain a tithe of the beautiful things there in bloom, for the Cattleya and Lælia houses have a fine show of all the plants of the season, conspicuous being the prime old favourite C. Mossiæ, and Lælia purpurata, in numbers of good and distinct forms.

The new Aërides and Dendrobium houses have some fine specimens, one mass of Saccolabium Blumei majus having some fifteen leading growths; Cattleya labiata Pescatorei with six leaves, and a fine looking Aërides sp., not yet flowered, about a dozen and a half Cœlogyne cristata alba, with fourteen leading growths, and others almost as fine. In flower were Aërides Ballantinei, A. Fieldingi, A. odoratum, A. crispum, many good Vanda suavis, and V. tricolor, V. cristata major, Saccolabium ampullaceum, S. curvifolium, S. retusum, Dendrobium Dalhousieanum, D. aureum, D. densiflorum, D. suavissimum, D. Bensoniæ, D. crystallinum, D. tortile, D. t. roseum, Angræcum Leonis, &c. Among the many other plants of interest in flower in the houses are some very fine specimens of Odontoglossum vexillarium, including rubrum and Cobbianum, many O. Roezlii, quantities of fine scarlet Sophronites, Cœlogygne Massangeana, Phaius bicolor, Promenæa citrina, the pretty and sweet Polystachya pubescens, with thirteen spikes; Maxillaria luteo-alba, Epidendrum rhizophorum, E. arachnoglossum, Lycaste Harrisonæ, L. Skinneri, L. aromatica, Phalænopsis Luddemanniana, &c.

The new Masdevallia-house is gay with the showy varieties of M. Harryana, M. ignea, M. Veitchii (one of the grandiflora form of this having flowers 7 inches in length), M. Shuttleworthii, M. amabilis, M. xanthina, and M. trochilus. The Phalænopsis are now suspended in the little house in which the varieties of Anthurium Scherzerianum and A. Andreanum are grown, and neither they nor the other good things seem at all likely to go back under the care of their new custodian, Mr. R. C. Fraser.

Florists' Flowers.

CHINESE PRIMROSES.

Without exception the remarkably fine rich-coloured Primula exhibited by Mr. Cannell at South Kensington lately under the name of Improvement, and certificated by the Floral Committee, is one of the finest of its kind yet offered to notice. It is true that the beautiful striped form shown had larger flowers, perhaps finer has never been seen, and of thick texture and high quality, but these striped or pale hued forms of Chinese Primroses, though ever so fine, lack the brilliancy and effectiveness found in the rich madders of the Chiswick Red strain. Not only do the flowers of Improvement exhibit remarkable size for the strain, but also first-rate form and quality. To those features is added a brilliant rosy-red hue that shows in a good light like to a setting sun or by gaslight a glow of fire. If Mr. Cannell will breed from this fine form, and show next year a score of plants with blooms as fine and good as the one recently shown he will have accomplished the most interesting feat yet seen in relation to Chinese Primulas. The newer blue tint which seems to have become widespread, is novel — that is its chief recommendation. By day it lacks effect, and under artificial light it is valueless. It is just possible that a really blue Chinese Primrose may be obtained by-and-bye, just as in time we hope to secure a really blue hardy Primrose. Interesting as such novelties may be it is certain that with hardy Primroses so with Chinese Primroses, the most popular hues are the rich crimsons, reds, pinks, and pure whites. A really good yellow Primula seems as remote as the blue Dahlia, but happily other species, especially Abyssinica and floribunda, give that hue of colour freely. It is to be deplored that representatives of the Chinese Primrose were so scantily represented at the Primula Conference. *A. D.*

THE "MEAL" ON AURICULA FOLIAGE.

Probably one of the heaviest and handsomest mealed Auriculas is White Rival (Trail), though I have got "selfs" more dense. Recently an accident happened to two of my finest plants of the former, necessitating repotting. The roots were not much disturbed, but of course the check was considerable. The leaves flagged, and with the flagging the gorgeous meal or white farina not only lost its brilliancy, but almost wholly disappeared; proving conclusively that vigorous health is necessary for the full development of this great charm of the Auricula. *W. J. Murphy, Clonmel.*

Reports of Societies.

ROYAL BOTANIC.

THE first great summer exhibition was held on Wednesday, May 19. A great crowd of visitors inspected the splendid collection of Roses, stove and greenhouse flowering plants, Orchids, Pelargoniums, &c., the above being the principal feature. In some classes the competition was very spirited, especially in Orchids, of which there were many fine specimens, and also collections from various exhibitors not for competition, notably that of Messrs. Low, of Clapton, who had a fine group of Cattleya Mossiæ. Mr. W. May also exhibited a small group, and Mr. T. Banks, gr. to E. Gotte, Esq., who had, amongst other plants, a very remarkable Lælia purpurata, with enormous growths and six flowers on a spike.

ORCHIDS.

In the class for twelve Orchids the 1st prize was awarded to Mr. J. Douglas, gr. to F. Whitbourn, Esq., Great Gearies, Ilford, with a very good group; a plant of Cattleya Mossiæ had thirty-one fine flowers, Oncidium ampliatum majus, with nine spikes; a good mass of Odontoglossum vexillarium, O. Roezlii, with 100 flowers; Cymbidium Lowianum, with two spikes and fifty-seven flowers, &c. 2d, Mr. F. J. Hill, gr. to H. Little, Esq., The Barrons, Twickenham. He had a splendid specimen of Dendrobium thyrsiflorum, Cattleya Mendelii, a fine variety with twelve blooms; Lycaste Skinneri, a fine form, nineteen blooms. Mr. C. J. Salter, gr. to J. Southgate, Esq., was a very good 3d: Masdevallia ignea was well grown and very pretty, M. Veitchii majus had eleven very fine blooms.

In the corresponding class for nurserymen Mr. J. Cypher, of Cheltenham, was 1st; he had a huge specimen of Dendrobium thyrsiflorum, Cattleya Skinneri oculata, six handsome spikes; a good specimen of C. Mossiæ, &c. Mr. Henry James, Castle Nursery, Norwood, was 2d; he exhibited a splendid specimen of Lælia purpurata, and also of Cattleya Mendelii, with twenty-five flowers.

AMATEURS.

For twelve exotic Orchids, *bonâ fide* specimens, Mr. J. Douglas was again 1st; he had Oncidium ampliatum majus, with a handsome spike; Dendrobium Wardianum, very fine; Odontoglossum Roezlii, and the variety alba, with fine flowers. Equal 2d prizes were awarded to Mr. S. Cooke, gr. to De B. Crawshay, Esq., Rosefield, Sevenoaks; and Mr. W. May, gr. to F. C. Jacomb, Esq., Stamford Hill. The best specimens were Cattleya Mossiæ, very fine flowers.

In the corresponding class for the trade, Mr. James Cypher was again 1st; he had Lælia purpurata Brysiana, very rich lip; a fine variety of Dendrobium thyrsiflorum, &c. Mr. James was 2d, with a neat group, in which was a nice Phalænopsis amabilis, and the rather uncommon Oncidium phymatochilum.

Messrs. Paul, of Cheshunt, were 1st as usual for pot Roses; they had superb specimens, Cheshunt Hybrid being remarkably fine; Céline Forestier, a handsome specimen; Madame de St. Joseph was very grand as a Tea. Messrs. Jackman, of Woking, were a good 2d.

STOVE AND GREENHOUSE PLANTS.

In specimen flowering plants Mr. W. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugeley, was 1st in both classes—six and ten specimens, all of them being of great excellence. Mr. G. Wheeler, gr. to Lady Goldsmid, St. John's Lodge, was 2d for ten; and Mr. C. Rann, gr. to J. Warren, Esq., Hand Cross Park, Crawley, was 2d for six, with good specimens.

Mr. Cypher was 1st in the trade class for twelve and six, with wonderful specimens. The eighteen plants placed together made a grand group. Mr. James was 2d in the same classes, his plants also formed a good group. Mr. J. F. Mould, Pewsey Nursery, Wilts, was 3d for twelve specimens.

Mr. C. Rann was 1st for six foliage plants in the amateurs' class, and Mr. James 1st in that for nurserymen.

Mr. J. Douglas had the best Ferns in the amateurs' class.

Twenty Roses in 12-inch pots were well shown by Messrs. Paul, of Cheshunt. They comprised large specimens with healthy foliage, and as many as thirty-six fine Roses on some of the plants. Mr. C. Turner, the Royal Nurseries, Slough, was 2d, with smaller, but withal finely grown specimens. Mr. Rumsey, Joyning's Nursery, Waltham Cross, 3d. Mr. Rumsey also received a 3d prize for nine Roses.

Azaleas were well shown by Mr. C. Turner, who gained 1st prizes for twelve specimens and also for six. The smaller specimens in 12-inch pots comprised some choice varieties, notably Mrs. Turner, Mdlle. Marie Lefebvre, a fine pure white; and the yellow A. sinensis, well grown.

Mr. Wheeler had the best six greenhouse Azaleas in the amateurs' class, and he was awarded a 3d prize for twelve.

Mr. Cypher had six excellent specimens of Cape Heaths. E. ventricosa magnifica was superb, the plant of large size, and the flowers rich in colour. They received the 1st prize.

Pelargoniums were very fine indeed, the plants of large size, and well furnished with fresh and beautiful blooms. For six large flowered specimens, Mr. C. Turner was 1st, and Mr. Cypher 2d.

In the amateur class Mr. D. Phillips, gr. to R. W. Mann, Esq., Langley Broom, Slough, was 1st with remarkably well grown specimens, and Mr. Hill 2d.

In the open class for fancy varieties Mr. Phillips very nearly wrested the honours from the veteran Mr. C. Turner, of Slough; the judges placed them equal 2d. The Shah and Princess Teck in Mr. Turner's collection were grand. Roi des Fantaisies and Mrs. Porter were best in Mr. Phillips' collection.

Twelve alpine plants were exhibited by Messrs. Paul, Old Nurseries, Cheshunt, Mr. T. S. Ware of Tottenham, and Mr. Douglas, who were awarded the prizes in the order of their names. Messrs. Paul had a very large collection of the choicest hardy barbaceous plants, beautifully arranged. They were greatly admired. Mr. J. James, of Farnham Royal, Slough, exhibited a collection of wonderfully fine specimen Calceolarias. The flowers were not only rich in colour, but the plants were handsome exhibition specimens. The St. George's Nursery Co., Hanwell, and Mr. Salter also exhibited Calceolarias. Mr. Wiggins, gr. to W. Clay, Esq., Kingston, exhibited a collection of Pelargoniums and Cinerarias; Mr. Ware hardy plants and a good group of forced Pæonia moutan, comprising seventy-five plants of choice and new varieties. Messrs. Lane & Sons, of Berkhamstead, had hardy Rhododendrons, in pots.

Mr. Ladds, of Bexley Heath, exhibited a basket of a new white zonal Pelargonium, Queen of Whites Improved; it is an excellent variety. Mr. Phillips, of Slough, sent some nicely bloomed Pelargoniums in 6-inch pots.

Large groups of plants formed a very prominent feature, as usual, in the centre of the large tent. A group of Roses from Messrs. W. Paul & Sons, Waltham Cross, was remarkably attractive; it was formed of thirty-four specimen plants as a background, and a front row of boxes of cut Roses of splendid quality. Orchids were a prominent feature in the group, which also contained fine Caladiums and Palms. Mr. B. S. Williams, of Holloway, also had a remarkably fine group.

Messrs. John Laing & Co., of Stanstead Park Forest Hill, arranged a splendid group of stove, greenhouse flowering and foliage plants, the tuberous Begonias being especially attractive; it contained new Orchids, well grown stove and greenhouse plants. Amaryllis Princess Battenberg was very striking, deep red with the margin of the petals cream. Oncidium tetracopis, in the way of O. macranthum, with chocolate petals, was very striking.

Messrs. E. G. Henderson & Son, Pine-apple Nursery, Edgeware Road, also staged a very meritorious group of new and rare plants; they were mostly of the foliage section, and very well grown.

The following is the list of the awards in the various classes:—

LARGE SILVER MEDALS.

To Messrs. Laing & Co., of Forest Hill, and to Mr. B. S. Williams, of Holloway, for their groups of plants.

SILVER MEDALS.

To Messrs. E. G. Henderson & Son, for a group of plants; to Messrs. W. Paul & Son, for Roses.

Small Silver Medals to Mr. J. James, for Calceolarias; and to Messrs. W. Cutbush & Son, for an excellent group of greenhouse and other plants; and Messrs. H. Low & Co., Clapton, for Orchids.

LARGE BRONZE MEDALS.

To Messrs. Paul & Sons, Cheshunt, for hardy plants; to Mr. T. S. Ware, for Pæonies; to Mr. T. Banks, for Orchids; and the St. Georges Nursery Company, for Calceolarias.

BRONZE MEDALS.

To Mr. T. S. Ware, for a group of hardy plants; to Messrs. Lane, for Rhododendron, and also for collection of Azaleas; to Mr. D. Phillips, for a collection of Pelargoniums; to Mr. Henry Turner, Langley, for a box of splendid examples of Maréchal Niel

Roses; and to Mr. D. White, Redlees, for a handsome specimen of Cattleya Mossiæ.

CERTIFICATES.

The following Botanical Certificates were awarded:—

To Messrs. Veitch, of Chelsea, for Phœnix hybrida, Rosa lucida, "Rose Button," and Rhododendron Brookianum.

To Mr. Mr. B. S. Williams, for Alocasia regina, Lælia Bella*, L. Russelliana, and Oncidium tetracopis.

To Mr. J. Douglas, for Cattleya Mossiæ "Silvia," Odontoglossum vexillarium "Silvia," and Æranthis Leonis.

To Messrs. H. Low & Co., for Cattleya Mossiæ splendidissima.

To. Messrs. F. Sander & Co., St. Alban's, for Odontoglossum Ruckerianum marginatum.

To. Messrs. E. G. Henderson, for Alocasia regina.

FLORAL CERTIFICATES.

To Mr. P. Ladds, for zonal Pelargonium Queen of Whites Improved.

To Messrs. J. Veitch & Sons, for Rhododendron President.

To Messrs. John Laing & Co., for Begonia Incendie and Queen Victoria.

To Mr. T. S. Ware, for Pæonia moutan, Lord Macaulay, Madame de Vatry, and Carolina.

Besides the certificated plants Messrs. Veitch exhibited baskets of Acer japonicum, A. palmatum dissectum, A. japonicum aureum, &c., a basket of Hydrangea paniculata grandiflora, very fine; Lilium longifolium, and hybrid Anthuriums.

EDINBURGH BOTANICAL: May 7.

THE Society met at the Royal Botanic Garden this evening, Professor Dickson in the chair. The following communications were read:—

I. "On Carex helvola, Blytt, as a Scottish Plant." By A. Bennett, F.L.S., Croydon.

II. "On a Method of Transmitting Living Plants Abroad." By R. Lindsay, Curator, Royal Botanic Garden.

"The method usually adopted in transmitting living plants, particularly where very long journeys have to be undergone, is to pack the plants in Wardian cases, *i.e.*, cases fitted with glass sashes, which, when closed, are nearly air-tight. This is no doubt the best mode of conveying plants safely, provided they are properly attended to on the journey. To do so it is almost necessary for some one who understands the requirements of plant life, to take charge of the case as, when sent without any special attention being paid to them, the results are frequently unsatisfactory. The dangers attending such structures appear to be want of ventilation and shading. The plants contained in them soon become drawn up and weakly in the steamy atmosphere of a close-fitting case, and often arrive at their destination in a dying or dead condition.

"One of the most successful importations of plants that I recollect of having seen was contained in a small wooden box sent to the Garden from Australia by Baron von Mueller, in 1866. The plants had been over three months on the journey, but were found to be in perfect health on their arrival at the Garden. This result we attributed chiefly to the simple manner in which the case was constructed. It consisted of a rough square wooden box, filled with soil, into which the plants (which had previously been grown in pots) were placed, two narrow strips of wood were nailed on to the sides of the box in an upright position, to which a cross-piece was attached, constituting a handle. The whole was then covered with strong cotton cloth, no glass being used. In vol. viii., p. 482, *Transactions of the Botanical Society*, a description is given of this case by the late Mr. McNab. In July last our associate, Mr. John Buchanan, when returning to Central Africa, being desirous of taking some economic plants out with him to that country, an opportunity was thus afforded of trying an experiment. This was rendered all the more necessary as on previous occasions similar plants sent to Central Africa from the Garden, packed in Wardian cases, although taken every care of on the way out, were found to be mostly dead on their arrival. On this occasion, a case similar to that exhibited was prepared. It is 18 inches long, 12 inches wide, 16 inches deep, has a ridge roof with a handle fastened on the top for carrying. The main difference from an ordinary Wardian case is in the substitution of cotton blinds for glass sashes. The blinds are nailed to the top of the ridge and tied down with cords to the sides of the case, so that they may be easily rolled up or down as required. The advantage of this method is the admission of sufficient light and air to maintain the plants in a healthy condition; the fine meshes of the cloth acts as a shade from strong sunshine, and do not admit so much air as to cause the interior to become quickly driedup. The plants sent on this trial consisted of India-rubbers, several Tea plants, Cinchonas and Ipecacuanha. They were all turned out of the pots in which they had been growing previously, the balls of soil slightly reduced, and then wrapped up tightly amongst sphagnum moss. The plants were then packed in the case firmly, in an upright position, using sphagnum for filling in the interstices. Thin strips of wood were placed across the balls, the ends of which were nailed to a flange inside the case for that purpose, thus preventing the plants from moving, even if the case was turned on end. After being well watered and allowed to settle for a day, the blinds were tied down and the case sent up to London, where Mr. Buchanan took it in charge. He was eighty-two days on the journey out, and in a letter to Mr. Taylor received in December last Mr. Buchanan reports that all the plants arrived in a perfectly healthy condition, except the Cinchonas, and that he had not given up all hope even of them. I may mention that the Cinchonas referred to were not very vigorous plants to begin with; they were the best we had at the time, but were merely young seedlings. It would be well to have this method still further tested, either by having a few plants sent to a distance alone, or at all events in charge of some one less skilful in the management of plants than Mr. Buchanan. For all but very tender plants (where special provision would be required), I think much more favourable results would be attained by the use of a case such as that described, always provided it were placed free from danger of sea water getting through the canvas, than if the usual Wardian case were used."

III. "Communication from John Buchanan, Shire Highlands, East Africa." By Andrew Taylor.

In this letter Mr. Buchanan stated that Mr. Lindsay's box, referred to in the preceding communication, should be kept away from sea-water, in the cabin. The writer had only been able to send to London a small box of Strophanthus hispidus, which, since the publication of Professor Fraser's paper, is advocated as a cardiac remedy. He was now attempting the culture of the plant in his plantation on Mount Zomba.

IV. "A Forest Tour in the Provence and Cevennes." By Major F. A. Bailey, R.E. Communicated by Dr. Cleghorn.

V. "Report on Temperature and Vegetation at the Royal Botanic Garden." By Robert Lindsay, Curator.

"During the month of April vegetation made slow progress. Comparatively little frost occurred, but a succession of dry easterly winds prevented any rapid growth from taking place. The season is unusually late, and should fine weather follow the prospect of an abundant fruit crop will be one good result. With few exceptions deciduous trees and shrubs had scarcely any leaves developed at the end of the month. The rainfall was light, thus rendering the ground in excellent condition for seed sowing. A few genial showers, however, are much required to assist growth. In my last report mention was made of considerable injury having been done to various plants by cold frosty winds. Several Conifers have been affected in a similar way during April, but to a greater extent. Large plants of Biota orientalis and its varieties are completely browned and destroyed, even such hardy plants as Cupressus Lawsoniana, Thuia gigantea and aurea, are more or less injured in some situations. Frost was registered on seven occasions, indicating collectively 15° of frost as against 27° for the corresponding month last year. The lowest readings were—on the 10th. 27°; 12th, 30°; 24th, 30°; 29th, 31°; 30th, 27°. The highest morning readings were—on the 2d, 55°; 13th, 47°; 25th, 50°; 27th, 58°; 30th, 48°. The lowest day temperature was 45°, which occurred on the 10th, and the highest, 72°, on the 27th. The total amount of frost registered this season (up to the end of April) is 632°, for the same period last season 466° were registered. The following is the distribution for each month, viz., September, 1°; October, 20°; November, 65°; December, 111°; January, 158°; February, 128°; March, 134°; April, 15°. On the rock garden 119 species and varieties came into flower during April, being sixty-three less than for last April. Among the finest flowered were:—

Adonis vernalis
Anemone Pulsatilla
Androsace carnea
,, Laggeri
,, brigantica
Arnebia echioides
Corydalis nobilis
Dentaria enneaphylla
Draba Mawei
Erythronium giganteum
,, Nuttallianum
Narcissus Bulbocodium
,, Gradisii
,, Emperor
,, Empress
Narcissus rupicola
Mandragora vernalis
Muscari Argæi
,, Szovitzianum
Ranunculus amplexicaulis
Soldanella montana
Trillium grandiflorum
Primula cashmeriana
,, Clusiana
,, ciliata and varieties
,, decora
,, integrifolia
,, rosea
,, Wulfeniana

"Of the forty spring flowering plants whose dates of flowering are annually recorded to the Society twelve came into flower during the month, thus completing the list."

Register of Spring-flowering Plants, Showing Dates of Flowering at the Royal Botanic Garden, Edinburgh, during the Years 1885 and 1886.

No.	Names of Plants.	First Flowers Opened. 1885.	1886.
1.	Adonis vernalis	April 8	April 3
2.	Arabis albida	Feb. 28	March 4
3.	Aubrietia grandiflora	March 8	April 6
4.	Bulbocodium vernum	Feb. 23	Feb. 27
5.	Corydalis solida	April 3	April 6
6.	Corylus Avellana	Feb. 4	Feb. 10
7.	Crocus susianus	Feb. 18	Feb. 12
8.	,, vernus	Feb. 23	March 17
9.	Daphne Mezereum	Feb. 11	March 23
10.	Dondia Epipactis	Jan. 13 / Dec. 30	....
11.	Draba aizoides	March 30	March 31
12.	Eranthis hyemalis	Feb. 14	Feb. 10
13.	Erythronium dens canis	March 22	March 26
14.	Fritillaria imperialis	April 15	April 26
15.	Galanthus nivalis	Feb. 6	Feb. 9
16.	,, plicatus	Feb. 8	Feb. 9
17.	Hyoscyamus scopolia	April 1	April 3
18.	Iris reticulata	March 6	March 20
19.	Leucoium vernum	Feb. 12	Feb. 17
20.	Mandragora officinalis	March 17	April 3
21.	Narcissus Pseudo-Narcissus	April 8	April 6
22.	,, pumilus	March 15	March 25
23.	Nordmannia cordifolia	March 1	March 20
24.	Omphalodes verna	March 31	April 3
25.	Orobus vernus	March 15	March 28
26.	Rhododendron atrovirens	Feb. 13	March 23
27.	,, Nobleanum	March 5	April 4
28.	Ribes sanguineum	March 28	April 8
29.	Scilla bifolia	March 10	March 19
30.	,, ,, alba	March 12	March 21
31.	,, præcox	Feb. 25	Feb. 13
32.	,, sibirica	March 1	Feb. 17
33.	,, taurica	March 14	March 20
34.	Sisyrinchium grandiflorum	March 9	March 21
35.	,, ,, album	March 7	March 21
36.	Symphytum caucasicum	April 12	April 20
37.	Symplocarpus fœtidus	Feb. 20	March 23
38.	Tussilago alba	Feb. 10	Feb. 10
39.	,, fragrans	Jan 7	Feb. 6
40.	,, nivea	April 2	April 3

VI. "On the Temperature, Vegetation, &c., in the Garden of the Royal Botanic Institution, Glasgow, for April." By R. Bullen, Curator.

"The temperature has been at or below the freezing-point twelve times during the month, the lowest readings being during the nights of the 27th and 28th, when 6° and 5° of frost were registered. Total frost for the month, 32°. Since the 9th we have had (with few exceptions) a succession of bright, dry days, and a temperature above the average. The season has been propitious for getting in all common or hardy kinds of seeds; those of a more delicate nature are better out of the ground for a few days, or until a favourable change takes place.

"Vegetation being in such a backward state, the late frosts have done no harm. After such a prolonged and severe winter it is strange to note the number of plants that have survived it well, and which always succumb to milder winters, while common Rhododendrons are in many cases injured almost beyond hope of recovery. As explained last month, the snow acted for a long time as a protector to small and compact-growing plants."

VII. Miscellaneous Communications.

A large number of interesting plants in flower were exhibited from the garden, amongst which were:—

Androsace villosa, and a Himalayan variety
,, foliosa
,, imbricata
Andromeda fastigiata
Arnebia echioides
Arabis blepharophylla superba
Dendrobium Wardianum a large flowered variety received from Burmah through J. N. Fraser, Esq.)
Daphne striata
Gentiana verna
,, ,, alba
Iberis petræa
Myosotis antarctica
Narcissus triandrus
Petrocallis pyrenaica
Polygala chamæbuxus purpurea
Primula denticulata eroïdes
,, farinosa
,, involucrata
,, mollis
,, Parryi
,, prolifera
,, Stuartii
,, Warei
,, Olgæ
Saxifraga purpurascens
Sarracenia flava
,, Chelsoni

* Lælia bella, so called, shown by Mr. B. S. Williams, which was awarded a Certificate, is, we think, wrongly named, L. bella having been described by Professor Reichenbach in the *Gardeners' Chronicle*, vol. xxi. (1884), p. 174, as a hybrid, raised by Messrs. J. Veitch & Sons, Chelsea.

THE ORCHID SHOW OF THE BIRMINGHAM BOTANICAL AND HORTICULTURAL SOCIETY: May 12.

IN these times, when it has become usual to hold exhibitions confined to some particular family of plants, it seems strange that Orchids are not oftener made the leading feature of such displays. The wide popularity which they have attained, the singular purity and brilliancy of their colours, their varied and exquisite markings, combined with their grotesque forms, render them at once the most fascinating of plants. This was the first attempt that has been made at the Hardware City to hold a show of Orchids exclusively, and the Society may be congratulated on the success, which was such as to leave little doubt that it will be repeated another year. The exhibition was held in the new show house—a large, roomy, and handsome span-roofed structure recently built adjoining the Curator's house. The plants were arranged so as to form a bank round the building, leaving plenty of room for a large assemblage of visitors. Small Palms, Ferns, and other suitable fine-leaved subjects in sufficient numbers were associated with the Orchids, and much enhanced the general effect.

OPEN CLASS.

For twenty plants, distinct varieties, Mr. Cypher, Cheltenham, took the lead with a good group, the best among which were Dendrobium thyrsiflorum with thirty-six spikes, D. crystallinum, a grand Cattleya Mendelii, C. Mossiæ, C. Skinneri (beautifully bloomed, and a fine variety); Cypripedium villosum (bearing eighteen flowers), C. Lawrenceanum, Lælia purpurata (a good plant of a splendid variety); 2d, Mr. Morgan, gr. to A. W. Wills, Esq., who exhibited a nicely flowered lot of medium-sized plants, including Dendrobium Falconeri and Cattleya Mossiæ.

The amateurs' class of ten varieties brought out four exhibits.—Mr. Barns, gr. to C. Winn, Esq., being 1st with a clean well flowered collection, conspicuous in which were Cattleya Mendelii, C. Mossiæ, Lælia purpurata, Odontoglossum vexillarium, O. Roezlii, Cypripedium barbatum, and Masdevallia Harryana; 2d, Rt. Hon. J. Chamberlain, Esq., M.P., Highbury, Moseley, in whose exhibit was a very well flowered plant of Cattleya citrina, and a fine variety of Oncidium Marshallianum; J. Fellows, Esq., was a close 3d, his best examples being Lælia purpurata and Odontoglossum Roezlii.

Ten varieties (nurserymen).—Of these Mr. Cypher was the only exhibitor, taking 1st with a creditable set, amongst which were well-bloomed plants of Dendrobium Bensoniæ, D. thyrsiflorum, Cattleya Mossiæ, a fine variety; C. Mendelii, C. Skinneri, and Lælia purpurata.

Six vars. (amateurs).—Here the Rt. Hon. J. Chamberlain, Esq., M.P., was well in front, staging Dendrobium densiflorum, with over thirty spikes; Lælia purpurata, a large specimen, well-flowered; Aërides Lobbii, Odontoglossum crispum, Oncidium Marshallianum, and Cattleya Mossiæ; 2d, Mr. Barns, with a fresh group of moderate-sized plants; 3d, Mr. Hodges, gr. to E. Wright, Esq.

For six (nurserymen), Mr. Cypher was again the 1st and only exhibitor, having well-bloomed plants.

TEN ODONTOGLOSSUMS, DISTINCT.

Amateurs.—In a somewhat close run Mr. Barns took the lead, his best examples being O. cirrosum, O. triumphans, O. Hallii, O. vexillarium, and O. Cervantesi, well flowered and a good variety; 2d, J. Fellows, Esq., whose collection was well bloomed, but there was too much sameness in it; it contained, with others, the dark and the light spotted forms of O. Roezlii.

Nurserymen.—Mr. Cypher was once more the only exhibitor, taking 1st with medium-sized plants, nicely bloomed.

SIX CATTLEYAS AND LÆLIAS.

Amateurs.—1st, Mr. Barns, who had a beautifully flowered example of Cattleya Mossiæ, of an unusually pale colour; 2d, Rt. Hon. J. Chamberlain, Esq. M.P.

Nurserymen.—Here Mr. Cypher was 1st, his best being a good plant of Cattleya citrina, bearing nine large finely coloured flowers.

TWELVE MASDEVALLIAS (OPEN).

Here Mr. Barns was a long way ahead, staging a splendidly grown collection of plants beautifully flowered, consisting of M. Harryana, M. H. discolor, M. H. violacea, M. H. Thompsoni, M. acanthifolia, M. Veitchii, M. Lindeni, M. regalis, M. amabilis, M. rosea, and M. Denisoniana; 2d, J. Fellows, Esq., whose group contained several of the less showy, smaller flowered kinds, the best examples being M. Harryana splendida and M. Harryana cœrulescens.

CUT BLOOMS.

Twelve varieties of Orchid flowers, open.—1st, Mr. Cypher, who showed a beautiful lot, comprising Cattleyas, Dendrobiums, Lælias, Odontoglossums, Oncidiums, and Cypripediums; 2d, Mr. Barns, with a pretty collection; 3d, Rt. Hon. J. Chamberlain, Esq., M.P., who also exhibited well.

AN EXTRA AWARD,

for a group of Orchids and other plants, was made to Mr. Lathom, the Curator of the Birmingham Botanic Garden. They were well grown and very well flowered, and included several forms of Cattleya Mossiæ, eight or ten plants of Odontoglossum vexillarium, amongst which were some of the best varieties, O. cirrosum, O. crispum, O. Pescatorei, Cypripedium acaule, and several other hardy kinds.

CERTIFICATED PLANTS.

Mr. Hans Niemand received First-class Certificates for Nephrolepis Bausei, Selaginella grandis, and Caladium Baroness James de Rothschild. A First-class Certificate was also awarded to Gymnogramma Lathomi, raised in the gardens here by Mr. Lathom; it is a hybrid between G. schizophylla and G. decomposita, and is a very beautiful and distinct Fern, differing completely from all others. A First-class Certificate was likewise awarded to Dendrobium Wardianum var. Wrightii, which is probably the finest form of D. Wardianum that has appeared; it was exhibited by Edwin Wright, Esq., one of the oldest Orchid growers in the Midlands. Certificates were also given for a well-grown group of Auriculas, contributed by Mr. John Clements, of Harborne; to J. Marriott, Esq., Coventry, for six very fine Melons, quite ripe; to Walter Chamberlain, Esq., President of the Society, for a group of Orchids, and a collection of well coloured Japanese Maples; to Mr. R. H. Vertegans, Chad Valley Nursery, for an interesting collection of alpine and herbaceous plants. Special Cultural Certificates went to Mr. Cypher for Dendrobium thyrsiflorum, large and grandly bloomed, and for Cattleya citrina; to Rt. Hon. J. Chamberlain, Esq., M.P., for Dendrobium densiflorum, unusually well flowered; to J. E. Wilson, Esq., for a large and finely flowered specimen of Dendrobium nobile; and to Mr. Barns for a splendidly grown group of Masdevallias.

The beauty of the exhibition was much enhanced by a number of Ferns, Palms, and other plants lent by Mr. Hans Niemand of the Harborne Road Nursery, who also contributed an artistically arranged group to which a Special Certificate was awarded.

THE BATH FLORAL FETE: May 12.

NOTHING could have been more unfortunate than the weather on this occasion, for it literally rained in torrents all day. The show took place as usual in the tents in the Sydney Gardens; some excellent subjects were staged; the gardens were seen perhaps at their best, many of the trees being in full bloom; thousands of persons were desirous of seeing the exhibition, but the pitiless rain made it almost impossible. One large tent with grass banks contained the specimen Azaleas, stove and greenhouse plants, Roses, &c., and three others the remainder of the plants. The stove and greenhouse plants, foliage plants, Pelargoniums, Calceolarias, and cut Roses, were especially fine, and the committee deserve commiseration for the great loss they must have sustained through the bad weather.

STOVE AND GREENHOUSE PLANTS.

It is not too much to say that Mr. James Cypher, nurseryman, of Cheltenham, never before put up a better twelve plants than were seen on this occasion: they were above the average size, fresh, even, and both finely grown and bloomed. They consisted of Dracophyllum gracile, Pimelea Hendersoni, P. spectabile, Anthurium Scherzerianum, and a fine variety named densifolia, Erica affinis, E. Cavendishiana, Franciscea eximea, Hedaroma tulipifera, and two fine Azaleas; 2d, Mr. C. Gardiner, gr. to W. Long, Esq., Bath, with a very creditable lot, his leading specimens being Anthurium Andreanum, Ixora Fraseri, I. Williamsii, Pimelea decussata, Anthurium Scherzerianum, Clerodendron Balfourianum, and Hedaroma tulipifera.

Mr. J. F. Mould, nurseryman, Pewsey, had the best nine specimens, staging good examples of the following:—Clerodendron Balfourianum, Erica ventricosa coccinea minor, E. Victoria regina, E. affinis, Boronia pinnata, Statice profusa, Imantophyllum miniatum, and Epacris miniata grandiflora; Mr. Tucker, gr. to Major W. P. Clarke, Trowbridge, was 2d; and Mr. E. E. Bryant 3d.

Mr. W. C. Drummond, Bath, had the best six, Mr. Thomas Jolly being 2d.

AZALEAS.

These are always a very fine feature at Bath, but on this occasion there was not such a good display as was anticipated. Mr. Gardiner had far away the best examples, staging twelve very fine, large, well-grown, pyramidal-shaped plants of Roi d'Hollande, Duc de Nassau, Souvenir de Prince Albert, Stanleyana, Model, Magnet, Stella, Mrs. Turner, Flag of Truce, Iveryana, Criterion, and Roi Leopold. The 2d prize was withheld. Mr. Cypher had the best nine, staging large bush rather than pyramidal specimens, well grown and bloomed, the best being Duc de Nassau, Model, Reine des Pays Bas, and Duchesse Adelaide de Nassau. Mr. J. F. Mould had the best six, and in both these classes also the 2d prize was withheld. Mr. Gardiner had the best specimen, staging a fine plant of Model.

PELARGONIUMS.

These were so well done by Mr. Cypher and Mr. A. J. Bliss, that it may be said the plants were up to Regent's Park form. Mr. Cypher had the best nine well-grown and bloomed specimens, consisting of Lady Isabel, an excellent purple; Triomphe de St. Maude, Decorator, Charles Outram, Edward Perkins, Rob Roy, Digby Grand, Royalty, and Miss Sutton. 2d, Mr. Tucker. The six shown by Mr. Bliss, and awarded the 1st prize, consisted of Triomphe de St. Maude, Lady Isabel, Kingston Beauty, Edward Perkins, Duchess of Bedford, and Digby Grand; 2d, Mr. John Mattock, nurseryman, Oxford. Fancy Pelargoniums were somewhat poorly shown.

HEATHS.

These were a good feature, Mr. Cypher being 1st with four specimens, and also with a single one. His four comprised highly creditable plants of Erica depressa, E. Cavendishiana, E. ventricosa coccinea minor, and E. ventricosa magnifica; Mr. E. E. Bryant was 2d, and Mr. J. F. Mould 3d. The best specimen was Mr. Cypher's E. Cavendishiana; Mr. Gardiner being 2d, with E. ventricosa gibbosa.

CALCEOLARIAS AND CINERARIAS.

Calceolarias were remarkably good, well grown and flowered. Mr. Tucker had the best nine plants; Lord Justice Lopes being 2d, and Mr. Jerom Murch, Bath, 3d.

Cinerarias were numerous, and the leading collections good; Mr. R. B. Cater had the best six, Mr. Jerom Murch being 2d.

ORCHIDS.

The prizes offered for these represented an attempt to encourage the culture of Orchids in the Bath district, and the show of them was regarded as decidedly satisfactory. The Rev. E. Handley, Bath, had the best six, staging good examples of Cattleya Mossiæ, C. Mendelii, Lælia purpurata, Oncidium Marshallianum, Odontoglossum Roezlii, and Dendrobium thyrsiflorum; 2d, Mr. H. C. Miles, with Oncidium macranthum, Odontoglossum Pescatorei, Cattleya Mossiæ, Cypripedium caudatum roseum, Dendrobium thyrsiflorum, and Masdevallia Lindeni. Mr. H. C. Miles had the best four, having Cymbidium Lowianum with two fine spikes, and a good Cattleya Mossiæ as his best specimens. Mr. E. E. Bryant was 2d. The best single specimen was Odontoglossum citrosmum, from the Rev. E. Handley.

ROSES.

In the class for nine plants Mr. W. Taylor, gr. to S. P. Budd, Esq., was 1st, with well grown and flowered specimen of Madame Catherine Soupert, La France, Edward Morren, Comtesse de Serenyi, Celine Forestier, Catherine Mermet, Dupuy Jamain, and two others; 2d, Mr. R. B. Cater. Mr. A. Hawkins, gr. to W. T. Jolly, Esq., had the best six; Mr. F. J. Walker, being 2d.

FOLIAGED PLANTS.

These were represented by the usual subjects staged, and as Mr. Cypher was 1st with fifteen it may be assumed that he set up an excellent group of well-grown plants; Mr. E. E. Bryant was 2d. Mr. W. C. Drummond was the only exhibitor of nine plants, and was awarded the 1st prize. The best specimen was Mr. Cypher's admirable plant of Kentia Canterburyana.

FERNS.

Mr. Tucker brought from Trowbridge the best group of twelve exotic Ferns, and which were, as usual, well grown plants; Mr. E. E. Bryant being 2d. Mr. W. C. Drummond had the best nine, Mr. Jerom Murch being 2d.

NEW PLANTS.

Mr. Cypher had the best new or rare plant, staging Anthurium Rothschildianum; Mr. Drummond came 2d, with Brexia chrysophylla, rather more rare than new.

CUT FLOWERS.

These consisted of Roses, stove and greenhouse cut flowers, Tulips, and Pansies. Of the former Mr. J. Mattock, nurseryman, Oxford, staged some very fine

blooms, some of them Teas grown on the seedling Brier, and of wonderful size and substance; Madame Willermoz, Maréchal Niel, Niphetos, Catherine Mermet, Souvenir de Paul Neron, Anna Olivier, Madame Wilcke, and Jean Pernet, were in such form as one seldom sees. Mr. S. P. Budd was a good 2d, and Messrs. Geo. Cooling & Son, nurserymen, Bath, 3d. Mr. W. Pethick had the best twelve varieties; Mr. W. W. Kettlewell being 2d. In addition, Messrs. Mattock, and Cooling & Son, had boxes of fine blooms, to which extra prizes were awarded. Tulips in sixes were shown by several exhibitors, but the flowers lacked the refinement one is accustomed to see in the North. Fancy Pansies were both fine and numerous, Mr. F. Hooper having the best twenty-four, and Mr. H. Hooper the best twelve blooms. Mr. H. C. Miles had the best stand of twenty-four bunches, Orchids being a leading feature; Mr. F. Tagart being 2d. Bouquets and epergnes were of good workmanship, Mr. W. Dobson being 1st in both classes.

FRUIT AND VEGETABLES.

The former was represented by Strawberries, Apples, and Pears. A fine dish of James Veitch Strawberry came from Mrs. Gouldsmith. The Rev. C. C. Layard had the best six pots. Several classes were devoted to vegetables, May Queen Broccoli being very conspicuous for its excellent quality. Cucumbers were numerous and good. There was also a class for twenty-four species of wild flowers, found within 12 miles of Bath, several collections being staged. A fine collection of cut blooms of new zonal Pelargoniums was shown by Messrs. J. R. Pearson & Sons, Chilwell Nurseries Nottingham, so distinct in character and superb in quality that a special Certificate of Merit was awarded to them.

NATIONAL HORTICULTURAL SOCIETY OF FRANCE.

THE show of this Society, which was held in the Champs Elysées in Paris, opened on the 11th and closed on the 16th inst. We are glad to say that again it has been a great success, notwithstanding the uncertain state of the weather; over 70,000 persons visited it. Every afternoon a band played in the garden, and really flowers and music go so well together that it seems that one cannot go without the other.

The greatest winner has been M. Chantin, nurseryman, of Paris, with his grand group of Palms, Tree Ferns, and Orchids; next came M. Truffaut, of Versailles, with Orchids, Bromeliads, stove plants, and Indian Azaleas; Messrs. Chantin Frères, with their seedling Dracænas, Crotons, Anthuriums; M. Bleu with his fine Caladium, Cattleya Mossiæ and others, seedling Anthurium Scherzerianum with a rose-coloured spathe, named A. Parisiense, and a fine batch of seedlings of Bertolonia with such strange colouring that they are more like Anaectochilus; Messrs. Moser, of Versailles; Croux, of Chatenay; Defresne, and others, exhibited Rhododendrons, Azalea mollis, &c.

Then came the Roses of M. Charles Verdier—a fine lot of standards and dwarfs; also those of M. Leveque, not forgetting the large group of annuals from Vilmorin, Andrieux & Co. M. Lemoine, of Nancy, sent some new double Lilac; M. Linden, of the Compagnie Continentale, Ghent, novelties among stove plants; and M. Massange, of Baillonville, over fifty splendid pots of Cattleya Mossiæ, C. Mendelii, Cypripediums in variety, &c. This group was much admired.

Orchids seem to be becoming more numerous every year, and there was not one group without its few plants of them.

M. Linden showed his new serial *Lindenia*, and Mr. Sander, of St. Alban's, the first part of the new work, *Reichenbachia*.

THE CONGRESS.

While the show was going on in the Champs Elysées, the Congress was opened on the 13th at the house of the National Society, 84, Rue de Grenelle. M. Hardy, the well known Director of the National School of Horticulture of Versailles, was the President, while M. Ernest Bergman, of Ferrières, acted as Secretary.

The programme comprised twenty-five questions, and during the discussion many interesting facts came out. The whole of the proceedings will be published, when we shall be able to refer to it at length later on. The members of the Congress number nearly 500. A great inducement for members of the National Society to come to the Congress was the special rate of fare granted by the French railway companies; special return tickets, available for fifteen days, were obtainable at half the usual fare.

We understand that the French Society intends holding a horticultural Congress every year during its May show, and we have no doubt that the great success which has been attained by the one of this year will be another inducement.

THE BEST VEGETABLES FOR EXHIBITION.

(*Continued from p.* 492.)

CELERY.—A great many of what otherwise would be most presentable samples as regards size and quality are disfigured by insects after earthing-up has taken place. To avoid this the top spit of soil should be quite free from recent dressings of manure. It is unnecessary to say that the finest heads are produced on the single row system, that is, where there is only one row of plants in a trench. When opening the trenches to receive the manure and plants, due regard must be paid to the depth of soil, drainage, &c. After the soil is removed to form the trench there should remain at least one spit for the plants to grow in. Before digging in the manure at the bottom of the trench the soil therein should be thoroughly broken up and made fine to its full depth. I prefer, then, instead of throwing the manure all along the trench and digging it in, in the ordinary way, to place it somewhat systematically, say, 6 inches under the surface. This can be done simply by removing at one end of the trench to the other about 1 yard in length of soil and 6 inches in depth, then to place on the manure, 4 inches thick at the least, and to cover over with soil 6 inches deep from the next yard, which in its turn is in readiness to receive manure, and so on until the end of the trench is reached. It is preferable to prepare the trenches a week or ten days prior to planting. The next important cultural matters that must not be lost sight of are abundance of water at the root during hot dry weather, and the persistent removal of suckers which form at the base of the plants. These and frequent weeding carry us on to the earthing-up time. If the sticks when blanched are to leave the trenches in the best possible condition, earthing-up cannot be done too carefully.

Before proceeding to tie the plants with matting, give a final examination, removing any remaining offsets or suckers and short leaves. No leaves must be buried beneath the soil. When tying and preparing the plants for earthing two men are required—one to gather up and place each leaf-stalk in its proper position, whilst the second ties them together moderately tight. The matting must be removed after the soil has been pressed lightly up to the plants. If the ground has not been previously dressed with soot or salt, I would advise, after 2 inches of soil (when earthing-up) has been pushed into the bottom of the trench, to sprinkle along each side between the plants a mixture of both, to be repeated two or three times at intervals until the plants have been earthed up to the desired height. It may be sprinkled close up to the plants, but should not actually touch them. The best white variety of Celery is Wright's Giant White, a grand stock of which can be obtained from Messrs. Veitch, of Chelsea. The best red variety is Major Clarke's Solid Red. There are several varieties larger looking before being trimmed, but none that we have tried has a larger and more crisp heart leaves than Major Clarke's. *G. H. R.*

Obituary.

AMBROSE VERSCHAFFELT. — Few names were better known or more respected among British horticulturists than that of Ambrose Verschaffelt, of Ghent, the former proprietor of the nurseries now conducted by the Compagnie Continentale. At the Ghent Quinquennials this gentleman always took an active part, and thus became well known to English visitors for his urbanity and intelligence. M. Verschaffelt had been in failing health for some few years, and died after much suffering on May 16, in his sixty-second year.

— JOHN PETRIE.—There died at Cullen on April 25 Mr. John Petrie, a veteran gardener of ninety-two and a half years, the oldest and one of the most respected citizens of Cullen. Mr. Petrie, who had reached the above ripe old age, was a native of Elgin, and was educated in the Grammar School there. In the year 1809 he entered the gardens of Gordon Castle as an apprentice under Mr. Saunder, at that time, head gardener to the Duke of Gordon; in 1814 he went to Edinbugh, travelling on foot to Aberdeen, and sailing by smack to Leith; he was engaged in Messrs. Dickson & Co.'s nurseries, Edinburgh, for a year, after which he went to Craigie Hall, and from thence to Dundas Castle, where new gardens were then forming under the personal superintendence of the late Mr. Dundas of Dundas. In the year 1818 he went to London by smack, experiencing a tedious voyage of three weeks' duration; he got employment in the Mile End Nurseries, owned by Mr. Thompson, with whom he became a favourite, and in the same year was sent to Oatlands, the seat of the Duke of York. After remaining some time there he returned to Mr. Thompson, who appointed him to the charge of a small place in Essex, from which, in the year, 1821, he was appointed to Invergordon Castle, Ross-shire, where he had the charge of the woods and gardens for twelve years. In 1834 he engaged with the late Sir Moses Montefiore, at Eastcliffe, near Ramsgate, but his wife's health failing there he returned to Edinburgh in the spring of 1836, and in the autumn of the same year he was engaged as forester, at Belledrum, Inverness-shire, from which place, in the following year (1837), he was appointed gardener to the Earl of Seafield, at Cullen House, which position he held for twenty-nine years. He retired from his active duties there about twenty years ago, and has since resided in Cullen. He was an enthusiast in his profession, a thoroughly good gardener in his day, and was held in high esteem by his employers. His genial disposition and social qualities endeared him to all who had the pleasure of his acquaintance. His wife predeceased him two years, having lived together sixty years. They had no family, and the chief mourner at his funeral was his nephew, Mr. Petrie Pirie.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MAY 19, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure from Mean for 10 years.	HYGROMETRICAL DEDUCTIONS from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100	WIND. Average Direction.	RAINFALL.
May	In.	In	°	°	°	°	°	°			In.
13	29.19	—0.55	51·8	45·0	6·8	47·6	—3·8	46·1	95	W.	1.28
14	29.25	—0.48	40·8	42·5	9·3	45·0	—6·3	39·4	81	WNW.	0.00
15	29.62	—0.12	53·5	37·8	15·7	44·7	—7·2	33·0	65	WNW. to NNW.	0.02
16	29.73	0.00	53·5	41·2	12·2	49·3	—6·0	44·9	95	S.W.	0.07
17	29.66	—0.08	58·7	43·0	9·7	52·7	—0·1	49·5	90	W. to S.W.	0.28
18	29.61	—0.12	67·4	50·5	16·0	59·0	+5·8	43·2	68	W. to S.W.	0.01
19	29.82	+0.01	67·5	45·0	22·5	50·3	—3·3	47·8	92	S.W.	0.05
Mean	29.55	—0.18	56·0	44·2	11·8	49·4	—2·9	41·1	84	variable	1.71

May 13.—Heavy rain from early morning till noon, finer from 4 P.M.
— 14.—Dull day, occasional gleams of sunshine.
— 15.—Fine bright day, cold rough wind.
— 16.—Rain in early morning, dull day, fine night.
— 17.—Rain from about 6 A.M. till 9 A.M. dull morning, sun shining at times in afternoon.
— 18.—Fine bright day, and fine clear night.
— 19.—Fine and bright in early morning, slight rain from 9 A.M. till about noon.

LONDON: *Atmospheric Pressure.*—During the week ending May 15, the reading of the barometer at the level of the sea increased from 30.03 inches at the beginning of the week to 30.07 inches by 9 A.M. on the 9th, decreased to 29.83 inches by 1 P.M. on the 10th, increased to 29.86 inches by 1 P.M. on the 11th, decreased to 29.10 inches by 9 A.M. on the 13th, and was 29.85 inches by the end of the week.

The mean reading of the barometer for the week was 29.72 inches, being 0.61 inch lower than last week, and 0.20 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 67°.2, on the 9th; on the 11th the highest was 49°.6. The mean of the seven high day temperatures was 55°.8.

The lowest temperature in the week was 37°.8, on the 15th; on the 9th, the lowest was 47°. The mean of the seven low night temperatures was 43°.5.

The greatest range of temperature in one day was 20°.2, on the 9th; the smallest, on the 11th, was 4°.3. The mean of the seven daily ranges was 12°.3.

The mean temperatures were, on the 9th, 55°.4; on the 10th, 54°.2; on the 11th, 46°.4; on the 12th, 47°.8; on the 13th, 47°.6; on the 14th, 45°; on the 15th, 44°.7; of these the first two were above their averages by 3°.9 and 2°.9 respectively; the rest were below by 4°.8, 3°.6, 3°.5, 6°.3 and 7°.2 respectively.

The mean temperature of the week was 48°.7, being 4°.8 lower than last week, and 2°.4 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 122° on the 10th. The mean of the seven readings was 91°.2.

The lowest reading of a minimum thermometer placed on grass was 28°.1 on the 15th. The mean of the seven readings was 37°.1.

Rain.—Rain fell on four days to the amount of 1.54 inch, of which 1.28 inch fell on the 13th.

ENGLAND: *Temperature.*—During the week ending May 15, the highest temperatures were 76° at Cambridge, 73°.3 at Brighton, 71° at Truro; the highest at Newcastle, 51°, at Hull 53°, at Bradford 53°.8. The general mean was 62°.9.

The lowest temperatures were 33°.6 at Wolverhampton, 35° at Hull, 35°.8 at Bradford; the lowest at Truro was 43°, at Plymouth 41°.8, and at Sheffield, Liverpool, Leeds, and Newcastle 38°. The general mean was 37°.8.

The greatest ranges were 39° at Cambridge, 33° at Brighton, 32°.6 at Wolverhampton; the least ranges were 13°, at Newcastle, 18° at Sheffield, Hull, and Bradford. The general mean was 25°.1.

The mean of the seven high day temperatures was highest at Brighton, 62°.8, at Truro 62°.4, at Plymouth 61°.3; and was lowest at Hull, 47°, at Newcastle 47°.1, at Bradford 47°.6. The general mean was 53°.8.

The mean of the seven low night temperatures was highest at Plymouth, 47°.6, at Truro 47°.4, at Brighton 46°.6; and was lowest at Hull, 39°.3, at Wolverhampton and Bradford 39°.4. The general mean was 42°.4.

The mean of the seven daily ranges was greatest at Brighton, 16°.2, at Wolverhampton 15°.8, at Truro 15°; and was least at Newcastle, 7°, at Hull 7°.7, at Bradford 8°.2. The general mean was 11°.4.

The mean temperature was highest at Truro, 53°.2, at Brighton 53°, at Plymouth 52°.7; and was lowest at Hull 41°5, at Bradford 41°.8, at Newcastle 41°.9. The general mean was 46°.5.

Rain.—The largest falls were 4.93 inches at Sheffield, 3 inches at Bradford; the smallest falls were 0.51 inch at Plymouth, 0.77 inch at Newcastle, 1.15 inch at Truro. The general mean fall was 2.14 inches.

SCOTLAND: *Temperature.*—During the week ending May 15th, the highest temperature was 64°, at Glasgow; at Greenock the highest temperature was 51°.2. The general mean was 54°.3.

The lowest temperature in the week was 31°7., at Edinburgh; at Leith the lowest temperature was 37°.5. The general mean was 34°.9.

The mean temperature was highest at Glasgow, 46°.2, and lowest at Edinburgh, 42°.2. The general mean was 43°.8.

Rain.—The largest fall was 0.91 inch at Edinburgh, and the smallest fall was 0.35 inch at Dundee. The general mean was 0.58 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, May 17, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been in an exceedingly unsettled condition in all parts of the kingdom. Unusually heavy and continuous rain has fallen over the inland parts of England, and large amounts in all other districts. In some localities hail, sleet, or snow has been experienced.

The *temperature* has been below the mean, the deficit ranging from 2° in the "Channel Islands" and 3° in "England, S.," to as much as 5° in "England, E.," and the "Midland Counties," 6° in "England, N.E.," and "Ireland, W.," and 7° in "England, N.W.," The highest of the maxima, which were generally recorded on the 17th, varied between 55° and 58° in Scotland, 56° and 60° in Ireland, and 59° and 63° in England. During the earlier part of the time the daily maxima over northern England and the greater part of Ireland were exceptionally low for the season; thus at Barrow-in-Furness the thermometer on the 12th did not rise above 39°, and at Parsonstown and Edgeworthtown 40°. The lowest of the minima, which were registered between the 13th and 15th, ranged from 32° in "Scotland, N.," "England, S.W.," and "Ireland, N." to "England, S.," and to 44° in the "Channel Islands."

The *rainfall* has exceeded the mean in all districts; in the "Midland Counties" the fall has been eight times as much as the normal amount, and in most other districts three or four times as much. By far the greater portion of this fall occurred between the 11th and 13th, when 4.73 inches were measured at Churchstoke, 4.36 inches at Hereford, 4.15 inches at Pershore, 3.38 inches at Ross (Herefordshire), and 3.44 inches at Fassaroe (Co. Wicklow, Ireland).

Bright sunshine shows an increase in Ireland and Scotland, but a decided decrease over England; the percentages of the possible amount of duration ranged from 13 in "England, N.E.," and "England, E.," to 35 in "Scotland, E.," and 54 in "Scotland, N."

Depressions observed.—During the earlier part of this period two high pressure areas were shown—one off our northern coasts and the other over France, while in the intervening region depressions appeared from the westward, bringing strong easterly or northeasterly, and subsequently northerly winds or gales to almost all parts of our coasts, and the heavy falls of rain noted above. By the 16th the western high-pressure area had given way, and a depression was skirting our north-western coasts in a north-easterly direction, causing fresh or strong south-westerly winds over our islands. At the close of the period a rather deep disturbance appeared off the North of Ireland, and the winds over the United Kingdom blew strongly, or with the force of a gale, from the south-westward or southward.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

VINE LEAVES TURNING YELLOW.—Can any of your readers kindly give me a little information about some Vines? I have an early house planted with Black Hamburghs and Foster's Seedling, border outside. The leaves on the Hamburghs, near the stem of Vine, are most of them turning yellow and falling off. What is the cause, and is there any remedy? The Grapes have just commenced their second swelling. *A. Woodward, Birmingham.*

Answers to Correspondents.

AZALEAS, SHOW AND FANCY PELARGONIUMS: *B. T.* The first may be struck in July and August from shoots taken before they are quite hard in the rind. This must have particular attention, as most of the roots spring from the rind. It is better to place the cuttings in a light porous mixture of peat and sand than in sand alone over peat, as the cuttings die very quickly from a deficiency of nutriment. The cuttings require a moist temperature at about 55° Fahr. When they make air-roots sphagnum or common hypum moss must be placed around them. Propagation may be performed either in a close pit with a northern aspect or under bell-glasses under equally unvarying conditions. Potting-off should take place in early spring. The Pelargoniums of both sections may be struck in June or July from firm shoots, placing them in sandy loam round the edge of a 48-sized pot. After thoroughly watering the pots to settle the soil, place them in a warm, dry, slightly ventilated pit or frame. The cuttings must be lightly shaded during the hottest part of the day, and receive a dewing over with a fine rose at sundown. Pelargoniums can also be struck from young wood taken off in March and April, using mild bottom-heat for them. This early-struck stuff makes nice stocky plants by the time winter arrives.

FUNGUS ON ROSE LEAVES: *H. M.* This is the common Rose mildew (Oidium leucoconium).

INSECTS: *H. M. T.* Your Pear leaves are covered with very numerous little blotches, irregular in size and shape, with uneven surfaces, which we thought at first might be caused by the attacks of the minute mites called Phytoptéris Pyri, but we can find nothing of the kind either on or in the little cells. *J. O. W.*

LÆLIA: *R. H., Bath.* We should consider this a poor form of Lælia purpurata.

NAMES OF PLANTS: *P. J.* Cytissus capitatus.—*W. B. S.* Menyanthes trifoliata.—*Mrs. B. Stamford.* Cornus mas.—*O. Thomas.* Rondeletia cordata.—*W. Marshall.* Aristotelia maqui.—*F. Canning.* 1, Prunus Padus; 2, Sedum rhodiola; 3, Asplenium bulbiferum; 4, Rhipsalis saglionis; 5, Montia fontana; 6, Lepidium ruderale.—*H. M. T.* 1, Peperomia argyreia; 2, Impatiens Jerdoniæ; 3, Fittonia argyroneura; 4, Onoclea sensibilis; 5, Phlebodium areolatum; 6, Primula denticulata var.; 7, Adiantum formosum; 8, A. cuneatum.—*W. R.* Scilla hyacinthoides (better known as S. campanulata).—*R. W.* Geranium lucidum (a British plant).—*J. Cornelius.* Olearia stellulata.—*D. D. 1,* Caltha palustris; 2, Datura coccinea; 3, Ajuga reptans; 4, Sisymbrium alliaria; 5, Ranunculus acris; 6, Anthriscus sylvestris.

PLANTS FOR WINDOW-BOXES: *Bedfordshire.* These are very numerous; we can mention a few that are suitable. The plants should be nearly fully grown, and just coming into flower, viz., Rhodanthe of sorts; Fuchsias, including F. microphylla, a pretty drooping plant; Lysimachia nummularia, yellow flowers, good for hanging over the sides; Sedum Sieboldi, also for the same use; Tropæolums, both dwarf growing and trailing varieties; Lophospermum in variety; Rhodochiton volubile; Sweet Peas; Maurandya Barclayana and others, the last four being creeping plants; Acacia lophantha; Ageratum of sorts; Antirrhinums, ditto; Petunias in many colours, single and double; Heliotropes; Ivy-leaf Pelargoniums; zonal ditto; tricolor ditto; Calceolarias of the shrubby class; Lobelias of sorts, blue, white, and rose-coloured; Nemophyllas; Ten-week Stocks; Genista racemosa; tuberous Begonias, Asters, Mignonette, Calliopsis, Mimulus, Musk.

PLUMBAGO CAPENSIS: *A. B.* This may be retarded by being kept in a cool-house, and also, as you say, by pinching out the flowering points. We cannot say how long after pinching the points the plants would begin to flower, as that would depend on the amount of shoots pinched off, its previous state, and the warmth of the house in which it is grown. When not stopped the plant will begin to flower in about eight weeks from starting it into growth, assuming that you grow it in an intermediate-house.

POTATO HAULM: *E. C. C. D.* The stem was curiously fasciated, and the foliage had the appearance of having been frozen slightly.

SCOTTISH APPLE CONGRESS: *Matus.* The report has not been published; we do not know when it will be.

SEEDLING CONIFERS: *Henry Mills, Enys, Penryhn.* Neither, in all probability, has anything to do with New Zealand—*i.e.*, is not a native of that country. Send when in fruit.

VINE LEAVES DISEASED: *A Constant Reader.* The leaves are miserably poor in substance, which may result from constant attacks of mildew; but we apprehend the state of the roots is not what it should be. The roots are not in good compost, or they are much too deep. Examine them as early as possible after the wood is ripe. Mildew had attacked the leaves sent. Apply some of the special remedies for this malady. Keep up a warm genial temperature, not letting cold draughts into the house.

VINES NOT FLOWERING: *J. E. M.* There is something wrong with the management. Give further particulars.

CATALOGUES RECEIVED.

EDMUND P. DIXON, 57, Queen Street, Hull—New and Choice Plants, Chrysanthemums, &c.

CLARK BROTHERS & CO., 65, Scotch Street, Carlisle—Bedding Plants and Florists' Flowers.

F. SANDER & CO., St. Albans—Seeds and Sundries.

VICCARS, COLLYER & CO., Central Hall, Leicester—Summer List.

COMMUNICATIONS RECEIVED:—T. M., Chelsea.—B. V.—H. Corevon.—J. D.—Carl Hansen.—J. P.—J. G. B.—A. D. W. T. W.—W. G. S.—I. O. W.—R. M.—K. & S.—S. & S.—J. B.—T. W.—J. V. & Sons.—Sutton & Sons (next week).—W. Millard.—Clarke Brothers & Co.—W. J. Murphy—L. Masereel.—C. F. P.—C. Y. M.—H. E.—W. E.—J. F.—A. D.—W. J.—J. D.

Markets.

COVENT GARDEN, May 20.

PRICES remain the same, with a steady business doing. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Apples, per ½-sieve	2 0– 4 0	Melons, each	3 6– 5 0
— Canadian, barrl.	8 0–21 0	Peaches, per dozen	8 0–21 0
Figs, per dozen	3 0– 6 0	Pears, per dozen	8 0–21 0
Grapes, per lb.	2 6– 6 0	Pine-apples, Eng., lb.	2 0– 3 0
Kent Cobs, 100 lb.	40 0–	— St. Michael, each	2 6–10 0
Lemons, per case	8 0–10 0	Strawberries, per lb.	2 0– 6 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Artichokes, per doz.	4 0–	Mint, green, bunch	3 0–
Asparagus, Eng., 100	2 0– 5 0	Mushrooms, punnet	1 0– 1 6
— French natural, per bundle	1 6– 6 0	Mustard and Cress, do.	0 4–
Beans, Kidney, lb.	2 0–	Onions, per bushel	5 0–
Beet, red, per dozen	1 0– 2 0	Parsley, dozen bunch	2 0– 3 0
Broccoli Sprts., bush.	5 0–	Parsnips, per dozen	1 0–
Carrots, per bunch	0 6–	Potatos, per cwt.	4 0– 5 0
Cauliflowers, per doz.	3 0– 4 0	,, kidney, per cwt	4 0– 5 0
Celery, per bundle	1 6– 2 0	Seakale, punnet	1 6–
Coleworts, doz. bunch	8 0–	Shallots, per pound	0 3– 0 0
Cucumbers, each	0 4– 0 6	Spinach, per bushel	3 0– 6 0
Endive, per dozen	1 0– 2 0	Sprue Asparagus, per bundle	1 0–
Herbs, per bunch	0 4–	Tomatos, per lb.	1 6– 2 6
Leeks, per bunch	0 6–	Turnips, bunch	0 6–
Lettuce, per dozen	1 0– 1 6		

POTATOS:—Old: Magnums, 60*s.* to 85*s.*; Regents, 70*s.* to 90*s.* per ton. New: Jersey Kidneys, 6*d.* lb.; ditto, small, 3*d.* lb.; other samples lower; Malta Kidneys, 14*s.* to 20*s.*; ditto, Rounds, 12*s.* to 16*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18	Evergreens, in var., per dozen ..	6	0–24
Arum Lilies, dozen..	9	0–12	Ficus elastica, each..	1	6– 7
Azaleas, per doz.	24	0–42	Ferns, in var., dozen	4	0–18
Bedding Plants, various, per dozen ..	1	0– 2	Foliage Plants, various, each ..	2	0–10
Begonias, per dozen	6	0–12	Genistas, per dozen	6	0–10
Bouvardias, doz ..	12	0–18	Lilies, per dozen ..	12	0–24
Cinerarias, per doz.	5	0– 8	Margarite Daisy, per dozen	8	0–12
Cyperus, per dozen..	4	0–12	Myrtles, per dozen..	6	0–12
Dracæna terminalis, per dozen ..	30	0–60	Palms in var., each	2	6–21
— viridis, per doz..	12	0–24	Pelargoniums, doz...	9	0–18
Ericas, various, per dozen	12	0–24	— scarlet, per doz.	3	0– 6
Euonymus, in var., per dozen	6	0–18	Spiræa, per dozen ..	6	0–12

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Anemone, 12 bun. ..	3	0– 6	Marguerites, 12 bun.	3	0– 6
Arum Lilies, 12 blms.	4	0– 6	Mignonette, 12 bun.	3	0– 9
Azaleas, 12 sprays..	0	6– 1	Narcissus, various, 12 bunches ..	2	0– 6
Bluebells, 12 bunches	0	9– 1	Pelargoniums, per 12 trusses	0	9– 1
Bouvardias, per bun.	0	6– 1	— scarlet, 12 trusses	0	4– 0
Camellias, 12 blms..	1	0– 4	Primulas, double, per bunch	0	6– 1
Carnations, 12 blms.	1	0– 3	Roses, Tea, per doz.	0	9– 2
Eucharis, per dozen	4	0– 6	— red, per dozen ..	2	0– 4
Forget-me-Not, or Myosotis, 12 bun.	2	0– 4	Spiræas, 12 bunches	6	0– 9
Gardenias, 12 blooms	1	0– 4	Stephanotis, 12 sprs.	1	6– 3
Lapageria, red, 12 blooms	1	0– 2	Tropæolums, 12 bun.	1	0– 2
Lilac, French, bunch	2	0– 7	Tuberoses, 12 blms..	1	0– 1
— English, 12 bun.	4	0– 8	Tulips, doz. blooms	0	3– 0
Lily-of-the-Valley, 12 sprays	0	6– 1			

SEEDS.

LONDON: *May* 19.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, E.C., describe to-day's market as very thinly attended, with almost a complete absence of business. Indeed the spring season of 1886 must now be considered as at an end. As regards stocks remaining over, those of Alsike, white, and also of home-grown red Clover seed are large, and the prices at which they are being carried over are exceedingly low. Occasional small orders still come to hand for spring Tares. Blue boiling Peas are meeting an improved sale. There is no quotable change in bird seeds. Feeding Linseed is weaker.

FRUITS AND VEGETABLES.

COLUMBIA (East London): *May* 19.—Fair supplies of vegetables met a good trade, and prices moderate. Quotations:—Cabbages, 4*s.* to 6*s.* 6*d.* per tally; Cauliflowers, 7*s.* 6*d.* to 15*s.* do.; Turnip Radishes, 3*s.* to 6*s.* do.; Spinach, 2*s.* 6*d.* to 3*s.* 6*d.* per sieve; Sprouting Broccoli, 2*s.* 6*d.* to 3*s.* 6*d.* do.; bunch Greens, 3*s.* to 4*s.* 6*d.* per dozen bunches; do. Onions, 3*s.* to 4*s.* 6*d.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; do. Rhubarb, 1*s.* to 2*s.* do.; Asparagus, 1*s.* to 2*s.* per bundle; Onions, 5*s.* 6*d.* to 6*s.* 6*d.* per cwt.

STRATFORD: *May* 18.—A good trade has been done at the undermentioned prices:—Cabbages, 5*s.* to 6*s.* 6*d.* per tally; Greens, 6*s.* to 7*s.* per dozen bunches; Turnips, 2*s.* 6*d.* do.; Carrots, household, 25*s.* to 35*s.* per ton; do. cattle feeding, 15*s.* to 25*s.* do.; Mangels, 20*s.* to 22*s.* do.; Onions, 120*s.* do.; do. spring, 3*s.* to 5*s.* per dozen bunches; Parsley, 2*s.* do.; Rhubarb, 1*s.* to 1*s.* 6*d.* do.; Carrots, 2*s.* 6*d.* do.

POTATOS.

BOROUGH AND SPITALFIELDS: *May* 18.—Supplies were ample and the trade dull, both for old and new. Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 90*s.*; Victorias, 70*s.* to 95*s.*; and Champions, 50*s.* to 65*s.* per ton. New Jersey round, 9*s.* to 12*s.*; do. kidneys, 20*s.* to 24*s.* per cwt.

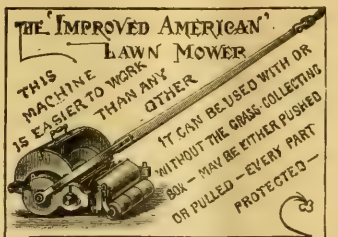
COLUMBIA (East London): *May* 19.—Trade has been better, and with short supplies prices have improved. Quotations:—York and Lincoln Magnums, 60*s.* to 90*s.*; do. Regents, 65*s.* to 75*s.*; Victorias, 60*s.* to 70*s.*; Champions, 40*s.* to 50*s.*; Kent and Surrey Regents, 60*s.* to 80*s.*; do. Magnum Bonums, 60*s.* to 80*s.*; do. Champions, 45*s.* to 60*s.*; Cambridgeshire Regents, 60*s.* to 75*s.*; do. Magnum Bonums, 60*s.* to 85*s.*; do. Champions, 45*s.* to 60*s.*; Scotch Regents, 65*s.* to 90*s.*; do. Magnums, 65*s.* to 80*s.*; do. Victorias, 60*s.* to 70*s.* per ton.

STRATFORD: *May* 18.—Quotations:—Magnums, best, 70*s.* to 80*s.*; do. seconds, 60*s.* to 70*s.*; Champions, 50*s.* to 60*s.* per ton; Malta, 10*s.* 6*d.* to 12*s.* per cwt.

Imports.—The imports into London last week consisted of 1001 bags from Hamburg, 3 Rotterdam, 711 Harlingen, 250 packages, 2960 half-boxes Lisbon, 18 cases Bordeaux, 16,340 sacks Stettin, and 3709 packages 1303 cases 28 casks Malta.

PRIMULA ARCTOTIS. — At p. 259, Primula arctotis (A. Kerner) is stated to be synonymous with nivalis (hort.). This, allow me to say, is a mistake. P. arctotis is, like P. pubescens (Jacquin), a natural cross between P. Auricula (L.) and hirsuta (Allioni), pubescens being nearer to Auricula (superauricula × hirsuta), and actotis nearer to hirsuta (subauricula × hirsuta). Both vary very much in colour, from white, clear yellow, to deep pink. Primula nivalis (hort.) is P. hirsuta (All.) var. alba. *O. F. Lehenhof.*

THE "IMPROVED AMERICAN" LAWN MOWER



PRICES

10 INCH MACHINE, £3.0.0. 14 INCH MACHINE, £4.15.0.
12 INCH MACHINE, 4.0.0. 16 INCH MACHINE, 5.10.0.
GRASS BOXES EXTRA

ALEXANDER SHANKS & SON, DENS IRON WORKS, ARBROATH & 27 LEADENHALL STREET, LONDON.

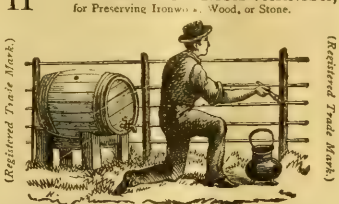
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18×12	22×16
20×12	24×16
16×14	20×18
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20×14	24×18

21-OZ. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.
A large stock of similar current sizes of 15-OZ. glass in 200 feet boxes.
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GLASS, LEAD, OIL and COLOUR MERCHANTS.
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Stock List and Prices on application. Quote *Chronicle.*

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HILL AND SMITH'S BLACK VARNISH,
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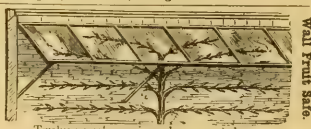
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VIRGIN CORKWOOD, for Ferneries, Rockeries, and Ornamental Work, in Gardens. Wholesale to the Trade.—WM. RANKIN AND SONS, 10, Carlton Place, Glasgow; and Lisbon, Portugal.



Twelve years' experience has proved that
PARHAM'S PATENT GLASS WALL COPING secures a certain crop of Apricots, Peaches, Pears, and all other Wall Fruit, on the Trees protected by it. A large Stock always on hand. Price, in painted Iron Framing, with 21-oz. Glass, and Rods for Front Curtains, 2 feet wide, 2*s.* 6*d.*; 3 feet wide, 3*s.* 6*d.* per foot run. Any carpenter can fix. References and Prospectus free. WM. PARHAM, Northgate Works, Bath, and 421, Oxford St., London, W. Specimens may be seen at either address. Parham's Illustrated Catalogue of Horticultural Buildings, post free.

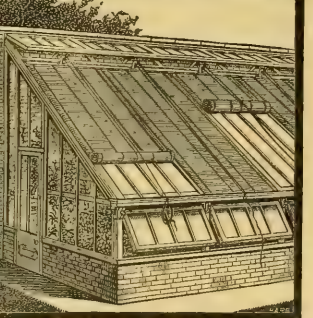
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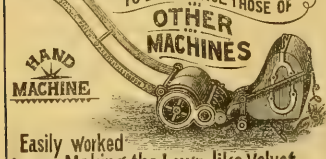
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A large Stock of Machines of all sizes always kept
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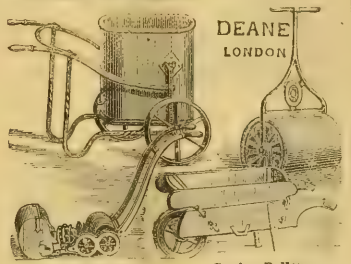
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All the Best Makes in Stock.

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DOUBLE CYLINDER	SINGLE.
20 by 18 in. 50s.	16 by 16 in. 32s.
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15 Gall... 30s. | 32 Gall... 46s.
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Well made and cheap .. 24/6
With loose top, as shown.. 32/6

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DEANE & CO. have SPECIAL FACILITIES for Grinding and Repairing Lawn Mowers of all makes, a large staff of EXPERIENCED WORKMEN being employed for the purpose. THOROUGHNESS in REPAIR and MODERATE CHARGES guaranteed.

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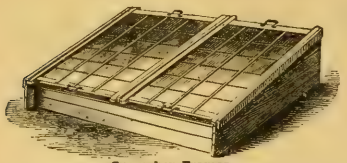
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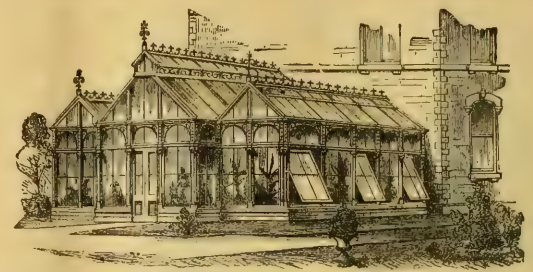
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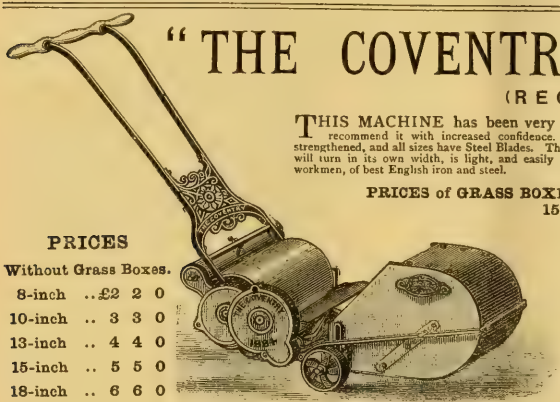
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W. RICHARDS, 41, Wellington Street, Strand, W.C.

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ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY, June 9.

Tickets and Schedules of Prizes to be obtained at the Gardens only. Entries should be sent in as soon as possible.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1886 will open at the Gardens, Old Trafford, on FRIDAY, June 11, at 2 P.M. Entries close on June 4. Schedules may be had from the undersigned.

BRUCE FINDLAY.

Royal Botanic Gardens, Manchester.

COLCHESTER and EAST ESSEX HORTICULTURAL SOCIETY'S SUMMER SHOW will be held at the "Holly Trees," East Hill, Colchester, on THURSDAY, July 1. Schedules of J. C. QUILTER, Sec. 5, Head Street, Colchester.

STOLEN, from our Grounds of Glenfield, a portion of the stock of two new Seedling crosses between the Raspberry and Blackberry—viz., 11 THORNLESS BLACK-FRUITED and 5 YELLOW-FRUITED. They are entirely distinct, and will be known anywhere; and, as these two varieties will not be offered for two or three years, we must therefore warn Horticulturists and the Trade generally against purchasing from any person plants of these that may be offered

VICCARS COLLYER AND CO., Leicester.
A. W. CREWS, *Manager.*

PALMS.—A few hundreds of hardy grown Seaforthia elegans and Latania borbonica, 12 inches high, 4*s.* per dozen, 25*s.* per 100. Seaforthia elegans, Latania borbonica, and Kuterpe edulis, averaging 20 inches high, 12*s.* per dozen; less quantity, 1*s.* 3*d.* each. Packages and Parcels post-free. A visit solicited

GARDENER, Holly Lodge, Stamford Hill, London, N.

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EUCHARIS CANDIDA.
LILIUM NEILGHERENSE.
FREESIA REFRACTA ALBA.

To clear out, no reasonable offer refused

NEW PLANT AND BULB COMPANY, Colchester.

PRIMULAS.—PRIMULAS.—PRIMULAS. —Seventeenth year of distribution. Williams' Superb Strain, 1*s.* 6*d.* per dozen; 10*s.* per 100. CINERARIAS, same price. Package and carriage free. Also Double White Primulas, 6*d.* each.—JOHN STEVENS, The Nurseries, Coventry.

ROSES IN POTS.—Her Majesty, the Bennett Rose, and all the best new English and Foreign varieties. All the choicest well tried sorts, in pots, 15*s.* to 36*s.* per dozen. Descriptive LIST free on application.

RICHARD SMITH AND CO, Nurserymen and Seed Merchants, Worcester.

HOLLYHOCKS—HOLLYHOCKS.—Strong Seedlings of a fine strain, to bloom this season. 12 for 4*s.*, 25 for 7*s.*, 50 for 12*s.* 6*d.*, 100 for 21*s.*

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FOR SALE, a fine Specimen of ARECA SAPIDA PALM. For particulars apply to J. DENNIS, Oak Lea, Silver Hill, Hastings.

DOUBLE WHITE PRIMULAS, 4*s.* per dozen, 30*s.* per 100.

TAYLOR AND CO., Nurserymen, Timperley, Cheshire.

CHEAP PLANTS.—Strong and well-rooted. DAHLIAS, finest named Show, Fancy, and Pompone, 3*s.* per dozen, 20*s.* per 100. VERBENAS, White, Purple, and Scarlet, 6*s.* per 100. GERANIUMS, Vesuvius, Bonfire, &c., 8*s.* per 100: Flower of Spring, White Queen, &c., 10*s.* per 100. FUCHSIAS, strong, best sorts, 8*s.* per 100. PETUNIAS, 8*s.* per 100.—W. JACKSON, Blakedown, Kidderminster.

To the Trade.

NEW SCARLET RUNNERS, a good sample. Price on application

JAMES CARTER, DUNNETT AND BEALE, 237 and 238, High Holborn, London, W.C.

To the Trade.

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H. AND F. SHARPE are prepared to make special offers of the above-named Seeds of 1885 growth, and raised on their own farms, from carefully selected stocks and transplanted Bulbs.

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WISE AND RIDES beg to inform Senders that they now have special facilities for the SALE of STRAWBERRIES, BEANS, CUCUMBERS, TOMATOS, GRAPES, MUSHROOMS, &c Also for EUCHARIS, Maréchal Niel ROSES, and other CHOICE CUT FLOWERS.

WISE AND RIDES, Fruit and Flower Salesmen, Fruit Market, and 360, Flower Market, Covent Garden, London, W.C.

Profitable Sale of Cut Flowers.

CONSIGNMENTS carefully Disposed of.

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WANTED, the following Number of the *GARDENERS' CHRONICLE*, viz., FEBRUARY 28, 1882. 2*s.* 6*d.* will be given for a complete copy.

Gardeners' Chronicle Office, 41, Wellington Street, Strand, W.C.

SWEET VIOLETS.—I beg to inform the TRADE and the PUBLIC generally that I have NOT LET OUT either "PRINCESS of PRUSSIA" or "PRINCE CONSORT" VIOLETS; and any Persons offering them for Sale are doing so

LIABLE TO LEGAL PROCEEDINGS.

G. LEE, F.R.H.S., Clevedon.

NOTICE.—The AMERICAN PLANTS at KNAP HILL are now in Bloom, and may be seen daily, Sundays excepted.

☞ The RHODODENDRONS in Rotten Row, Hyde Park, are supplied by ANTHONY WATERER, Knap Hill Nursery, Woking Station, Surrey.

Pæonies.—Pæonies.—Pæonies.

HOOPER AND CO. are offering the finest Collection of these Grand Hardy Flowers in Europe, and will have a splendid EXHIBITION of SPECIMEN BLOOMS ON VIEW in Covent Garden during the week.

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LASTREA ARISTATA VAR.—One of the best Greenhouse Ferns, having very nice variegated foliage. One Guinea per Hundred.

Apply for the New General Price LIST.

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YELLOW PETITE MARIE.—A clear golden-yellow sport of the old-fashioned free-flowering Petite Marie. The above will be an excellent substitute for the yellow Calceolaria, with the additional advantage of hardiness. Plants, per dozen, 18*s.*; each, 2*s.*, post-free.

HOWDEN AND CO, The Nurseries, Inverness, N.B.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.

The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Street, Liverpool.

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Now Ready.

TEA and NOISETTE ROSES, in Pots, of best sorts only, in great quantity, and of best possible quality. Priced LIST gratis. A Sample Dozen will be put on rail, carefully packed for travelling, on receipt of 13*s.* 6*d.*

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The Raiser now distributes the above at the Reduced Price of 3*s.* 6*d.* each. The value of strong 2-yr. old Plants will be well understood by all.

CHARLES NOBLE, Bagshot.

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Double White Golden Feather.

GEO. SMITH, 61, Penrose Street, Walworth, S.E., offers the above desirable novelty, raised by him, at 15*s.* per 100, cash. It is pure white, dwarf habit, and colour of Single Feather, seeds tolerably freely, and comes true.

PRIMULAS, CINERARIAS, CYCLAMEN. —Plants now ready for potting in single pots. First-class strains (still supplying Customers who have had from us for 12 years). PRIMULAS and CINERARIAS—12 for 1*s.* 6*d.*, 24 for 2*s.* 6*d.*, 100 for 9*s.* CYCLAMEN—12 for 2*s.*

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham; 12, Market Street, Manchester.

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THE ADVERTISER having Sold his House, is desirous of DISPOSING of the WHOLE of his PLANTS at an unusually low figure.

For particulars enquire of COACHMAN, 9, Fitz John's Avenue, South Hampstead, N.W.

Vines—Vines—Vines.

THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, have a grand stock of Black Hamburgh and other GRAPE VINES, suitable for Fruiting in Pots and Planting Vineries. CATALOGUES with full particulars on application.

The Vineyard and Nurseries, Garston, Liverpool.

TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

ASPARAGUS (true Giant).—Special Offer to clear ground:—2-yr., 20*s.*; 3-yr., 30*s.*; 4-yr., 40*s.* per 1000.

NEW POTATO (Bird's Doctor Bob), 4*s.* per stone.

Trade prices on application.

JAMES BIRD, Nurseryman, Downham.

ASPARAGUS.—This delicious vegetable does not require half the expense often incurred. For directions see Illustrated SEED LIST, free. Strong roots, 2*s.* 6*d.* per 100; extra strong do., two years old, 3*s.* 6*d.* per 100.

RICHARD SMITH AND CO., Worcester.

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To Florists, Seedsmen, Horticultural Builders, &c.

PLANTS, FLOWERS, FRUITS and VEGETABLES a Specialty.

WM. J. WELCH begs to call particular attention to his productions for ILLUSTRATING BOOKS, MAGAZINES, CATALOGUES, and for ADVERTISING PURPOSES.

For Specimens see *Gardeners' Chronicle*, 1883 to 1886.

ADDRESS, 25, Wellington Street, Strand, London, W.C.

SALES BY AUCTION.

Wednesday Next.—(Sale No. 7169.)

IMPORTATIONS of ORCHIDS from Popyau, Brazil, &c.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, June 2, at half-past 12 o'Clock precisely, a fine lot of ODONTOGLOSSUM CRISPUM, collected in flower by Mr. F. C. Lehmann, of Popayau, Cauca. Also a consignment of LÆLIA PERRINII, CATTLEYA BICOLOR, several hundred Plants of ONCIDIUM ROGERSII, O. CRISPUM, and O. ALTISSIMUM, SOPHRONITES, &c., just received direct from Brazil, East Indian ORCHIDS, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7169.)

VALUABLE ESTABLISHED ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, at half-past 12 o'Clock precisely, about 200 lots of Choice ESTABLISHED ORCHIDS, from the Collection of Charles Dorman, Esq., of Sydenham, including fine plants of :—

Dendrobium nobile nobilius	Cattleya Trianæ Backhousiana
,, ,, Cooksoni	,, ,, ,, Dodgsoni
Cypripedium vexillarium	Dendrobium Ainsworthi
,, ,, Druryii	Epidendrum Wallisi
Lælia anceps Dawsoni	Cymbidium Lowii
Vanda Sanderiana	,, Parishii (very rare)
Angræcum Kotschyi	Dendrobium Dominii
,, sesquipedale	Odontoglossum blandum (Dormanianum), &c.
Odontoglossum Hrubyanum	
Cattleya Wagneri	

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7170.)

The SECOND PORTION of the COLLECTION of ORCHIDS, formed by the Rev. J. B. Norman, of Whitchurch Rectory, Edgware.

WITHOUT THE LEAST RESERVE.

MR. J. C. STEVENS has received instructions from the Rev. J. B. Norman, who is going abroad on account of ill-health, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 3, at half-past 12 o'Clock precisely, the second portion of his famous COLLECTION of ORCHIDS, comprising many hundred plants of Odontoglossum Alexandræ and varieties (some of which have not yet flowered), O. Pescatorei, rare Masdevallias in great variety, Cattleya labiata (autumn flowering), splendid forms of C. gigas and C. Trianæ, C. Eldorado Wallisi, Oncidiums, Cypripediums and other ORCHIDS.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7170).

CYPRIPEDIUM CAUDATUM, splendid compact, green-leaved plants.

CATTLEYA SPECIES, from a new district, not seen in flower.

ONCIDIUM AMPLIATUM MAJUS, strong masses.

ODONTOGLOSSUM ALEXANDRÆ, splendid pieces of the best type.

EPIDENDRUM STAMFORDIANUM, strong compact plants.

MR. J. C. STEVENS will include in his SALE by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 3, by order of Mr. F. Sander, splendid importations of the above, the whole in fine condition. Also several fine hybrid ODONTOGLOSSUMS in flower; O. NITROSUM ROSEUM, three strong plants in bloom; O. PESCATOREI, spotted form in flower; EPIDENDSUM SCHOMBURGHI, splendid plants of CATTLEYA SCHOFIELDIANA, ODONTOGLOSSUM KRAMERI, ONCIDIUM CHEIROPHORUM and many other ORCHIDS.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower and Bud.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS in FLOWER will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 9, and he will be glad if gentlemen desirous of entering Plants for this Sale will please send particulars of same not later than THURSDAY NEXT.

The Sale is fixed a week earlier than usual in consequence of Whitsuntide intervening.

The Entire Collection of Orchids

Formed by J. T. Barber, Esq., of Spondon, near Derby.

MR. J. C. STEVENS has received instructions from J. T. Barber, Esq. (in consequence of his lease having expired), to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., towards the END of JUNE, his entire COLLECTION of ORCHIDS, including fine plants of many rare and valuable species. Nothing will be sold privately, but every plant included in the Sale.

Further particulars in next advertisment.

Wednesday Next.

0 first-class named CARNATIONS and PICOTEES from a well known collection, PHLOX, beautiful PANSIES, PYRETHRUMS, and other HERBACEOUS PLANTS, Maidenhair FERNS, GERANIUMS, PELARGONIUMS, and other PLANTS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, June 2, at half past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

2000 ONCIDIUM JONESIANUM (true).

MESSRS. PROTHEROE AND MORRIS are instructed to include in their SALE, on FRIDAY NEXT, 2000 ONCIDIUM JONESIANUM, collected and sent home by the original discoverer of this grand plant, M. Louis de Saint Leger. They have been collected at the proper season, and these plants will flower this year. All are in splendid condition, and the whole consignment is offered. Also a quantity of BRAZILIAN ORCHIDS, received direct.

On view morning of Sale, and Catalogues had.

Friday Next.

MAGNIFICENT HYBRID ODONTOGLOSSUM: grand form, with intensely dark spots, probably the finest ever flowered.

MESSRS. PROTHEROE AND MORRIS will include the above Valuable Plant in their Sale on FRIDAY NEXT, June 2.

On view morning of Sale, and Catalogues had.

Friday Next.

CATTLEYA MENDELII, ONCIDIUM BICOLOR, DENDROBIUM LITUIFLORUM, VANDA CATHCARTII, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, June 4, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., a large quantity of IMPORTED ORCHIDS, received in the finest possible condition, comprising Barkerias, Cattleya Gaskelliana, C. Mendelii, fine specimens; Cœlogyne cristata and other species, Deudrobium lituiflorum, D. nobile, D. transparens, Epidendrum nemorale, Lælia autumnalis atrorubens, L. pnduncularis, Oncidium bicolor, O. olivaceum, Odontoglossum atrosmum, O. Lodesboroughianum, O. Roezli, and other CHOICE ORCHIDS.

On view morning of Sale, and Catalogues had.

Lower Norwood.

40,000 well-grown BEDDING PLANTS, including 12,000 Geraniums of the best sorts, 2500 Lobelias, 1000 Coleus, 2000 Alternantheras, 1000 Ivy-leaf Geraniums, and 1000 Violas. Also a great variety of GREENHOUSE PLANTS.

MESSRS. PROTHEROE AND MORRIS will SELL the above, by AUCTION, on the Premises, The Tivoli Nurseries, Chapel Road, near West Norwood Station, on SATURDAY, June 5, at 1 o'Clock precisely, by order of Mr. A. A. James, F.R.H.S.

On view two days prior to Sale. Catalogues had on the Premises, and of the Auctioneers, 67 and 68, Cheapside, E.C., and Leytonstone, E.

Monday, June 7.

SPECIAL SALE of IMPORTED ORCHIDS collected by Mr. C. Patien.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. C. Patien to SELL by AUCTION at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on MONDAY, June 7, at half past 12 o'Clock precisely, a large quantity of IMPORTED ORCHIDS, collected and brought over by him, comprising Bolleа Patinii, Uropedium Lindenii, very rare, 200 plants of Lælia Patinii (new), Odontoglossum Pescatorei (new), Pescatorei as many as fifty to eighty flowers on a branched spike, Odontoglossum Wallisii, and many other ORCHIDS; an importation of ORCHIDS from Burmah, a selection of ESTABLISHED ORCHIDS, a quantity of PALM SEEDS in variety, &c.

On view morning of Sale, and Catalogues had.

Handcross, Sussex.

To MARKET and AMATEUR GARDENERS, INVESTORS and OTHERS.

MESSRS. G. SIMMINS AND GASSON will SELL by AUCTION, at the "Red Lion" Inn, Handcross, on TUESDAY, June 7, at 3.30 for 4.0 O'Clock, Two valuable, Semi-detached DWELLING-HOUSES, known as Zephyr Place, with Garden, Peach-house, Conservatory, Greenhouse and other Outbuildings, fronting on the Brighton Road, adjoining the above village.

Particulars and conditions of Sale may be had, in due course, at the Sale, and of the Auctioneers, Crawley, Sussex.

Kent, Mottingham (near to Eltham and Chislehurst).

By order of the Mortgagees.

The VALUABLE LEASE of nearly 80 years of the well-known ROSE NURSERY, embracing about 5A. 1R. 1P. of productive Nursery Ground, together with Ranges of Heated Glasshouses some 450 feet in length, pits, &c., and a comfortable Cottage Residence with Stabling and necessary Outbuildings. Possession on completion.

MESSRS. BAXTER, PAYNE AND LEPPER will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, June 9, at 2 o'Clock precisely, the above PROPERTY.

May be viewed, and particulars with Conditions of Sale obtained of Messrs. FLADGATE AND FLADGATE, Solicitors, 49, Craven Street, W.C.; at the Mart; and of BAXTER, PAYNE AND LEPPER, Surveyors and Land Agents, Bromley and Beckenham, Kent, and 69, King William Street, E.C.

Heathrow, in the Parish of Harmondsworth, in the County of Middlesex. About 14 miles from London, and a short distance from HEATHROW Station, S.W. Railways.

IMPORTANT SALE of valuable FREEHOLD ESTATES, all Tithe Free.

MR. E. P. NEWMAN is instructed by the Trustees under the Will of the late Samuel Hunt, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on TUESDAY, June 22, at 1 for 2 o'Clock, an exceedingly valuable property known as the HEATHROW FARM, with convenient Farmhouse and numerous Buildings, forming 2 Homesteads, 16 Cottages, Orchards, and Gardens thereon; the whole comprising about 135 acres, and calculated to produce about £650 per annum. The land, which is well drained, is principally arable, has been highly farmed, and comprises a good depth of rich Loam; it is in a very clean state, and well adapted for Market Gardening, Seed Growing, or Nursery purposes, and the whole Property will be divided in 9 Lots. There are very extensive Building Frontages to good roads, and there is Brick Earth on a considerable portion of the estate. Possession on completion of the Purchase.

May be viewed 7 days prior to the Sale, and particulars with Conditions and Plans can be obtained at the Auction Mart, London, E.C.; Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; and of the Auctioneer and Estate Agent, 42, High Street, Uxbridge, Middlesex.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

TO LET, on Lease, through ill-health, a DAIRY FARM, near Tunbridge Wells, with a substantial Milk Contract, supplying 100 gallons per day. Prompt payment fortnightly, with a satisfactory profit. Adjoining a Junction Station on the Main Line to London. Containing about 200 acres of excellent Land in a good state of cultivation, convenient Agricultural Buildings; Stalls for about 50 cows; 7 Cottages. All in good working order. Rent very low.

Messrs. LANGRIDGE, Land Agents, Tunbridge Wells.

FRUITERER'S, FLORIST'S, and GREEN GROCER'S, near Crystal Palace. First-class affair Trade £65 per week. Rent £215. Price £1275.

Principals apply to the CITY of LONDON and GENERAL BUSINESS AGENCY (Limited), 56, Holborn Viaduct, E.C.

To Landed Proprietors, &c.

A. McINTYKE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

FRUIT and EARLY PRODUCE CULTURE.—Persons interested are invited to co-operate with Owner of Property specially situated and adapted for Fruit on a large scale. Important advantages. Large profits.—Address

FRUIT, Messrs. Bates, Hendy & Co., Advertising Agents, 37, Walbrook, E.C.

FRUITERERS and FLORISTS.—An active young man, living in the Haarlem district, is desirous to obtain good Connections for the Purchase of Bulbs and Vegetables. For particulars apply, with post-paid letters, to Mr. CRIÉTÉE, Postmaster, Hillegom, Netherlands.

THE PARKS, &c. COMMITTEE of the METROPOLITAN BOARD of WORKS will meet at Office of the Board, Spring Gardens, S.W., on WEDNESDAY, the 2nd day of June, 1886, at 12 o'Clock at noon precisely, and will then be prepared to OPEN TENDERS by persons who may be willing to contract for the SUPPLYING and FIXING 48 SEATS on Highbury Fields, in the Parish of Islington, in the County of Middlesex. Persons desirous to submit TENDERS may obtain Form of Tender, and other particulars, on application to the Superintending Architect of the Board, at the Office, Spring Gardens, between the hours of 9 A.M. and 4 P.M. (or on Saturdays between the hours of 9 A.M. and 2 P.M.), until Wednesday the 2nd day of June. The Tenders, which must be on the form supplied from this Office, and be addressed to "The Clerk of the Board," are to be delivered at the Office before 11 o'Clock A.M. on the last-mentioned day, and no Tender will be received after that hour. Any tender which is not fully filled up in every particular will be rejected. The Committee do not bind themselves to accept the lowest or any Tender.

J. E. WAKEFIELD, Clerk of the Board.

Spring Gardens, S.W., May 26, 1886.

DAHLIAS.—New Cactus, Pompon, and Single Dahlias, by parcel post or rail. Plants sent gratis for carriage. [each.

NEW CACTUS DAHLIA, MRS. TAIT, 5s. per dozen, 6d.
,, ,, PICTA FORMOSISSIMA, 4s. per dozen, 6d. each.
,, ,, COCHINEAL, GENERAL GORDON, LORD LYNDHURST, PRINCE IMPERIAL, 7d. each.
DAHLIA, CONSTANCE, White Cactus, 3s. dozen, 4d. each.
,, JUAREZI, Scarlet Cactus, 3s. per dozen, 4d. each.
,, PARROT, Scarlet Cactus, 3s. per dozen, 4d. each.
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Exhibitors are requested to forward to the Steward a description of the Plants proposed to be shown, and the name of the Gardener who will be in charge. All Plants must be in their allotted places on TUESDAY, June 1, or not later than 10 A.M. on WEDNESDAY, June 2. For further particulars apply,

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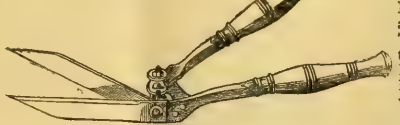
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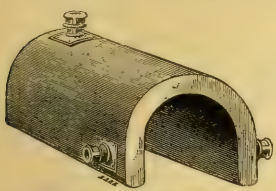
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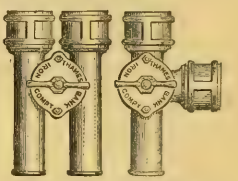


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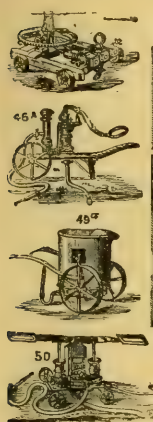
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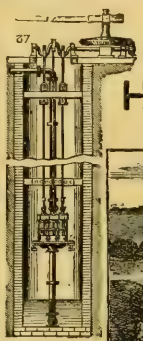
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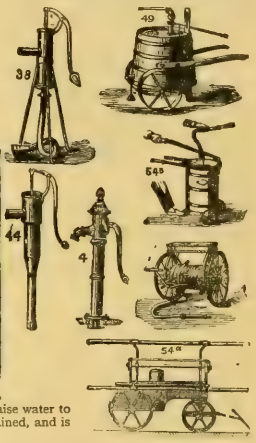


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THE

Gardeners' Chronicle.

SATURDAY, MAY 29, 1886.

CASSIOBURY PARK.

EVELYN said of Cassiobury and of its noble owner, the first Earl of Essex, whom he visited, "No man has ever been more industrious than this noble lord in planting about his seat, adorned with walks, ponds, and other rural elegancies." It is fortunate for present owners when their predecessors, 200 years ago, indulged such tastes as the great promoter of tree-planting here describes. Trees and shrubs of priceless value such as time imparts are among the heirlooms of Cassiobury, and the delighted visitor sees at once that the gardens are historic. Some noble Cedars of Lebanon on the lawn are fit memorials of the year 1675, and of the improvements referred to by Evelyn.

As the present is, in this case, more interesting than the past, I will speak of Cassiobury as it is. There are 700 acres of park, as well and variously planted as any park in Hertfordshire, and, like several of the others, liberally opened to the enjoyment of the public. Oaks are numerous; and if the light soil of the neighbourhood has prevented the trunks from attaining the height they reach on deeper and heavier land, it has not robbed them of their size or picturesque form. The trees are perhaps a little too numerous—a much better state of things than the opposite, which would be a sad plight for any park, especially for one which is of rather level contour.

The beauty of the park is partly due to the genius of Le Notre, the famous gardener of St. James's Park, who laid out the walks and woods. The river Gade runs through it, and produces trout 3 lb. and 4 lb. in weight. I shall only say of the family who became possessed of Cassiobury by marriage with its heiress in the time of Charles I., that in that reign Arthur Capell was created Baron Capell of Hadham, Herts; that this staunch loyalist was beheaded for his services to the king; and that his son was created by Charles II. Viscount Malden and Earl of Essex in 1661.

I traversed the pleasure grounds and other gardens under the guidance of Mr. Fitt, the head of a staff which till lately comprised twenty-six gardeners—a number which has been in these bad times somewhat reduced, though the diminished forces are of such a quality and so well led that the horticultural prestige of the place is not likely to suffer. Large numbers of bedding plants are used. In the first warm days of May this year 3000 Tulips might be seen in full blossom, arranged, of course, with skill according to their colours; and presently 30,000 Pelargoniums will be planted in the flower garden, while the total number of plants turned out into beds for summer decoration is 100,000.

The lawn and shrubbery of 16 acres, enclosing two sides of the house, are delightfully arranged on a rather complex plan, which is, I believe, partly due to the foreign taste of a former proprietor. Several wildernesses formed, by short and curved hedges of Hornbeam, have proved

most welcome in hot summers for the shade they afford. They were probably French in their origin. They are specially adapted for a southern clime and a hotter sun than ours. You will hardly find such another garden for shady nooks and pleasant arbours, such cool retreats and sheltered places, and so many convenient seats for rest.

We will now examine the garden briefly in detail The bright colours of the beds of Tulips and Violas, and clumps of Aubrietia, attracted us to the front of the orangery, a good spot for a general view of the grounds immediately connected with the house. The bare walls of this building, both within and without, have been pleasantly relieved by a wooden trellis, which is painted a reddish-brown colour, known technically as purple-brown. It is not an orangery in name only, being full of large trees in boxes, which will presently be wheeled out upon the lawn, together with several species of standard Rhododendron, also in tubs. These receive the same treatment as the Oranges, and they deserve wider culture, blossoming as they do without heat. One of them produced its beautiful pink trusses as early as January, while another blossoms in May. Another plant which claims notice in the orangery is a Clethra arborea, 20 feet high, and bearing sweet-scented flowers, like the Lily of the Valley, in July.

A Douglas Fir upon the lawn opposite the orangery, which the Earl must view with interest, as his family will do for generations we may hope, was planted by himself as a seedling, "out of a pot," as gardeners say. Near it is a Catalpa syringæfolia of notable size, with a large and very ornamental Hemlock-Spruce. Those who have the happiness of an extensive acquaintance among exotic and other trees, will find themselves frequently "pulled up" here by some fine specimen or other, the pleasure and surprise at such meetings with one's favourites being increased by their artful distribution.

Walking hither and thither, and passing from one compartment into another, each slightly though distinctly separated, yet not sufficiently to destroy the idea of one garden, the following trees worth notice will be met with :—A Fern-leaved Beech and a Copper Beech, a Tulip tree, a standard Ginkgo adiantifolia or Maidenhair tree, and a Magnolia purpurea, in full blossom on May 6, growing in a sheltered nook partly fenced by a wall, covered by Magnolia grandiflora and Honeysuckle. This is one of those delightful retreats with a Rose-covered arbour which looks expectant of some strolling reader or smoker, to enter and sit down and be happy out of the sun, or safe from a shower. Except in such a sheltered spot, I suppose that Magnolia purpurea would hardly have grown as a standard tree of size, even here on this warm soil.

Elsewhere I noticed Magnolia glauca and a magnificent Sequoia sempervirens, which is not alluded to as being tender, but as a tree planted by the late Earl, and whose trunk can now scarcely be clasped by two persons with extended arms, reaching at least 12 feet. Among other curiosities, Mr. Fitt, the gardener, showed me some shoots of a Bay tree which had grown from a cutting brought by Mr. James Forbes from the tomb of Virgil at Naples. In another part of the garden is another commemorative tree, a Willow, brought as a cutting from the grave of Napoleon, and planted by a fountain among Flags and Bulrushes. A Douglas Fir here challenges comparison with most others in England, the best one at Dropmore, it is said, being less in girth, though higher. It is 85 feet high, 12 feet in girth at 4 feet high, and the spread of its branches is 80 feet across. A queer little tree stands near it, and is perhaps a still more remarkable specimen of its kind. This is a Picea excelsa var. pumila, or Pigmy Spruce, a thick bush, 13 feet high, with a single stem and impenetrable foliage, extending 40 feet in circumference, and generally holding a bird's-nest, and fitting close to the ground.

A Rose garden, with a "temple" of Roses and Honeysuckles in the centre, forms one of the divisions of this delightful 16 acres of pleasure garden. Another spot, a little "combe" or hollow surrounded and sheltered by Rhododendrons and Hornbeam arbours, and forming in itself a natural division, has been set apart by Mr. Fitt as a sub-tropical garden. I can only hope to give a general idea of the plan of these old and famous gardens, and many of the details, however interesting, must be omitted. One of the most pleasing spots at Cassiobury is that near the orangery, having for its central attraction a miniature cottage which would make a delightful sketch or photograph. Perhaps, for the sake of brevity, and to avoid failure in description, I may copy here from my notes as follows :—"Fountain in front, painted windows, Roses and Ivy clambering about ; low-backed, comfortable chair, much used ; table, convenient for book—Horace or another—or a hookah. 'Tis said that the Earl sometimes smokes, and often sits here." Another nook not yet noticed —a Rose garden, which I will not spoil by description — adjoins this cottage summer-house. It looks like and is, I believe, a lady's — it might be the Lady Corisande's, and here Lothair might have plucked the Rose he gave her.

In passing through the grounds I came upon a stove on one side of the formal Rose garden already noticed, and within it, among a variety of plants, are two nice things—a beautiful Passiflora princeps and a chair. It is a capital idea at eighty to have a chair placed in every convenient spot for sitting down, and to signify to all concerned that it must not be moved, and if it is unwittingly moved, to send out in all directions and have it brought back, so that it be not moved again. There is a Camellia-house in the pleasure garden furnished with another chair ; and here perhaps I may venture to remark that in home-like gardens of this sort, which were formed for enjoyment rather than display, a large detached conservatory, or glasshouse of any kind, would destroy the sense of harmony by attracting too much attention to one dominating object. A "Turkish tent" on one side of the lawn is a building of much novelty, designed on too small a scale to have any such undesirable effect.

In conclusion, I may state that there are 4 acres of kitchen garden within walls, and the same extent without. The bothy for the young men near Mr. Fitt's house is well managed, and Mr. Fitt wisely promotes the game of cricket out-of-doors and the reading of the *Gardeners' Chronicle* within. *H. E.*

MYOSOTIDIUM NOBILE.

This striking herbaceous plant (fig. 151), introduced from the Chatham Islands, New Zealand, about thirty years ago, is worthy of extended cultivation. Several strong plants of it were shown by E. G. Loder, Esq., Floore, Weedon, at the meeting of the Royal Horticultural Society on April 13 this year, creating much interest. To many persons it appeared to be quite a new plant, although so long introduced. The flowers are of a light-blue colour, with a broad margin of white, and show a tendency common to most members of the order, namely, to expand with a purplish tinge, and then gradually fade to blue, pink, or white, as the case may be. The purple tint in this instance is confined to the five spots at the base, and alternating with the five lobes of the corolla. The great petioles are of much consistency and substance, the upper surface of the huge cordate glabrous leaves is light green, and the under surface is coated with a softish adpressed pubescence—characters found in some species of Myosotis.

New Garden Plants.

CYPRIPEDIUM LINDLEYANUM, *Schomburgk.*

This flowered in February, 1886, with Messrs. J. Veitch & Sons. It has greenish bracts, brown ovaries, pallid greenish-sulphur-coloured sepals and petals, and lip with red veins, and similar veins and spots on the lip. The staminode is tridentate, the side-teeth divaricate, yellowish-green, with red hairs. The petals of Messrs. J. Veitch & Sons' plants are unusually narrow and long, and very wavy.

Having been asked by various correspondents for my opinion about Selenipedium kaieteurum of Mr. N. E. Brown (*Gardeners' Chronicle*, 1885, August 29, p. 262), I addressed myself to the authorities at Kew, and was kindly furnished with a wild grown flower and a fresh leaf. Originally I was very partial to the thing, the more as Messrs. Veitch's narrow-petalled plant looked very distinct from the wild grown kaieteurum. The author said :—"Specifically it is allied to S. Lindleyanum, but differs in having more glabrous sheaths and bracts, and differently coloured flowers." I thought I might find a difference in the shape of the shoe. I preferred, however, to defer the formation of an opinion till my most recent rich materials should be available for inspection after having been set aside for poisoning. Finally there are beforme me, four inflorescences. I am persuaded Mr. N. E. Brown, after their inspection, would combine both together ; at least, I do not see any difference. The representation made by Sir R. Schomburgk's artist, both kept at the British Museum in the original, and at Kew in a copy, may have influenced Mr. N. E. Brown. I do not think it a masterpiece of accuracy, as indeed could not be expected from a young artist working during such an uncomfortable journey. *H. G. Rchb. f.*

MAXILLARIA ENDRESII, *n. sp.**

This flowerered in 1870 in the Hamburgh Botanic Garden, having been sent alive with Sievekingia by the late Mr. Endres, to whose memory it is now dedicated. I made a sketch in colours, but never published it. Now it has reappeared, also from Costa Rica, in the establishment of Messrs, Hugh Low & Son, whence it has been kindly sent me by Mr. Edward Low.

It belongs to the group of Maxillaria setigera, Lindley. I wanted in 1870 to watch in future its possible changes. This is the reason why I did not publish it. It kept quite constant. It has very broad elliptical bulbs, which finally are as much wrinkled, or nearly so, as in an old plant of Oncidium ampliatum. Leaves cuneate-ligulate, blunt, acute. Peduncle rather short. Bract equalling, or shorter than the stalked ovary. Sepals and petals light ochre-coloured ; triangular ligulate, tapering in an acuminate manner, and having a short bristle at the top. Petals smaller. Side laciniæ semi-oblong, angulate at the top, light ochre-coloured with a purple border and similar coloured veins, mid-lacinia oblong-acute, ovary toothletted, ochre-coloured with a yellow disc. A triangular callus, much depressed between side laciniæ. The whole internal area hairy. Column with a membranous toothletted border to the androclinium, and a fine orange base. Excepting this it is a light ochre. The plant has a peculiar appearance by its curved sepals and petals, which are most distinct from those of Maxillaria setigera. *H. G. Rchb. f.*

CYPRIPEDIUM HYERANUM, *Lucien, Linden ana Rodigas.*

I find this Cypripedium mentioned in this year's *Gardeners' Chronicle*, pp. 567 and 590.

Mons. Jules Hye Leysen, of Gand, Coupure 8, was so very kind as to send me the only flower we Europeans have had an opportunity of seeing. I immediately thought it might be an albino of Sir

* *Maxillaria Endresii*, Rchb. f. Aff. M. setigeræ, Lindl : pseudobulbis ellipticis transversis, demum valde rugosis ; fol is cuneato—oblongo ligulatis acutis ; pedunculis brevibus ; bracteis ovaria subæquantibus ; mento modico ; tepalis ligulatis acuminatis apice brevissime setigeris ; sepalis subæqualibus minoribus, labelli trifidi lacinuis lateralibus semiovatis antice angulatis versus medium labellum, lacinia mediana ovata acutiuscula denticulata crispula ; superficie interna velutina callo antrorsum triangulo depresso inter lacinias laterales ; androclinii membrana cingente denticulata. Costa Rica. *H. G. Rchb. f.*

Trevor Lawrence's Cypripedium. It is pallid over the whole surface without any tint of purple, has even green veins on the vexillar dorsal sepal. Even the leaves are very pallid, as I had guessed, and as Mons. Hye Leysen ascertained. But this pallor is all. I am persuaded we must regard it as Cypripedium Lawrenceanum variety Hyeanum, the name having been given, otherwise we might better call it "Mons. Hye Leysen's individual." The horticultural world may be pleased with such a thing, but the botanists will not feel over-excited by such individuals. The history is simply, that it was found at the old establishment of Linden amidst a mass of typical C. Lawrenceanum. There is but that one plant. My late friend Professor Hackel of Leitmeritz in Bohemia (Pulsatilla Hackelii !) told me of a single white Cypripedium Calceolus having been found between thousands of the normal ones. *H. G. Rchb. f.*



FIG. 151.—MYOSOTIDIUM NOBILE. (SEE P. 680.)

FRITILLARIA CONTORTA, *Hort.*

Bulb as in F. Meleagris. Stem 1 foot long, one-headed, sometimes, but not always, angled in the middle by the decurrent base of the leaves. Leaves three, distant, ascending, sessile, fleshy, linear or lanceolate, the lowest half a foot long, ¼ to 1 inch broad. Flower white, cernuous, gamophyllous, 1¼—2 inches long; tube oblong, with an obconic base tinged with green, ⅓ inch in diameter, with six green narrow linear nectaries ¼ inch long placed a little above the base opposite each segment; segments oblong, ¼ inch long. Filaments slightly flattened, white, ⅓ inch long; anthers linear-oblong, ⅓ inch long, dehiscing down the edge; pollen sulphur-yellow. Ovary clavate, ⅓ inch long; styles ⅓ inch long, white, free in the upper third.

I shall be glad of any information bearing upon the above plant. The description is drawn up from two specimens brought to Kew by the Rev. Canon Ellacombe, in full flower in the first week in May. The stamens, pistil, and nectaries, are just those of Fritillaria, but the perianth is gamophyllous, the six segments being united, except in the upper third, so that the perianth a good deal resembles that of Sandersonia. *J. G. Baker.*

ADIANTUM COLLISII, *n. hyb.?*

Fronds very broad, supradecompound, glabrous; pinnæ six times pinnate, very broad and spreading, the pinnules (secondary branches) triangular ovate; pinnules finely pedicellate, very much varied in form and size, some almost ovate lobed on the upper edge and somewhat cuneate at the base, some rhomboid, some trapeziform, some cuneate, some bluntly oblong, while in size the majority do not exceed one-fourth of an inch in length or breadth, while some few, especially near the margin of the frond, are fully half an inch long and one fourth of an inch wide; sterile pinnules lobate, the lobes serrated; sori oblong, occupying the whole width of one of the small teeth into which the shallowly lobate margin of the pinnule is divided; veins free, flabellate; stipes glossy ebeneous, the pinnæ, pinnules, and pinnulets, especially the two former, bare for a considerable space at their bases; caudex tufted.

This is a seedling raised by Mr. Bause. Further than this we do not know its history, but from the aspect of the plant we suppose that Adiantum tenerum

may be one of its parents, supposing it to be a hybrid. The large size of the fronds and their supradecompound character, together with the small and unequal size of its pinnules, and their varied and irregular form, are features which distinguish it from all others. It forms a bushy, well-furnished specimen of elegantly spreading character, and is a good Fern either for decoration or exhibition. The central portion of the frond when spread out appears thinly furnished, owing to the absence of the leafy parts from the lower parts of pinnæ, pinnules, &c., but this is not observed in the growing plant, the dense decompound development amply supplying the deficiency. It has been exhibited as a new plant several times by Messrs. Veitch & Sons, into whose hands it has fallen, but it has failed to win a certificate. This is perhaps owing to its bearing some resemblance to the small-pinnuled form of A. tenerum, but on close inspection it is found to be very distinct from that species, and, in fact, for cultural purposes has a much more graceful and elegant style of growth. There are now so many fine Maidenhair Ferns in cultivation that growers are perhaps getting a little fastidious about admitting them to their collections. At any rate, where the forms of A. tenerum are not grown, A. Collisii should be welcomed. *T. Moore.*

ORCHIDS AT WOODHATCH LODGE, REIGATE.

Although but four-years-old, the collection of Orchids belonging to T. B. Haywood, Esq., may compare with any for the excellent growth of such things as Odontoglossum vexillarium' Cattleya Mendelii, C. Mossiæ, and other specialties in which his plants are not easily beaten.

Odontoglossum vexillarium is a special favourite at Woodhatch Lodge, and the remarkable progress which the plants have made from the small bits purchased three years ago is interesting to note. The plants of it at present in flower make a gorgeous display in the cool-house, the quality of all their flowers being excellent as to size and substance, and the varied tints, from nearly white to bright rose, charming. For quantity of bloom it would perhaps be impossible to excel them with the same number of plants. The largest, grown from a very small plant, now measures about 3 feet across, and bears over 240 blooms, forming a specimen worthy to hold its place in any floral exhibition in the world. Many of the other specimens have about fifty blooms, each measuring 5 inches in length and 4 inches across the labellum. What a source of pleasure they must be to the owner and also to his gardener, Mr. J. Ridout, who has grown them, and who is a great enthusiast in Orchid culture.

Arranged behind and among the fine specimens of O. vexillarium are many equally superb examples of Masdevallia Harryana, each bearing from fifty to 120 of their richly coloured blooms varying in the different specimens from bright mauve to crimson and dark blood-red. Masdevallia Veitchiana gigantea, too, has about a score of blooms, M. Chelsoni a good number, M. Schlimii ten spikes of five or six blooms each, M. ignea many flowers, Odontoglossum cordatum spikes of ten to twelve blooms, O. Hallii fine spikes with six or seven branches, O. triumphans some very large blooms, &c. These set up with a grand lot of Odontoglossum Alexandræ, some of the flowers of which measure 4 inches across; a good sprinkling of large branched spikes of O. Pescatorea, some O. crispum guttatum, O. Coradinei, the twiggy spikes of many Oncidium incurvum and other good things, form a splendid show, which the Orchid-growing readers of this note will be better able to imagine than we to describe.

The house in which the O. vexillarium is grown has also some good specimens of it in bloom, as also O. Roezlii, O. Phalænopsis, Pescatorea, Lehmanni, and Masdevallia chimæra, all of which are grown with the O. vexillarium. The house is a small lean-to facing north, and so situated that strong sun-light, which is so injurious to these plants, cannot possibly shine on it. For temperature it is kept cool all the year round, just what one entering it would describe as neither warm nor cold—a still, rather humid temperature of 60° to 65°. In one of the houses is a fine piece of Cypher's variety of Anthurum Scherzerianum, which is the largest, brighest and showiest of scarlet Anthuriums; it has six fine spathes. The long lean-to range facing south is divided into three divisions, and all are, like the other houses here, well provided with both top and bottom ventilators, which are ungrudgingly used to admit pure air, and which to a great extent accounts for the health of the Orchids. The first division is an East Indian-house filled with a choice selection, among them being in bloom Cypripedium calurum, with eleven flowers on one branched spike; Cypripedium lævigatum, well flowered, C. Sedeni candidulum, C. Rœbeleni, many well bloomed; C. Lawrenceanum, Saccolabium ampullaceum, S. Blumei in several varieties; Angræcum sesquipedale, Aërides suavissimum, A. Fieldingii, some Phalænopsis, Vanda Roxburghii, V. tricolor, and some good specimens of V. Sanderiana.

The second division for Dendrobes, &c., has in bloom good large specimens of D. thyrsiflorum, D. Dalhousianum, D. chrysotoxum, D. Parishii, D. Dearei, D. Farmeri, D. Devonianum, Epidendrum Parkinsonianum, &c. In the third division the grand masses of Cattleyas make a show almost equal to that in the Odontoglossum house, the many lovely specimens of Cattleya Mossiæ, each with a score or more blooms, are superb. Every variety of tinting and form can be found among them, none being below and most being above the average quality, while some of them are certainly deserving of a distinguishing name. The plants of C. Mendelii are equally good; Lælia purpurata, fine; Cattleya nobilior, C. Lawrenceana, C. labiata Warneri, C. intermedia, Lælia elegans, Chysis bractescens, and Trichopilia tortilis, well in bloom; and a grand mass of the old Miltonia flavescens, with ten spikes of ten to twelve flowers each, one of the most elegant plants imaginable. All branches of gardening are well carried out at Woodhatch Lodge, the other plant-houses furnishing in their different divisions excellent examples of culture—the house of Gloxinias in bloom, the Ericas, and Azaleas, being particularly good. Mr. Ridout must be complimented on giving the utmost attention to his Orchids, which he grows so well without letting any of his other charges suffer thereby, even the large and pleasant outdoor garden, in which there are many rare and valuable trees, being as neat and well cared for as it could possibly be.

ALPINE PLANTS FROM SEED.

In a previous article on the subject of Gentiana seeds (p. 590, this vol.) I spoke of my want of success with Gentiana acaulis and G. verna. These two species are now coming up in as compact a manner as so much moss. I have also some other species, such as G. germanica and G. Clusiana, which germinate very well.

We have made some very interesting observations in our gardens concerning the seeds of Primulaceæ. Mr. Max Leichtlin was good enough to send to the Jardin Alpin this spring several species of Primula, including P. Kingii, P. sikkimensis, P. bellidifolia, P. Munroi, &c. I sowed them in a soil composed of equal parts of coke-dust and sphagnum, with a little sand added. At the end of five weeks I had the pleasure of seeing them rise in a mass, and in such a vigorous condition as to prove to me that the soil into which they had plunged their roots suited them admirably.

I have also obtained most gratifying results with Androsaces. I could never raise from seed delicate species such as A. glacialis, A. helvetica, A. imbricata, but last autumn I tried a peculiar plan, which gave excellent results, and which I now hasten to recommend to the lovers of these plants. I took for A. helvetica a soil composed of one-third calcareous sand, one-third coke-dust, one-third of calcareous pebbles, broken fine; to this mixture I added a large quantity of the humus soil found in the chinks of the rocks where these plants grow. This soil consists of nothing more, than the more or less decomposed tufts of the Androsaces. Mixed with the prepared soil this humus material gives it a composition which, chemically and physically, resembles nearly enough that in which A. helvetica is found in a state of Nature. It is in soil so prepared that I sowed my seeds, freshly gathered from A. helvetica. Now they are coming up freely, and are showing their second leaves. A similar remark applies to A. imbricata, for which, however, I take sand and granitic rock instead of limestone. A. imbricata is appearing in great abundance, as is also A. glacialis. These results are interesting in showing how we can raise these delicate plants as freely as the stronger ones. *Henry Correvon, Jardin Alpin d'Acclimatation de Geneve.*

A BOG GARDEN.*

Given a piece of squashy, water-charged bog land, on which you dare not tread for fear of going in over your shoetops, worthless except to produce a few Rushes, and may be an Alder or Willow stub—Can it be made into an attractive garden? Yes; but it takes two or three years to do it, to get rid of its old indwellers, and fully establish the newcomers, and to find out what will and what will not do, for I do not think we know very much about the likings of moisture-loving hardy plants.

The Site.

My experiment was tried at High Beech, and this is how the bog garden was made. The site was one of those depressions which are found on the sandy hilltop of Bagshot Heath, Wimbledon, Epping Forest, and Hampstead. Between two ridges of raised ground and on the falling slope occur oozy springs issuing from the higher ground above, and soaking down the hollow, widening and gathering moisture till the water issues in a small rill at the bottom of the decline. Droseras, Ivy-leaved Campanula, and other native bog plants, are found with the sphagnum and Rushes in the wet, springy ground.

The successful growth of Sarracenias and Dionæas first led to carrying out the idea more fully. There are many hardy plants which from the want of the continuous moisture of such a site, and which they enjoy in their native haunts, do not succeed year after year in the ordinary herbaceous or garden border; a hot summer comes and they are not—to instance some Calthas, the double varieties of the glorious Marsh Marigolds now brightening our Lea marshes; Sarracenias, Primroses from Himalayan bogs, Spiræas, and others. The idea was to show these plants in a natural way, and so to see them in their full beauty.

How best to Use the Site—Requirements.

The chief thing to do was to husband and use thoroughly the water running into and accumulating in the bog. A temporary deep drain was made right up the centre, and the work was done early in a dry autumn, thus allowing the men to move about freely on the surface. This, husbanding the water, was done by forming beds following the circular shape of the depression, and so made that the upper set received all the water from the oozy springs that could be found issuing from the surrounding banks on to the surface of the bog. A 2½ feet wide bank of clay was then put in and trodden firmly on the lower side of the beds, defining the beds and keeping the moisture in them until allowed to escape.

A second series of beds was made a foot lower. A third a few inches below this, and one bed of this serie had all the peat removed until the clay which (except here and there where water oozed up through clayey sand) formed the bottom of the bog, was reached, thus making a small pond to receive the overflowings from the upper beds. A fourth series of beds received the overflow from the pond and upper beds, as well as the water from independent springs, and eventually the water ran off into the brook or ditch in a small clay-lined channel built across the miniature valley.

The small difficulties I had to overcome were in making the clay walls to the beds. Towards the sides of the hollow a firm bottom was found, but when the bottom was springy the water simply oozed up through the clay, and does so still more or less, but the dams or walls do their work—that is, they keep the moisture well in the several levels. They act also as paths to let you walk in comfort about the space (which, by-the-bye, is 60 feet square), the chief thing which makes a bog garden useable and enjoyable in all weathers and seasons. But the paths at first did not answer, for you found yourself up to the knees in miry clay. A surface crust of gravel and cement concrete was tried, but the water oozed up through it, and the clay swallowed it up; so something had to be done to keep the clay down and get a safe path.

The foreman suggested the remedy, and a wood clearing close by furnished it. For the oozy places some small Beech trunks were split in two, laid round side downwards along the paths, and short split branches (smaller) were laid across them, making corduroy paths 2½ feet wide. A little gravel between the logs keeps them in place; they make a perfect, comfortable, and lasting path, and keep the clay

* A paper read by Mr. George Paul at the meeting of the Horticultural Club, Tuesday, 11th inst.

down and in place. I forgot to say that from each series of beds water at a certain level flows, in small drain pipes, into the next level, enabling the height of the water in each bed to be regulated.

In the middle of one or two of the largest central beds an upright post is driven, the top just level with the surface, to receive the one end of three slabs, and so allow every plant in the bed to be reached. So far we have gained control of the water, enlarged and retained the boggy space, and have the means of moving comfortably about.

Preparing the Beds for Planting.

Owing to our enlarging the area there was not sufficient peaty material, and peat and leaves had to be furnished to make 1½ foot of good soil in each bed. Small rills drawn with a hoe to the mouth of the overflow pipe allow the water on the bog to be controlled, for a stroke of the hoe retains moisture, or allows the surface and crowns of the plants to be kept dry or raised out of the water. The beds are subdivided by small peat banks, on which plants liking their root-extremities in water, but their crowns to live in drier regions, are fixed.

The chief enemies have afforded an example of the principle of the "fittest surviving," in the shape of the Rushes and water-loving grasses striving to resume possession: an occasional and timely weeding conquers this; the Liverwort tries to surface the whole, to the detriment of the smaller plants, such as Soldanellas, Violas. It wants a careful watching, and now and again scratching away. The birds, tempted by the loose peat surface, after hoeing or weeding, come and scratch for food, and some smaller winter-resting plants, such as Dionæas, Droseras, Pinguiculas, are apt not to be forthcoming when looked for in the spring.

Just a word as to full exposure to sunlight. The space is open, except for a slight shade in the shape of a row or two of 6 feet Hollies to the south, but my experience is that, provided there is sufficient moisture at the roots, few plants object to this exposure to the sun. In this the garden differs from Mr. Wilson's interesting experiments at Wisbey, where many of the plants are under, or shaded by overhanging trees. In other ways our experiments differ, besides it is not every one can devote an area of a wood to gardening.

The Plants.

Of the plants first put in, there were many that died. The water supply of the several parts was unknown; some were drowned, some were too dry. The best survivors were Calthas, double forms, and the monstrous, the palustris plena, and the later dwarf and double form. Of the Sarracenias, purpurea flowers and seeds freely about; S. Drummondi is the next hardiest; S. flava, S. rubra and S. psittacina seem to live, but get weaker after each winter. I am sorry that some interesting hybrids sent me by Mr. H. Veitch and Mr. Wrigley have not survived. The white Pilewort (Ficaria) is a splendid plant in the bog. Lobeliasyphilitica and the American Osmundas flourish well together. On an extreme point jutting out into the small pond, Saxifraga cordata flowers gloriously, and the golden Lysimachia has to be restrained, or it would cover the surface. The striped Viola and V. pedata, Ranunculuses, including the beautiful little R. Parnassifolius, thrive. Dondia epipactis, Valeriana Phu aurea, the Trollius, and more especially the varieties of American Cowslip, Dodecatheon Jeffreyanum, and others, are quite at their best.

Of the taller-growing plants the Thalictrums, Achillea ptarmica fl.-pl., the American Liatris, Lysimachia clethroides, Lychnis of sorts, Gentiana pneumonanthe and G. macrophylla thrive freely. Pyrola rotundifolia, the Mandrake, Mandragora, with its curious two-legged roots, Pyrola rotundifolia, Trientalis europæa, also do well. On the slightly raised banks the arctic Bramble and the Rubus Chamæmorus have established themselves, and fight where they join for supremacy with the American Cranberry from the Wisbey wood. Droseras, Dionæas, and Pinguicula have been disturbed this winter by the birds. Orchis foliosa seems to rejoice in a water-teeming bed, and is there quite hardy. No doubt other Orchis would succeed.

Primulas have a bed to themselves; forty or fifty of the alpine and Himalayan kinds were planted, but, probably from the want of limestone or from not having been planted on shaly slopes charged with water, only the following have survived and thriven: viz.—P. japonica and denticulata which are becoming the self-sowing weeds of the garden; P. rosea and its large-flowered variety, P. Wulfeniana and the varieties of minima, P. viscosa nivalis, P. glutinosa, this last needs shade; P. villosa and Stuartii; and P. Munroi, that needs the moistest place. A large bed is given up to Spiræis, such as Aruncus, S. palmata, and P. japonica; they are planted in company with American Lilies of the pardalinum type, which attain 6 to 8 feet. Mr. Bull's S. astilboides and the white form of S. palmata thrive apace.

The Zebra and Corkscrew Rushes need to be kept in bounds. As to Irises, I took counsel with Professor Foster; the stronger varieties of Iris Kæmpferi are at home in the wet bog, but occasionally a sort will disappear in winter. They seem to be quite at home in the clay banks of the rill.

I should occupy too much time if I gave a list of all the failures; the general result of the experiment has appeared to be a success. If my remarks lead some others to make a trial in this direction I shall be glad.

VEGETABLE PRODUCTS AT THE COLONIAL AND INDIAN EXHIBITION.

It is unnecessary in commencing a series of notes on the vegetable products of the Exhibition to dwell on its scope or extent, as this has been so fully treated of by the Press generally. A large number of our readers will ere this have had an opportunity of examining the contents of the several buildings, and comparing them with those of similar shows in former years, and such as have had this opportunity will fully endorse the general opinion, that never has such a splendid collection of products been brought together, by which the riches and extent of "Greater Britain" can be seen at a glance as they now are at South Kensington.

We propose in these notes to draw especial attention to anything novel or striking in the collections of vegetable products from the several colonies and dependencies that may be likely to interest our readers.

Commencing with the West Indian Colonies, the finest collections of fruits are those of New Grenada and Jamaica. Those of the former colony are not only large and well preserved samples, but the fruits themselves are fine and extremely well grown. The Nutmegs (Myristica fragrans) are remarkable for their size as well as for the development and colour of the Mace. Here are also enormous clusters of fine fleshy Cloves (Eugenia caryophyllata), splendid Cola nuts (Cola acuminata); in the fruits, remarkably fine Liberian Coffee (Coffea liberica), Tamarind (Tamarindus indica), Bread Fruit (Artocarpus incisa), Sweet Potato (Ipomœa Batatas).

The Jamaica collection, though not such large specimens, are well preserved, and are a very interesting series. Besides many of those already mentioned are several others of considerable interest, such, for instance, as Anacacha tubers (Anacacia esculenta), an umbelliferous plant cultivated in the mountainous districts of Northern South America for the sake of the tuberous roots, which form a staple article of food amongst the people. When boiled they are said to have a flavour between that of a Chestnut and a Parsnip. The Arnatto seeds (Bixa orellana) shown in this collection are very fine and bright red in colour. As these seeds are valued for the colouring matter which surrounds them their commercial value is considerably increased by their plumpness and high colour. Arnatto seeds are imported into this country from the West Indies, East Indies, and Ceylon, besides which Arnatto paste is also brought from the last-named island, but as this commodity often reaches us in anything but a fresh state, and as it is used largely in cheese and butter-making it would be to our advantage were planters to send the seeds themselves, and of such quality as is shown in the Jamaica collection. It is, however, only just to several of the other colonies to say, that their exhibits of Arnatto seeds are for the most part of good quality. Amongst other products less generally known are fruits of the Akee (Blighia sapida), a sapindaceous tree, native of tropical Africa, but introduced to the West Indies by Captain Bligh, of H.M.S. *Bounty* in 1793. These fruits are fleshy, somewhat Pear-shaped, but flattened on their sides. When ripe they are of a reddish colour with a yellow tinge. They dehisce by three longitudinal slits, each division containing a shining black seed partly enveloped in a white fleshy aris, which is the edible part and has an agreeable sub-acid taste, which seems to be developed only in tropical countries; those grown in hothouses here are said to have no such flavour, but to be very insipid.

The collection from the island of Dominica is one of much interest, some of the exhibits being of excellent quality and unusual size; this is notably the case with the pods of the Purging Cassia (Cassia fistula), the soft, pulpy dissepiments of which is used in English medicine as a laxative, being imported from both the East and West Indies. The tree is well known in tropical and warm countries on account of its ornamental character, for which purpose, as well as for a shade-tree, it is much grown. In this court are shown some specimens of Cairo ginger in remarkably large brands, indicating, that if this quality of the ginger is equal to that of Jamaica it might be worth some attention.

Antigua, St. Lucia, Tobago, and St. Vincent all make a good display, and each has many interesting exhibits which want of space alone prevents us referring to more in detail. There are also some striking exhibits from British Honduras, notably a magnificent slab of figured Mahogany, 10 or 12 feet, by about 4 feet wide. Honduras, it is well known, is a Mahogany producing country, from whence large quantities of this valuable wood are sent to England, but the dark transverse wavy lines as seen in this specimen, are exceptional in Mahogany, and if it were more frequent so as to be procurable in sufficient quantity a demand would soon be created for it for superior cabinet-work.

A large and interesting collection of water-colour drawings illustrating the flora of the West Indies, by Mrs. Blake, wife of the Governor of the Bahamas, most of which are extremely well done, are displayed in the centre of the court.

The whole of the West Indian division is well arranged and its general aspect pleasing, reflecting very great credit on Mr. A. J. Adderley, C.M.G., the Executive Commissioner for the West Indian Colonies.
John R. Jackson, Museums, Royal Gardens, Kew.

A FLOWER FARM.

Probably three of the most distinct and interesting types of good hardy-plant collections are represented by botanic gardens, nurseries, and private gardens, especially devoted to their culture. Each of the three has its peculiar advantages (considered apart from beauty of arrangement or surroundings), but to these may be added a fourth type, distinct in character from them all—the flower farm, which perhaps must be within easy reach of Covent Garden to attain to its fullest development, and where necessarily the principle of selection is regulated by the kinds most popular as cut flowers for the Covent Garden market, and which blossom at a time of year when most in requisition.

A visit to Mr. Walker's flower farms at Whitton near Richmond, during April and May (but especially in April), must be a new experience to most growers of hardy plants. The immense scale on which these plants are grown fills one with wonder; how, for instance, the thousands of such kinds of Narcissus as N. Horsfieldi, Emperor, Empress, Sulphur Crown, &c., and still more the tens of thousands of maximus, can have been got together! and also such fine masses of Sir Watkin; Mary Anderson, &c., amongst the later introductions. Almost more surprising are the thousands beyond count of the ornatus and recurva varieties of N. poeticus, N. incomparabilis, &c. It may give some idea of the extent to which Narcissus culture is here carried to mention that about 20 acres are devoted to it.

From N. pallidus præcox to N. poeticus recurvus a long succession of flowers is secured, and in the same way, though to a less extent, a succession of Tulips are grown, some 4 acres being devoted to them. Beds 400 or 500 feet long, of their various brilliant and soft colours, are a beautiful sight. Anemone fulgens is another popular flower of which Mr. Walker, probably, has by far the largest stock in the kingdom. He prefers the kind with narrow perianth segments as having more lasting flowers. Later in the season the masses of Irises, German, English, and Spanish, must be a sight worth going far to see. Herbaceous Pæonies are largely grown; and Gladiolus The Bride, Lily of the Valley (partially sheltered by fruit trees) one of the Doronicums, double Pyrethrums, and Wallflowers are amongst the popular hardy plants which find a place on the farm for cut flowers. Christmas Roses when used for forcing, and Cyclamen in pots of course require glass, but

they are almost the only flowers to which any such protection is given. No space is wasted; where it is not filled with flowers it is utilised for vegetables. In so well grown a collection, it is needless to say, weeds are carefully kept down, and Mr. Walker's experience appears to be strongly in favour of lifting and dividing most herbaceous plants every two or three years at the farthest, and in the case of most bulbs, every year. He is fortunate in having a variety of soils, both heavy and light, between his two farms, and, what is perhaps of still greater importance, soil of good depth. Not the least interesting part is the collection of Narcissi "on trial," or of kinds too rare for the possibility of a large stock being got together.

The variety of good kinds, as well as the perfection of their culture, was well shown by the stand of flowers at the Narcissus Conference at South Kensington on April 27. But choice Narcissi grown by the acre, not for the sale of the bulbs but of the blossoms, is a phase of Daffodil culture which almost requires to be seen for its singular effect, to be in any degree realised. *C. M. Owen.*

THE SHAMROCK.

One of the first questions for an Irish Parliament of naturalists and devotees of folk-lore to settle would be as to the identity of the true Shamrock. Is it Oxalis Acetosella? or is it the more prosaic Dutch Clover, Trifolium repens? We do not pretend to resolve the knotty problem which lends an interest to the lovely little wilding represented in our illustration (fig. 152); with delicate foliage, of a pleasantly acid taste, the tender blossoms, clear white, veined with pink. Various species of Oxalis are in cultivation, for the genus is a large one, especially in South Africa, but not one among them is more beautiful, more refined in its loveliness than this little denizen of our woods and hedge-banks. In some counties it is called Gowk-meet. May no League ever arise to besmirch the tender grace of this flower, or extirpate it from our woods. Botanically it is a near ally of the wild Geranium.

The Apiary.

SUBDUING AND HANDLING BEES.

Once upon a time the above could only be done by an expert, and old Daniel Wildman of Holborn was looked upon as something more than a man, because of his power over the bees. He would take up handsful at once in his bare hands, and seemed to have absolute control over them. But it was not so with ordinary persons, and the bulk of them had to guess at what was going on inside a hive by the appearances outside. Not so, however, now; and as the time has arrived when more or less handling is necessary, I will describe the manner of doing it. It is well known that smoke cannot be tolerated by many insects, and the bee is one of those. If, then, smoke is driven into a hive, the bees will get frightened at once, and gorge themselves with honey. After they have well gorged themselves they are perfectly tame, and ready for manipulation. There is a little instrument called a "smoker," which is made expressly for the purpose, and if you contemplate buying one, take care that it is a cold-blast smoker. There are many different makes, all of which are of course the best! If you only want to super the bees, or examine the state of the hive, do not puff smoke in at the entrance. Remember when you are smoking that all you require is to subdue the anger of the bees; therefore when you find they are sufficiently subdued do not continue smoking them, or perhaps you will defeat your object, for even a worm will turn on its enemy now and then, and the bees are not so helpless as worms. Lift off the cover of the hive quietly, and uncover the bees gently, and a little at a time; and before the bees have any time to inquire the cause of the disturbance puff a little smoke down into the hive, and they will not inquire at all. You can then do what you wish. The only nuisance about the smoker is that sometimes it will go out just when you want to use it, and so you may get stung after all.

But the ingenuity of man has overcome this also. A little machine has been invented by Mr. W. B. Webster, which looks like a "smoker," but there is no smoke and no fire about it. Instead of fuel the "smoker" (not the bellows part) is filled with sponge held in position by hooks. Fifty or sixty drops of carbolic acid are dropped on the sponge, and then the apparatus is used exactly as if you were puffing smoke, when in fact you are only ejecting the fumes of the acid; and very effectual will you find these fumes. I have no interest whatever in the sale of this apparatus, therefore I can recommend it all the more. Mr. Cheshire says he has subdued Eastern bees with it, and if you know the temper of an Eastern bee that is character enough. One caution—do not give the bees too much. Once charged, it will remain charged for a week. After that a few drops will do. *Walter Chitty.*

MESSRS. C. LEE & SON'S NURSERIES, EALING.

In an exceptional season like the present the inspection of an extensive fruit tree nursery is of much interest, as affording an opportunity of seeing how things have fared during the trying winter from which we have now happily emerged, and to "take stock," as far as possible from present appearances, of the damage resulting, if any.

Naturally, the late season has had one good effect upon fruit trees generally, as they have only lately "set" their blooms, therefore not much harm is likely to be done in the way of frost.

Up to this date (May 12) Pears, Plums, and Cherries, also Peaches, Nectarines, and Apricots on walls, which have set well, are pretty safe, the dry weather having helped matters; but Apples, being later in blooming, have yet to go through a critical time, for should continuous rains occur during the blossoming period the effect would be to wash away the pollen, thus causing the fruit to "set" very imperfectly. But let us hope for the best, and that there may be truth in the old adage, which seems to be peculiarly appropriate to the present season, viz.:—

"If Apples blow in March, for Apples you may search;
If Apples blow in April, Apples will be plentiful;
But if Apples blow in May, you may eat Apples night and day!"

Some importance has been attached to this subject—viz., that of late-blooming fruits—by various writers asserting that more success is likely to result by planting the latest blooming kinds so as to avoid frosts; but this can only be imaginary. To cite cases in point. We find that some of the earliest flowering Apples—no matter whether early or late season—have proved to be the best and surest bearers, such as Stirling Castle, Lord Suffield, Ecklinville Seedling, Irish Peach, Keswick Codlin, and Worcester Pearmain. Closely following these are Cox's Orange Pippin, Ribston Pippin, Margil, Cellini, Warner's King, and King of the Pippins. We noticed that the petals of some flowers are closer and more "cupped," and of a globular form, which would appear to protect the stamens and pollen from cold winds; while others, and these the earliest flowers—notably Ecklinville Seedling and Worcester Pearmain—have wide open petals, far apart. So much for apparently protected fruit-tree blossoms!

The following few sorts are extremely late in blooming—viz., Court Pendu plat, Bess Pool, and Northern Spy. Mr. George Cannon (Messrs. Lee & Son's able manager) informs us that he has known these kinds to flower as late as May 18, and to be cut off by frost even at that time; while of other sorts the fruits were set, and the trees well covered with foliage and uninjured; showing that some of these opinions or theories are conflicting.

With reference to colour in Apple blossoms, one or two little facts were noted, the record of which may prove of interest. Some of the varieties have very deep coloured flowers, while others are nearly white; one of the highest or reddish-coloured Apples is Red Astrachan—it has flowers almost white; whilst some of the lightest coloured fruit, such as Lord Suffield, Keswick Codlin, and Stirling Castle, have very beautiful deep coloured flowers; so that the colour of the flower is by no means an indication of the colour of the fruit. No new fact brought to light certainly, but still one that might strike those of an observant and inquiring turn of mind.

It was interesting and instructive to note the influence of stock on the growth of the trees; such sorts as the following, when worked on the free stock, make more vigorous trees and fruit and do better in every way than the same when on Paradise, on which stock they produce so freely as to become stunted in growth, and the fruit small.

The varieties referred to, viz., those doing well on the free stock, are:—Lord Suffield, Stirling Castle, Keswick Codlin, Ecklinville Seedling, Hawthornden, and Worcester Pearmain; those doing best—indeed, benefiting on Paradise—being Alexander, Blenheim Orange, Peasgood's Nonsuch, Beauty of Kent, Golden Noble, Warner's King, Lady Henniker, Galloway Pippin, Alfriston, Annie Elizabeth, and Gloria Mundi. Amongst kitchen sorts, and in dessert kinds:—Ribston Pippin, Cox's Orange Pippin, Margil, Sturmer Pippin, Claygate Pearmain, Adams' Pearmain, Cockle's Pippin, King of the Pippins, and Pine-apple Russet.

Touching stocks, it may be worthy of note to put on record here that this old firm have the credit—and justly so—of having possessed for considerably over half a century the true English Paradise. Although there are Paradise stocks in the trade, French and Doucin, the great advantage of the true English Paradise is that it possesses greater vigour than other stocks, the union at the graft is more even, and the trees when worked on it continue in a healthy condition—a great point gained; exuberant growth is also kept in check, and therefore the object in view is obtained, viz., greater fruitfulness. The quarters of Apples on the English Paradise in this nursery are noteworthy feature. When in bloom this portion of the nursery looks very gay for the time of year. Great attention is paid to get perfect shaped pyramidal trees. It is interesting to notice the stocks which were budded last summer now pushing forth the bud, to be hereafter treated or grown into whatever form is required. If wanted as standards they are allowed to go ahead to a height of 6 feet, then topped, and others are cut back into pyramids, and all required for espaliers and dwarf-trained trees for walls are taken out of the quarter in autumn as one-year-old (or maidens), and planted in another quarter at a good distance apart to allow of their being so trained, thus giving them plenty of room, light, and air, the process of transplanting ensuring that very necessary requisite to successful fruit tree cultivation—good roots. The strong loam of this nursery appears to be the very home of the Pears. They are grown in great quantities on the Pear and Quince stocks. Such sorts that do best on the Quince are grown as pyramids and cordons, and those on the Pear stock as standards, pyramids, and trained as espaliers, horizontal and fan-shaped, for walls.

The various sorts that do well on the Quince appear to be more fruitful in the young state, making compact trees with less vigorous growth. There are great prospects of a good crop of fruit, as they have set well. Pyramid Plums are also grown, but not in anything like the numbers as compared with Apples and Pears, as they are not so much in demand. Neither are they so well adapted to be grown in this form, although such free-bearing sorts as Victoria, Early Orleans, Prince of Wales, Rivers' Prolific, Diamond and Pond's Seedling make nice trees and do well. In pyramid form they have set a nice crop of fruit—as also as standards and against walls. The best dessert sorts, such as Green Gage, Jefferson's and Kirke's, do best against walls.

An immense quantity of Plums is grown as trained trees. They are now "breaking" strong and healthy, and will soon be ready for training into shape for that purpose.

There is one remarkable feature in this nursery to which special reference must be made, and that is, 2000 standard and half-standard Peach trees trained to trellis-work, so as to be ready for immediate planting, the trellis consisting of a series of upright Larch poles to which are affixed crosswise deal laths, the shoots being tied down to these when ready. The great advantage of a trellis such as this is, that it shelters the trees in the spring, at that critical time when they are beginning to break, and they receive a beneficial influence from the sun's rays having direct and thorough play upon the trees when grown in this way. Visitors to the famous old and historic nursery of the firm at Hammersmith will vividly remember

the Peach walls. They were indeed a feature, now swept away to make room for so-called "improvements." Here we have as attractive, useful, and interesting in their way. although, it must be admitted, not quite so endurable, the "wooden walls" of Ealing!

Referring to the standard-trained Peaches, we noted that the stems are of clean, good growth, without "knots" of suckers. This happy state of affairs—a fact well worth recording—is obtained by selecting the finest Mussel stock, re-budded into the Mussel near the ground. By this mode of procedure a strong clean stem is obtained, upon which the Peaches are worked. We noticed a piece of young stocks worked in this way making a growth of from 7 to 8 feet in one year, to be budded with Peaches this season for standards.

Dwarf-trained Peaches, Nectarines, and Apricots are largely grown, and appear, notwithstanding the severe winter, to be starting into nice healthy growth, and cannot fail to make good trees for autumn planting. Great care is bestowed by Mr. Cannon in this particular branch, every precaution being taken to select the best and most suitable stocks upon which to work the different sorts—a very important point.

Cherries also do well here—quantities of dwarf-trained trees are cut back to be trained for walls, notably Morello, which sort seems to be in greatest demand; no difficulty is experienced in selling 1000 of this alone every season. May Duke, Bigarreau Elton, Bigarreau Napoleon, Black Tartarian, and Governor Wood are all favourite sorts. The prospects of the fruit crops seem favourable.

A fine piece of Crittenden Damson was noted—a deservedly popular variety, stems 7 feet in height. They cannot grow enough of it at Ealing, so great is the demand for this particular variety. It is rapidly taking the place of the Prune and other sorts.

Amongst miscellaneous subjects we may refer to Roses, for which the nursery is deservedly famous; they are grown in large numbers as standards, half-standards, and dwarfs; they were budded last season, and look very promising, breaking with unusual vigour, throwing out strong suckers. The severe winter does not seem to have affected them in any way, except it may be in the case of some of the tenderer sorts of Teas. *B.*

Scotch Notes.

INTERNATIONAL EXHIBITION, EDINBURGH.

On the south-east side of Van Houten's elegant Cocoa Pavilion, Messrs. James Dickson & Sons, Edinburgh, have two beds filled with a collection of Oaks, Acers, and other deciduous trees, relieved by samples of Conifers and some clumps of Daphne cneorum in bloom, which latter attracts the attention of visitors of all classes from widely different reasons, the professional horticulturists hailing the wee gem-like shrub as an old acquaintance rarely met with, and the non-professional noting it as something very desirable to know.

Immediately in front of the west entrance-gates stands the memorial tree planted on the opening day (May 6) by H.R.H. Prince Albert Victor. It is a handsome, well-balanced specimens of English Elm, and having been well prepared for, and being well attended to, it gives every promise of doing well, notwithstanding the late period at which it was planted.

Turning to the horticultural erections, which are not so numerous as might have been expected, the visitor entering from the west comes first in view of a very handsome architectural conservatory on the left or north side of the lawn, erected by Messrs. David Low & Sons, of Edinburgh and Manchester. The design is obviously intended for association with a mansion by direct attachment thereto, or by means of a corridor. The proportions are light, elegant, and just in every detail. The ventilating gearing is a very clever contrivance of a universal acting joint in each angle, by means of which the screw, wherever it may be placed, opens and closes the ventilators in the various angles without having resort to the clumsy and comparatively costly gearing of cogwheels and ratchets. A very superior portable span-roofed plant-house for amateurs' purposes, garden-frames of the ordinary form and also span-roofed, with boilers in variety and garden-seats of substantial and elegant character, are the remaining subjects of Messrs. Lowe & Sons' exhibits.

A little nearer the electric railway station stands a neat little conservatory in architectural style, built by Messrs. Keith, Hardy & Co., of Edinburgh, who also exhibit an ornamental iron staircase in form adapted to introduce into conservatories where such contrivances are required. Staged in this conservatory at the time of our visit was an interesting collection of Narcissi and other spring flowers from Messrs. Jas. Cocker & Sons, Aberdeen.

To the right from the last noted exhibit stands a small structure illustrating the "Penicuick patent glazing" principle, the leading feature of which is the employment of zinc bars and laps with lead clips instead of putty, the whole resting on a wood framework. Economy and efficiency are claimed for the method, in addition to the important consideration of facility in putting the structure together and taking it to pieces—a point of some importance when portable tenants' erections are contemplated.

A little nearer the Exhibition buildings stands a very handsome curvilinear conservatory by Messrs. McKenzie & Moncur, of Edinburgh and Glasgow. The structure is elegant and light; a spacious dome surmounts the centre, and forms the key of the entire roof, which is formed of light lattice wrought-iron girders, thus doing away with the necessity for pillars and tie-rods, and leaving the entire space clear o interrupting and objectionable lines, and giving full effect to the graceful proportions of the interior. This conservatory is adapted to stand apart by itself, or to form an adjunct to a mansion, and the painting both of the exterior and interior work is of a highly suggestive and pleasing fashion, viewed in connection



Fig. 152.—Oxalis acetosella (wood sorrel). (see p. 684)

with its being placed in the latter position, the tints being strictly in accordance with the artistic style of house decoration in vogue at the present time. A very handsome span-roofed plant-house, a portable tenant's greenhouse, garden frames of various forms, and a collection of hot-water boilers, garden seats, vases, and valves, complete the exhibits by this firm. Near by, there is a large collection of mowing machines by many makers, but as there is to be a competitive trial of these by-and-bye, which we shall have an opportunity of reporting on fully, we defer comment upon them individually at the present time.

Mr. Peter Stevenson, 9, Forrest Road, Edinburgh, has set up near the north-east entrance gate a meteorological apparatus, which automatically records temperature, atmospheric pressure, and rainfall, in the most simple, satisfactory, and reliable manner. Without diagrams it is impossible to convey an intelligible idea by mere description of the ingenious construction of the apparatus; but the readings of the several instruments are recorded automatically on paper so ruled and divided as to indicate the variations every ten minutes during the twenty-four hours of every day. The recording apparatus, including the clock, is placed inside a handsome fluted cast-iron pillar, not unlike in size and appearance a post-office pillar-box. The first apparatus of the kind was constructed by Mr. Stevenson about ten years ago for the late Marquis of Tweeddale, who expressed the fullest satisfaction with its perfect working. The instrument recorded a fall of more than 1 inch of rain on Thursday last, when rain fell incessantly and heavily for about twelve hours. *X.*

Orchid Notes and Gleanings.

ODONTOGLOSSUM CITROSMUM.

I had not seen this charming Mexican species grown and flowered as it does in "Nature" until Mr. F. Sander exhibited it in his show Orchid-house in the Indian and Colonial Exhibition. Cultivators of this Orchid will have noticed that the flower-stems as they push out with the young growths lie on the surface of the potting material, and incline to fall over the side of the pot. The stem is very slender, and not intended to hold up the spikes in an erect position. As grown and exhibited in Teak baskets the spikes take their natural position; the stem has no more power to hold up the spikes than if it were a silken thread. We have always tied the spikes up to sticks and exhibited them in that way; we shall perhaps still continue to do so, Mr. Sander notwithstanding, but his system is the more elegant. This species, like most Mexican Orchids, prefers a sunny position in the house not far removed from the roof-glass; a good supply of water when in full growth, but for three months in winter complete rest, and no water whatever even if the bulbs shrivel considerably. *J. D.*

ODONTOGLOSSUM VEXILLARIUM ALBUM.

A white variety of this popular Orchid, first flowered by M. A. H. Finet, of Argenteuil, near Paris, and similar to, but different from, O. v. var. Measuresianum. *Orchid Album*, t. 227.

ONCIDIUM SESSILE.

An old and rarely-met-with variety, grown by Mr. Buchan, of Southampton, and having a loose panicle of yellow flowers, spotted in the centre with pale cinnamon colour. The flowers, each 1½ inch in diameter, are produced in spring, and last for several weeks. *Orchid Album*, t. 228.

TREBLE-LIPPED LYCASTE MACROPHYLLA.

In the cool division of the Orchid-house at Kew is a specimen exhibiting a state of matters we should expect to find when duplication of the labellum occurs. The latter occupies its usual position, and except being narrower and having its ligule less perfectly developed, is otherwise quite normal. Two additional labella are produced, one on either side of, and smaller than the primary one. All three are coloured alike, and together with the petals stand erect, occupying the centre of the flower with recurved tips. Owing to the supernumerary pieces of the perianth, the flower bears some resemblance to a double-flowered Daffodil, where the duplication takes place inside the trumpet only. The labellum and petals are white, while the spreading sepals are of a peculiar dusky green and pubescent on the lower part. There is a figure of the species in *Annales de Gand*, 1848, 373, where, however, the natural colours are not very well represented, the sepals being of a dusky pale red and the petals pale yellow. It would be exceedingly difficult to paint the sepals true to nature. The above name is synonymous with Maxillaria macrophylla of Poeppig, *Genera of Plants*, i., t. 64. *J. F.*

CATTLEYA TRIANÆ FORMOSA AND OTHER SPECIES.

The figure of this plant in the *Orchid Album*, alluded to at p. 594, is that of a remarkably fine variety well deserving the name. My object in alluding to it is merely to remark upon the splendid varieties of this fine species introduced during the last few years. How numerous good forms are may be learned from the fact that Dr. Reichenbach had no less than eight specimens sent to him. Further, this gives us some idea of the great value of good coloured plates of Orchids. Any Orchid fancier with this plate before him might have named his own plants by comparison, without troubling a busy man unnecessarily. For my own part I am sometimes wearied with returning answers to people who send Auricula pips that by comparison with the most ordinary named sorts they would see are quite worthless. Cattleya Mendelii bella is well figured in the *Orchid Album* (plate 225), but it is not an uncommon form, as we have a similar one in our small collection. The same plant had previously been named C. labiata bella by Dr. Reichenbach (see *Gardeners' Chronicle*, n.s., xvii., 700), the identical specimen being alluded to. It is evidently a form of what is now termed C. Mendelii, and out of the numerous plants recently introduced others may be found with this colour outlined on the front portion of the lip. Mr. Moore describes it as bluish-mauve, shaded by a darker mauve-lilac. The question is, what is the typical C. Mendelii—flowered first by Messrs. Backhouse, of York, I believe? There are now scores of handsome varieties, but when the typical species is once determined upon, no other botanical name should be admitted; bella can scarcely be considered even a descriptive name, as the whole of this species may be designated "handsome, charming, lovely." Why should this particular variety have a monopoly of these adjectives? They start to one's lips when surveying any well grown group of C. Mendelii in flower. While writing the above remarks the *Gardeners' Chronicle* for May 15 is to hand, and at p. 618 the remarks on Cattleya lead to further confusion. The true Cattleya labiata must be referred to C. Warneri, but C. Percivaliana is a totally different plant, and is distinct as a species. The typical plant is well figured in *Reichenbachia* under the specific name of C. Percivaliana; it is also figured in the *Lindenia* as a distinct species. It is also described as a species by Mr. Williams, but Mr. Nicholson does not find a place for it anywhere. If the plant figured in *Lindenia* was named as suggested in the *Gardeners' Chronicle*, C. labiata, Reichenbach's variety, nearly every Orchid grower would suppose it to be a distinct form of C. Warneri, whereas it is nothing of the kind. C. Percivaliana var. Professor Reichenbach would be best, because Reichenbach's variety would infer that the learned Professor had first flowered, and was a cultivator of the variety itself; the name Professor Reichenbach would merely be a compliment to that gentleman. If the matter may be discussed further, I would suggest that the name C. labiata be dropped altogether, except for the autumn-flowering plant grown under that name; that the summer-flowering type, sometimes named C. labiata, and more often C. Warneri, should take the name of C. Warneri. The other species of the labiata section ought still to retain their specific names. Thus C. Mossiæ, C. Gaskelliana, C. Mendelii, C. Percivaliana, C. speciosissima, C. Trianæ and C. gigas. C. crispa, again, is quite as near C. labiata as C. Percivaliana is. Varieties of the above should have purely English names. C. Sanderiana, for instance, cannot be admitted to be specifically distinct from C. gigas, and it would by following the lines indicated above be named C. gigas variety "Fred. Sander." This would be in accordance with the new departure made by the Floral Committee, when that body, on April 27, had a new variety of Fern presented for a certificate under the name of Pteris cretica albo-lineata Mayii, it was altered to Pteris cretica, "H. B. May." The committee did not act on the same principle all through, as Cattleya Mendelii var. Lendyana ought to have been C. Mendelii, "Major Lendy." The fact is, there is no consistency at South Kensington or anywhere else. What is the Narcissus Committee doing? Page 568 of the *Gardeners' Chronicle*, may be studied with advantage. On that page we find Narcissus "Duchess of Westminster" and N. C. J. Backhouse the specific name is not given as it ought to have been. I do not hold that committee responsible for this, but they must be held reponsible for the name Narcissus incomparabilis pallidus aurantiacus expansus! this we are told was the first bloom of a seedling not artificially crossed. What is the Narcissus Committee doing, or where are they going? *D.*

THE HERBACEOUS CALCEOLARIA AT MESSRS. SUTTON & SONS, READING.

Those of us who were engaged in the culture of what we must term florists' flowers for want of a better name, rather more than thirty years ago, can well remember the beautiful varieties of the Calceolaria grown under names, and the care required to propagate them from cuttings or parting the plants after they had been layered into some fine sandy soil. Handlights and the north side of a low wall or fence was the favourite position for the plants when passing through this stage of their culture during the summer months. Such cool places are the haunts of slugs, and it was a nightly pleasure to look round with a good lamp, to disappoint the depredators at their evening meal. Nearly the whole of these choice varieties were golden-yellow, more or less spotted and tiger striped. These colours were the most popular for the exhibition varieties, because the flowers were the finest form. It is rather singular to read in the first number of the *Florist*, published in 1848, an article by the Editor, in which, referring to these spotted varieties, he says:—"In the spring the Calceolaria puts forth in the utmost profusion its lovely blossoms; but what a pity to let fashion rule their colouring. Where are our handsome selfs and blotches? Why discard them entirely for the spotted varieties? Who can forget the beauties of the Lady of the Lake, Miss Antrobus, Madonna, &c." There have been many changes in fashion during the last forty years, not only in the system of culture, but also in the taste for self-coloured varieties. One of the best cultivators and raisers of new varieties, Mr. W. H. Holmes, writing in the same number of the *Florist*, recommends the stems to be cut off as soon as the flowers fade, to prevent the seeds from forming, as the effort to ripen seeds weakened the plants and caused some of them to die. I have slightly digressed from the subject of this paper, which was to give some account of a visit I paid to the establishment of Messrs. Sutton & Sons, Reading. At the time of my visit the Calceolarias were in full bloom, one large house not being sufficient to hold the plants set apart for saving seeds from, selections being placed in other houses of a smaller size. The plants in the large house I have alluded to are of the most varied description. The Messrs. Sutton believe they can best please their customers by supplying them with a very great variety of colour. "Where are our handsome selfs?" The answer is supplied by Messrs. Sutton. In this collection there are some splendid varieties, but they are, as they ought to be, not so numerous as the blotched and tiger-spotted varieties.

Amongst the selfs I greatly admired one of the most brilliant crimson with a maroon shade, another was quite a crimson-scarlet, the colours of others shading to one of a soft rosy tint. The variety of colours in the spotted varieties is very pleasing, but the most striking are those with a deep yellow ground colour. In some cases they are lightly spotted and marked with short crimson lines; in others the spots and blotches are so close together as almost to cover the ground colour. The shades of yellow are from pale to a deep gold, and some have a creamy white ground. One very handsome variety had large well shaped flowers, yellow and spotted on the upper part, the lower portion of the flowers being reddish-brown. I was greatly pleased with what to me is a new colour: the ground is reddish-buff thickly spotted with crimson; other varieties of this type have a soft Apricot ground colour, also covered with bright coloured spots. Many tasteful persons would prefer this colour, and the Messrs. Sutton do well to select such a

variety of rich and novel colours from which to save their seeds. In another house there is a large group of yellow varieties, the flowers large in size and handsome in form; this type does not produce seeds very freely, and great watchfulness is necessary to daily collect the pollen on a small brush wherewith to fertilise the flowers. Indeed this is a daily duty with the entire collection. It was by the skilful use of the pollen brush that such a collection was formed, and in no other way can the quality be maintained and improved. The size and handsome form of the flowers are quite as remarkable as their rich and varied colours. They have also been skilfully cultivated, the plants being dwarf in habit, quite free from that tiresome pest, greenfly, and have consequently formed dense heads of bloom. Messrs. Sutton do not propagate any plants from cuttings; all are seedlings; so that by careful selection and culture, every year may be expected to produce flowers in advance of that preceding.

Many persons fail in the culture of Calceolarias from nothing but careless handling of the seeds. A packet contains a large number of seeds, but they are very small, and if care is not taken in opening the packet they may be lost. The seeds may be sown in June, July, and August. Prepare some rather rich light soil, and drain the seed-pot well, fill up with the potting soil, reserving an inch of the surface, for a portion of it that has been finely sifted; make the surface quite level, sow the seeds thinly, and just cover them with fine sand. The seeds will vegetate most freely in a partially shaded place, for should the surface become over-dry when the seeds are in process of germination, the whole of them would perish. The plants must also be pricked out when they are exceedingly small, and require very careful handling. Three dozen may be planted in a large 60-sized pot, and they may remain until the leaves meet together, when each individual specimen may be repotted into a small 60, or three into a large-sized 60, repotting them on as they require it until they reach the largest sizes required, viz, 7, 8, and 9 inches. I do not think there is much gained by using this largest size. Calceolarias are hardier in their constitution than Cinerarias. They will stand a greater degree of cold, but they are even more susceptible to the attacks of green-fly, and frequent fumigations are necessary to entirely destroy it. *F. D.*

The Flower Garden.

TUBEROUS AND OTHER HERBACEOUS PLANTS.

Ranunculuses and Anemones should receive abundance of water if dry to swell their flower buds, and a good mulch of cocoa fibre or spent mushroom dung will prove very beneficial. Gladiolus, Violas, and hosts of other subjects will derive much benefit from frequent applications of weak manure water in dry weather. Hollyhocks should have the number of shoots reduced to one or two, and they should be kept carefully secured to their stakes. As growth advances they must not suffer any check from drought at the root. Rain often fails to reach the neck of the plants, as much of it is diverted by the foliage, so that copious waterings will be necessary should the weather become hot and dry. Continue staking and tying as growth advances.

Forced Plants, &c.

Thin successional sowings of annuals and make additional sowings of Mignonette, Saponaria, and Nemophila, according to requirements, for later displays. Rhododendrons, Azaleas, Kalmias, &c., which have been forced, may now be transferred to their places in the peat beds; they will require frequent syringings and constant attention with water during the summer. Pick all the seed-pods from flowering shrubs, to throw the vital force into next year's bloom-buds. Plant out Lily of the Valley which have been forced in a shady position. I have seen it do well in market-gardens planted by the side of fruit trees. It does not like the full blaze of the sun—the north or east side of the garden wall is the best, and a deep rich soil. Hyacinths and Tulips which have been forced may be planted out in beds and borders, for next season's blooming; they are useless for forcing the second year, but thus treated they make a very fair display, and are useful to cut from.

Lawns will require frequent mowing to keep the grass in proper trim, and prevent the grasses throwing up their flower-stems. Continue sweeping and rolling walks to keep them firm and smooth.

The Rose maggot is very troublesome this season. The best way to destroy them is by frequently going over the plants, and wherever a curled leaf is visible to pinch it between the finger and thumb, as no insecticide can reach them. Tie in loosely the shoots of climbing Roses as they advance in growth, so that there may be free play of heat and air around them to mature their growth. *W. M. Baillie, Luton Hoo Garden.*

Plants and their Culture.

FERNERY.

In this department the plants will be in a very active state of growth, and should have a plentiful supply of water at the roots as well as a moist atmosphere. This may be produced by damping all available places; also dew the plants over twice a day on all favourable occasions, but Gymnogrammas should never have water from a syringe or rose overhead. Let the blinds down when the sun shines, but draw them up when it is cloudy. Although Ferns in general are shade-loving plants, they are much benefited by not having fixed shadings on the structures in which they are growing.

Tree Ferns.

These must have the stems kept moist to encourage the young roots; if this is overlooked the fronds will be thin and short. Where fountains and open tanks are constructed it is a good plan to stand Tree Ferns on pots, blocks, or slabs, stood in the water. They make greater progress in this position than in any other.

Gleichenias.

The present is a good time to propagate the different Gleichenias, as the rhizomes are now in active growth. Place some pots or pans round the specimens it is intended to increase from, filling the pans or pots with good fibrous peat, sand, and charcoal. Lay the rhizomes on this, securing them to the soil by pegging them down, and leave them until they are nicely rooted, when they may be severed from the parent.

Filmy Ferns

will require regular attention as regards keeping their roots and fronds well supplied with water, as well as keeping all the surroundings continually moist during the dry hot weather. If ever allowed to get dry at the roots, or if the sun shine on the fronds, they very quickly turn rusty, and never regain their freshness and beauty. Great care must, however, be taken in damping the plants overhead, and some of the slender or dwarf varieties must be dewed over with a very fine rose; if this is not seen to, great damage and loss will be sustained. Others of the taller and more robust sorts, such as Todea superba and T. pellucida, &c., will stand the syringe with impunity. If a house is not devoted to them, a shady place must be selected for them during the summer: a sunken pit with a northern aspect suits them well.

Seedlings.

All young seedlings which are large enough should now be potted up, to keep a good growing young stock for decoration and cutting purposes.

Selaginellas.

Pans of these should be made up. S. densa, S. Martensii, and S. Kraussiana will be found most useful where different forms of house decoration are carried out. *A. Evans, Lythe Hill, Haslemere.*

Reading Horticultural Society.—The date for holding the exhibition at Reading is fixed for June 2 instead of June 1, as was stated in our last number.

Fruits Under Glass.

LONG-KEEPING GRAPES.

These, in addition to Gros Colmar, include Muscat of Alexandria, Black Alicante, Mrs. Pince's Black Muscat, Gros Guillaume (the bunches of which should be tied out carefully, and additional ties put to them as they increase in size, so that the points of the shoulders of the bunches so tied do not become perpendicular at the point of contact with the matting), Lady Downe's, Gros Maroc, and Trebbiano; and they should all have the berries thinned well out in the bunches, as much with a view to securing large berries as of insuring their keeping qualities, by reason of the berries being less close together in the bunch, and, therefore, less liable to suffer through damp and contact of the berries as bunches not so thinned would be.

Watering the Borders and Atmospheric Moisture.

As soon as the branches have been thinned, we strew a little of the manure recommended for fruiting Pine plants over the border, following it immediately with a mulching of horse droppings 2 inches thick, and a good soaking of tepid water, and after the mulch has been watered a couple of times we give liberal supplies of liquid manure direct from the tank, followed immediately by watering with clear water at a temperature of 85°. These waterings should be given every ten days until the Grapes begin to colour, when less frequent, though none the less liberal supplies of clear water will suffice. A dry, warm and somewhat airy atmosphere should be observed in houses in which the Grapes are beginning to colour, to give flavour and finish to the berries. The same remark also applies to houses in which the Grapes are in flower, in which case the rods should be tapped with the hand twice a day to distribute the pollen. And the houses in which the Grapes are ripe should have abundance of air on all favourable occasions. Houses in which the Vines are swelling their bunches should have the pathways, walls, and surface of the border, especially under the hot-water pipes, and between them and the front wall, well damped with tepid water early in the morning and again at closing time in the afternoon, and once or twice between during bright sunshiny weather. These remarks are also applicable to Vines during their progress from the opening of the leaves to the time the bunches come into flower.

Ventilation and Temperature.

Open the ventilators a little in the morning when the thermometer registers 75° to 80° in houses in the which the Vines are swelling their bunches, and afterwards increase or decrease the quantity of air given according to the rise and fall of the temperature in individual houses until closing time, which should range from 3.15 to 3.45 in the afternoon on bright sunny days during the next four or five weeks, and the temperature may be run up to 98°. If the vineries are pretty nearly air-tight, the front and top ventilators should be opened a little late in the evening and closed first thing in the morning, except in houses in which the Grapes are beginning to colour or are coming into flower, which should have more or less air left on all night.

To Vines swelling their bunches, as most Vines are doing now, give a night temperature of from 60° to 65°, 70° to 75° by day with fire-heat, and 10° higher with sunheat, with plenty of air—running the temperature, as already stated, up to 90° at closing time, when the house should be well charged with moisture. A minimum temperature of from 55° to 60° should be maintained in houses in which the Grapes are ripe. *H. W. Ward, Longford Castle, Salisbury.*

Publications Received. — *The Advertisers' Guardian*, by Louis Collins (L. Collins, 4, Wine Office Court, E.C.).—*The Gallery of Marianne North's Paintings: Kew Descriptive Catalogue*, 4th edition, by W. B. Hemsley, A.L.S. (London: Kew Gardens).—*The Agricultural College of Michigan Entomological Department, Bulletin No. 14: The Codling Moth and Bark Louse* (Thorp & Godfrey, Lansing, U.S.A.).—*A Practical Treatise on the Growing and Curing of Tobacco in Ireland*. By J. Cairns (Dublin: M. H. Gill & Son).

APPOINTMENTS FOR THE ENSUING WEEK.

Wednesday,	June 2	Bath and West of England Society's Show, at Bristol—continued till June 7. Reading Horticultural Society's Show. Sale of Established Orchids from the Collection of C. Dorman, Esq., at Stevens' Rooms. Sale of Carnations, Picotees, &c., at Protheroe & Morris' Rooms.
Thursday,	June 3	Sale of the Second Portion of the Collection of Orchids formed by Rev. J. B. Norman, at Stevens' Rooms.
Friday,	June 4	Sale of Imported Orchids, at Protheroe & Morris' Rooms.
Saturday,	June 5	Sale of Bedding and Greenhouse Plants, at the Tivoli Nursery, Norwood, by Protheroe & Morris.

ANOTHER illustration of the ascendency which Orchids enjoy at the present moment is afforded by the magnificent publication devoted to their illustration and description by Mr. F. Sander, the first part of which lies before us. Appropriately enough it bears the title "Reichenbachia,"* for, since Lindley's death, no one has more conspicuously identified himself with this family than the Hamburgh professor, no one has amassed such stores of information concerning Orchids, no one has more disinterestedly put himself at the service of Orchid-lovers and Orchid-growers. Such entire devotion to science and such generous sympathy and essential help extended to men of all degree, deserve the fullest recognition.

The present time is specially appropriate for the issue of a new illustrated periodical, in which the interests of Art, of Science, and of Practice are alike catered for. Long practice and access to abundant materials for verification and reference enable a botanist to frame elaborate and accurate descriptions in words, but, unluckily, the more perfect and the more elaborate the verbal description, the more difficult is it for students of humbler degree to recognise the plant described. This may seem anomalous and contradictory, but in practice it is not so. The master-mind may see his way clearly enough through the Dædalean labyrinth of interminable detail and limitless variations, but (except to a limited extent) he cannot impart his own insight, his own subjectivity to any other person. For this reason accurate representations, drawn by a competent artist, have a value much beyond the written description. The latter, at the best, appeals to but few, the former can be appreciated by any one with eyes in his head and ability to use them properly. Orchid growers are getting overwhelmed with the number of the varieties, for whose appearance they are themselves in a measure responsible. It is certain that no amount of technical skill and knowledge will now-a-days suffice to differentiate the endless varieties, which make their appearance. The differences are frequently so slight, that although they may be appreciable to one, they may not be so to another, or at any rate it is impossible to convey any adequate idea of the variation to a second person by words only. From a purely botanical point of view some of these variations may seem of minor moment: such is not the opinion of the collector, or the dealer. A value represented by pounds, or hundreds of pounds it may be, is attached to one variety, while the worth of another, which to botanical eyes seems neither better nor worse, is estimated in shillings! There is, however, one point of view from which these protean variations commend themselves to the botanist as strongly as they do to the Orchid grower, and that is with reference to the existence, limitations, and lineage of what are conventionally called species. From this point of view the more variation the better, because it enables us to obtain a fuller and more accurate knowledge of the degree and kind of variation, and of the inferences that may be derived therefrom, as well as a clearer notion of the relationship which one so-called species bears to another. Here, again, the importance of accurate drawings cannot be over-estimated. Mr. Sander in the work before us has provided us with illustrations that are at once artistic and accurate, two qualities which, we are sorry to say, do not always run in harness together.

The first plate, devoted to Odontoglossum crispum, is beautifully rendered, and it is a good example to start with, not only on account of its intrinsic beauty and associations, but because it affords an illustration of the difficulties which beset those who have to grapple with the complexities of Orchid nomenclature. We cannot enter upon these details now, it must suffice to say that Professor Reichenbach, who furnishes the botanical text to this plate, keeps up the original O. crispum of Lindley, as in duty bound, but ranges the innumerable varieties under two principal groups—*a*, Alexandræ (Bateman's Odontoglossum Alexandræ, the variety here figured); and *b*, Bluntii. In the group of which Alexandræ is the type the texture of the flower is more membranous, the petals, or, as the Professor calls them, "tepals," very broad, oblong, rhomb-shaped, acuminate, serrate, dentate or jagged at the crisped edge. In the group represented by O. Bluntii the texture of the flower is thicker, the petals rhomb-shaped, ovate-acute, denticulate or entire, and rather flat at the edges.

Lindley, in his original description from one of Hartweg's specimens, spoke of the flowers as "yellow with a purple centre," being misled into so doing, according to Prof. Reichenbach, from the inspection of a copy of a drawing made by a Spanish artist, Tafalla, though by some erroneously attributed to Hartweg. Hartweg's plant was, says the Professor, undoubtedly white-flowered. We allude to this matter first because yellow-flowered forms of Odontoglossum crispum have since been seen; and, next, because it is now well known that the colour of these flowers sometimes changes considerably after fertilisation, and what was a flower of virgin white assumes in time a yellowish tinge. In addition to the technical remarks contributed by the Professor, Mr. Sander himself supplies some interesting historical details and cultural notes which we may cite as giving a sample of the text, and which we may here state is printed in English, in French, and in German.

"Although the geographical range of Odontoglossum crispum is comparatively limited, there is a marked difference in the varieties found in various localities. The Pacho Mountains are the home of the finest forms, and here the plants grow on the lower branches of the forest trees in company with O. gloriosum and O. Lindleyanum, two inferior species in point of beauty, but which have, perhaps, in a great measure, been instrumental in producing the beautiful narrow-petaled supposed hybrids, such as Andersonianum, Ruckerianum, Jenningsianum, and others. It is peculiar that, whereas the starry-flowered forms, similar to Lindley's type specimen, abound exclusively on the north of Bogota, the woods on the south, about ten days' journey distant, are rich in the fine round-flowered varieties. Although this Orchid is imported in larger numbers than any other from South America, the risks and expenses are not slight even now. In our case, we purchase the exclusive right to collect plants in the woods in certain districts; natives are employed to gather them, for which purpose parties of from four to eight go into the woods, returning in about a fortnight with the result of their labours. After the plants have been cleaned and prepared, and kept on wooden

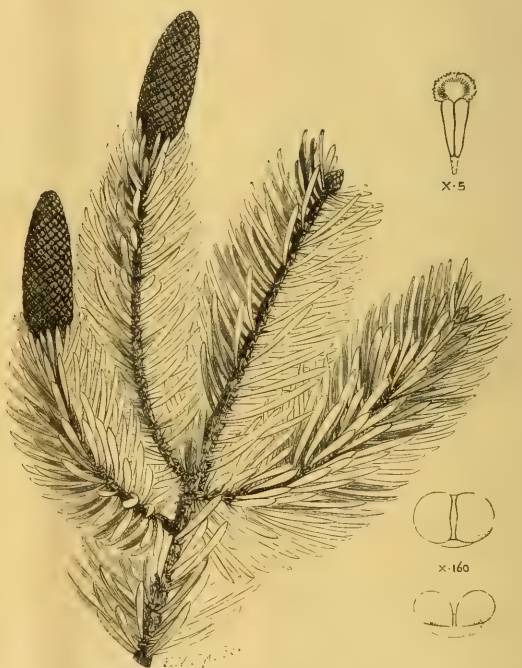


Fig. 153.—Abies webbiana: male catkins. (see p. 691.)

* *Reichenbachia: Orchids Illustrated and Described.* By F. Sander, St. Albans, assisted by eminent scientific authorities. Magnificently illustrated in colours.

stages for several weeks, they are ready for packing. They are then fastened to stout sticks, and these are fixed in wooden boxes so as to leave air space around them. The cases are carried on mule-back to Bogota, a journey of about ten days, and here they are received by an agent, who sends them by mules to Honda, which is reached in another six days. This place is situate on the river Magdalena, and here the cases are put on board a river steamer, which takes them to the seaport town of Savanilla, a journey occupying about five days. Owing to the intense heat on the river journey the plants often perish. The cases then come, as a rule, by mail steamer, *viâ* Colon and St. Thomas, to England, the passage being made in about twenty-seven days. The risks, therefore, of importing this Orchid are great, and, owing to the peculiarly soft nature of the plants, they are so liable to decay, that in some instances seven-eighths of the consignment are dead on arrival here. The havoc made in the native forests, too, must be considerable, for we calculate that for every three plants actually established in European gardens a tree has been felled."

The other Orchids figured in the present number are :—Cattleya labiata, var. Percivaliana, Cypripedium Sanderianum, a new species from the Sonda Isles, and nearly allied to C. Stonei platytænium, a sufficient recommendation in itself. Of this very remarkable long-tailed species, we must speak at greater length on another occasion. Odontoglossum Rossi var. forms the subject of the last plate.

Woodcuts giving analytical details accompany the text, so that from the threefold point of view of the botanist, the cultivator, and the artist, Mr. SANDER'S new venture may be called a great success.

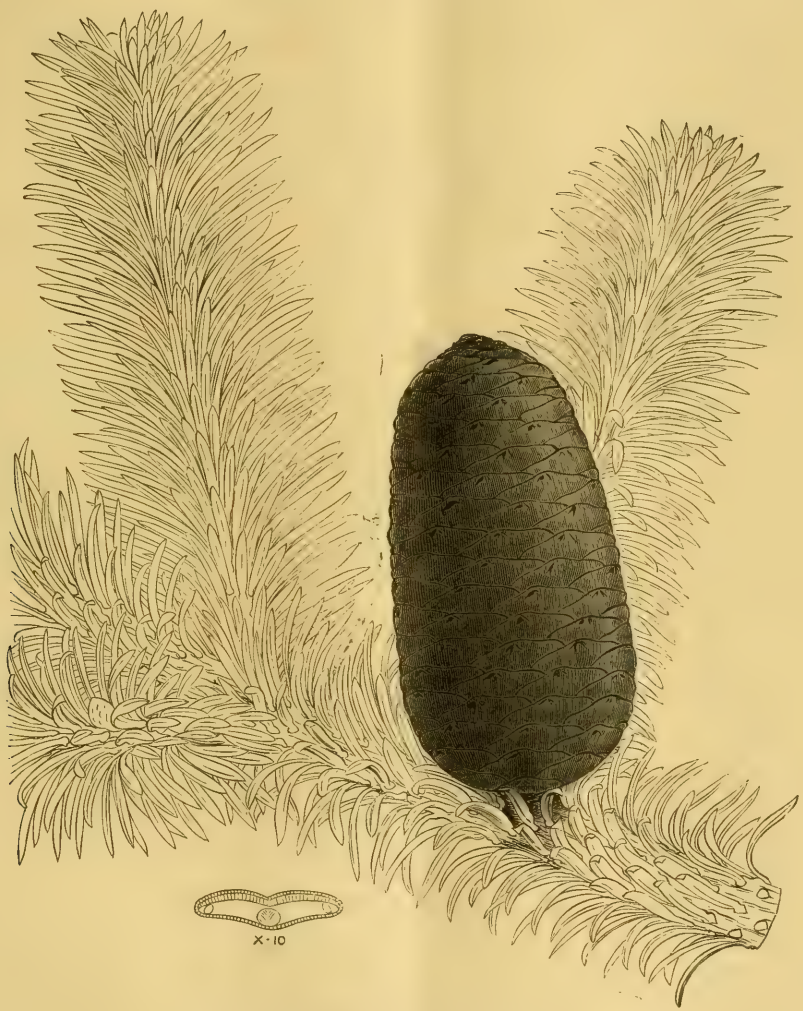


FIG. 154.—ABIES PINDROW: CONE PURPLE. (SEE P. 691.)

—— TOBACCO IN DEVON.—It may be of interest to our readers, especially those residing in or near the county of Devon, to learn that Mr. SAMUEL ELIOTT (LUCOMBE, PINCE & Co.) has been granted permission by the Board of Inland Revenue to make experiments in the growth and curing of Tobacco in that county.

—— RHODODENDRONS.—Messrs. JOHN WATERER & SONS, Bagshot, Surrey, inform us that they intend to hold their annual exhibition of these plants in Cadogan Place, Sloane Street, during the month of June.

—— FLOWERING TREES.—We have received from Mr. MAHER, of Jatteahoe, Newbury, some beautifully flowered shoots of Pyrus malus floribunda. Such subjects as the flowering Crabs, that are well suited to most gardens, however small, as they grow seldom to a greater height than 15 feet, should receive more attention from planters. One section of the Crab family, Pyrus malus prunifolia, numbers more than a dozen garden varieties, each differing from the other in colour and size of fruit; P. m. baccata, the Cherry-Apple, as well as most of the others that do not grow large, make nice preserves.

—— THE BEDFORDSHIRE AND BOSTON HORTICULTURAL SOCIETES.—In connection with the annual

meeting of the Bedfordshire Agricultural Society at Luton on July 21 there will be a horticultural exhibition on an extensive scale, and handsome prizes are offered, open to all comers, for Orchids, stove and greenhouse plants, Ferns, Fuchsias, cut Roses, and fruit. The annual exhibition of the Boston Horticultural and Floral Society is fixed for July 29, and, as usual, takes place in connection with the County Agricultural Association.

—— Messrs. Sutton & Sons, Reading, at Edinburgh and Liverpool.—At the Edinburgh International Exhibition this firm has a fine stand, some 50 feet in length, which may be said to some extent to be illustrative of the progress in horticulture and agriculture during the past half-century. The upper part of the stand consists of seven sections; the two ends contain specimens of their export boxes of seeds, which are exported in great numbers to India, China, and other distant countries. These boxes have been constructed and are so arranged that while preserving the seeds in perfect condition, they can be opened and closed again with ease. The third and fifth sections are remarkable. They consist respectively of models of a Melon and Cucumber plant, some 6 feet high, in full bearing—leaves, flowers, fruits, tdenrils, and branches being represented with marvellous accuracy. The varieties illustrated are Sutton's Hero of Lockinge Melon and Sutton's Cluster Cucumber. The second and sixth sections contain specimens of the various kinds of Fescues, Poas, Loliums, and other grasses used for permanent pasture purposes. In a series of glass cases immediately below the sections, already referred to, are well-executed models of different kinds of vegetables, fruits, and agricultural roots. The lower front of the stand is devoted to such grasses as are used for permanent pasture and alternate husbandry, as also for lawns and ornamental grounds. Altogether the display is most instructive, and one which cannot fail to attract great attention during the Exhibition. At the Liverpool Exhibition the firm makes a display of a similar character to the above.

—— The Linnean Society.—On May 24 the ninety-eighth anniversary meeting of this Society was held at the Society's premises, Burlington House, Piccadilly. The chair was occupied by Sir John Lubbock, M.P. The Chairman delivered a presidential address. The following, as recommended by the Council, were appointed to their respective offices for the ensuing sessional year:—President, Mr. William Carruthers, F.R.S.; Treasurer, Mr. Frank Crisp, LL.B., B.A.; Secretaries, Mr. B. Daydon Jackson and Mr. W. Percy Sladen, F.G.S. Five members of the Council retired by rotation, viz.:—Mr. Thomas Christy, Mr. George R. M. Murray, Mr. G. J. Romanes, LL.D., F.R.S., Mr. Howard F.Z.S., and Lord Walsingham. To the seats thus vacated the following five Fellows were elected by ballot:—Mr. Arthur Bennett, Mr. James E. Harting, F.Z.S., Mr. Albert D. Michael, F.Z.S., Professor St. G. Mivart, F.R.S., and Mr. Henry Trimen, M.B. In the course of the proceedings a special vote of thanks was moved to the Chairman by Professor Allman, who alluded to the invaluable services which Sir John Lubbock had rendered the Society during his presidency. The vote was passed with acclamation.

—— "Spongio-Lignine."—One of the most prominent objects shown in the Hungarian court of the Inventions Exhibition last year was a substance advertised as "Spongio-Lignine," from which numerous useful and ornamental articles were made and shown. In the circular accompanying these exhibits "Spongio Lignine" is described "in its crude state as a hard unwieldy substance containing a very small percentage of organic and silicious matter. This hard substance, when treated by the patent process of the exhibitor, produces the softest and most delicate material imaginable, which the finest sponge or silk velvet cannot equal. Being antiseptic by nature this quality can further be improved by medication, which renders Spongio-Lignine invaluable for medical and surgical purposes. A small piece applied to cuts and wounds immediately stops bleeding, producing salutary and healing effects in the shortest space of time." Hammers for pianos covered with Spongio-Lignine are said to produce a clearer and sweeter sound than that produced by felt or any other material, besides which it leaves no indentation by wear. For caulking ships the substance is described as being the best, most durable, non-rotting material, swelling in water, filling out accidental crevices, growing almost to the wood, and dispensing with the use of pitch. On account of its antiseptic nature Spongio-Lignine is said to form the best washing glove for the complexion; it can be used either as a flannel or glove, and removes all blotches and skin diseases. Amongst the articles actually made from this substance and exhibited, some of which have since been presented to the Kew Museum, are socks for boots and shoes, chest protectors, purses, cigar and card cases, bags, shooting and jockey caps, picture and looking glass frames, cushions, &c., the material being nothing more nor less than Amadou or Polyporus igniarius. For head coverings, such as travelling caps, the material is both warm and comfortable.

—— Lilies of the Valley.—We lately saw some excellent examples of flowers of this plant grown from roots raised and flowered by Messrs. Hawkins & Bennett, Twickenham. The plant is evidently quite at home in the light soil of that place, and the culture is well understood. This is one more piece of evidence of our ability to grow plants which it was formerly supposed could only be raised in perfection on the other side of the Channel.

—— North of Scotland Horticultural Association.—The members of the North of Scotland Horticultural Association held their usual monthly meeting on the evening of Friday, the 21st inst., in the hall of the Christian Institute, Aberdeen. There was a good attendance. Mr. Peter Harper (Duthie Public Park), President, occupied the chair. Mr. J. Taylor, Clashfarquhar, read a paper on "The Action of Light on the Colour of Flowers." He showed in an interesting manner how the sun's rays affected the colour of flowers, and also fertilisation. Discussion followed, and a hearty vote of thanks was awarded to Mr. Taylor. Mr. Farquhar, Fyvie, read a short paper on "Peas," dealing mainly with their cultivation. He gave a brief sketch of the history of the Pea, and compared some of the numerous varieties. In conclusion, he touched upon the best modes of preserving the plant from the attacks of insects, vermin, and game. Mr. Farquhar was awarded the thanks of the meeting for his interesting contribution.

—— London Catalogue of British Plants.—After an interval of some years an eighth edition of this useful list has been issued by Messrs. George Bell & Sons, under the editorship of Mr. F. J. Hanbury. In this new edition the sequence of orders and genera has been changed so as to bring it into conformity with that adopted in Bentham and Hooker's *Genera Plantarum*, a matter of convenience, no doubt, but which involves an inconsistency, for the synthetic principle followed in the *Genera* is the exact opposite of the analytic tendencies manifested in the list of species. Practically, however, this is of little moment. The length of time that has elapsed since the publication of former editions, and the consequent additions and alterations of nomenclature have necessitated the re-numbering of the species, a circumstance to which those who have numbered their herbaria according to the older lists will have to submit as a necessary evil. To give some idea of the relative rarity, or rather of the comparative diffusion of species, figures are added to the names of the several species, showing the number of vice-counties or districts in which the plant is recorded to have occured. These figures are taken from Watson's *Topographical Botany*, and afford the best general indication that is possible to attain, though they do not, and cannot, represent the rarity or abundance of individual plants in any given area. In compiling a list of this description the main objects to be attained are clearness and consistency of arrangement, together with accurate nomenclature. Any attempt to convey further information must of necessity be incomplete and unsatisfactory. Botanists are under great obligations to Mr. Hanbury for the trouble he has taken in the matter.

—— Bougainvillea spectabilis.—For some time after its introduction to this country, in 1829, it seems that no one had been able to flower this species, although on the Continent there seemed no difficulty in that respect. Even now it is at best a capricious plant, flowering with no degree of certainty, notwithstanding that sufficient time has elapsed for gardeners to become thoroughly versed in its cultural requirements. There seems no reason why it should not flower with the same degree of regularity as its better known profusely flowering congener, B. glabra. Whether it may ever be depended upon, like the latter, for a display is a problem as yet unsolved, but one which would well repay the trouble of that happy cultivator who should hit upon a successful method of treatment. It was flowered last year in the temperate-house at Kew, and a large plant covering great part of the roof of the porch of the Water-Lily house is at present a sight worth seeing. The plant is evidently very old, and planted out, but has not flowered so profusely for many years. The bracts are larger and much deeper coloured than those of B. glabra, and may be described as an intense rosy-purple—some say brick-red, shaded with scarlet, others say purple. The plant is figured in *Paxton's Magazine*, xii., 51, ic. The generic name is given in honour of Bougainville, a French navigator, and is often erroneously spelt Bugainvillæa, or Buginvillæa.

—— Mimulus Queen's Prize.—A pretty collection of this unique strain of Mimulus, shown by Messrs J. Carter & Co., found many admirers at the Royal Horticultural Society meeting on Tuesday last. The flowers were boldly marked with rich colours, and were of an unusually large size. It is said they are produced true from seed—certainly those shown were seedling plants.

—— The Fruit Prospects in Scotland.—We have had, writes a correspondent, a very changeable and late spring; still about three weeks behind an average season; but the past week has been mild and genial and growth is pushing freely now. Fruit trees have not suffered much from frost, but the cold, raw air, of the early part of this month caused much of the Plum and Cherry blossom to fall off without setting. Pears are setting much better; and as Apples are not yet in full flower, there is a good chance of a full crop of them, as the trees are loaded with flower-buds. Small fruit promises to be very abundant. Vegetable crops, although late, are very healthy, and promise well with a continuance of the fine weather. Field crops are also looking well, and promise abundance, if the summer is moderate.

—— China-grass (Bœhmeria nivea). — The frequent recurrence or re-introduction of China-grass or Rhea fibre to the notice of commercial men is a fact well known, and each time the plant is brought to notice some novel mode of preparing the fibre is announced, or some new machinery is invented. The latest of these is a patent of Messrs. Raabe, Zimmermann & Houchet, which cleans the fibre in a purely mechanical manner without any assistance whatever from chemicals. A handful of the stems of the Rhea is put into the machine at one time; they are carried rapidly through and delivered on the other side, when it is seen that the whole of the woody portion of the stems is broken and loosened, so that it is easily shaken out by again passing the partially cleaned fibre through a similar machine a second and third time; the fibre comes out quite cleaned of woody particles, and after it has been hackled it is as fine as Flax, and, like Flax, is of a greenish colour; the fibre, however, is in a perfectly natural state, being simply removed from its position in the stem, and after being woven it can of course be bleached like an ordinary Flax fabric, or dyed if required. The inventors of this machine claim for it advantages over other machines for cleaning Rhea fibre because of its simplicity in preparing the fibre for spinning purposes by simply removing it from its position in the stem without weakening it by the action of chemicals or bleaching compounds, besides which the fibre is removed from the stem in its entire length, which is, of course, a great advantage in spinning.

—— Fruit from South Australia and New South Wales.—A considerable consignment of fruit from these colonies, brought by the Orient liner *Cusco*, has reached the market in excellent condition. The South Australian fruit consisted of Almonds, Apples, Currants, Grapes, Quinces, Raisins, and Oranges. Samples of these weres hown in the South Australian court on the recent visit of Her Majesty,

the Prince of Wales, and Princess Beatrice, to whom a basket of the fruit was presented. The New South Wales consignment consists of various descriptions of Apples and Grapes from the district of Orange. Owing to the excellence of the method of packing adopted, the fruit, especially the Grapes, arrived in good condition. Some of the fruit was exhibited on Tuesday at the show of the Royal Horticultural Society.

—— Rhododendron cinnabarinum.—Messrs. Veitch send us from that wonderful place, Combe Wood, trusses of this beautiful shrub, with finely developed orange flowers cut from a shrub growing in the open air. Even if protection were needed the plant is amply worth it, and the same may be said of R. Keysii, R. triflorum, and R. Blandfordiiflorum, which we have heard of this spring as producing flowers in the open.

—— Gardening Appointment. — Mr. O. Bishop, late Head Gardener at Stisted Hall, Braintree, Essex, as Head Gardener to J. P. Heseltine, Esq., Walhampton Park, Lymington, Hants.

THE NATIONAL ART TREASURES EXHIBITION, FOLKESTONE.

This Exhibition, which was formally opened by the Lord Mayor with the assistance of the Lord Warden of the Cinque Ports, and various celebrities, municipal and otherwise, on Saturday last, does not contain a great deal of special interest to the horticulturist. But as that individual has generally an eye for anything that is good outside as well as inside his own department, we may advise him, if he have the chance, to spend a few hours in the building. He will find an exceedingly interesting collection of antiquities and objects illustrative of the habits, customs, and modes of life of our forefathers, municipal and military, and an extensive and varied collection of pictures ancient and modern. Among the latter are some glorious examples of the Lionells, father and sons. The Exhibition is at present in an incomplete state, and the general arrangement is of the higgledy-piggledy order—a great defect from the point of view of the convenience and instruction of the visitor. The preliminary catalogue is, if possible, worse, and its sale in its present state is not creditable to those concerned; it would be bad enough if it were given away, but to make a charge of one shilling for what is worse than useless will provoke much dissatisfaction. Doubtless this matter will be rectified later on, in the meantime it would be better to withdraw the catalogue, and issue a small pamphlet, calling attention to the principal objects of interest, and giving some indication of the place where they might be expected to be found.

In the little gardens between the courts local nurserymen have displayed their taste and resources. Each has had a series of square beds to fill, and most of them have not got beyond "Scarlets" and "Calcies" arranged in formal patterns, while some have attempted monstrosities in the way of carpet beds: the bed of the sea would be more interesting! The exhibitors are Messrs. G. Pilcher, Dover Road, Folkestone, who have a mixed bed; Messrs. Buzan of Folkestone, Burbridge of Ewell, and Fentiman of Folkestone, and Mr. Bunyard of Ashford.

This last exhibitor has beds of a much more varied and interesting character than those of most of his allies, comprising Otaheite Oranges in fruit, Choisya ternata, Rosa rugosa, Phyllyrea Vilmoriniana, Ulex hispanicus, Acer polymorphum, Olearia Haastii, Grevillea Preissiana, and a variety of evergreen and flowering plants, which afford a welcome change from the uninteresting bedding plants of the ordinary type. Had the exhibition been more distinctively horticultural, a very interesting exhibit might have been made of the shrubs that thrive best by the sea-side, such as we have noted from time to time in these columns. It may not be quite irrelevant to suggest to the Folkestone authorities generally that they religiously preserve what is left of the wild character of the greensand cliff below the Leas. Some planting has been done, and judiciously, and more might be accomplished, but no more formal paths should be tolerated, and no more destruction of the wild natural beauty and interest of the bank. Just now it is bright in places with the pink flowers of the Thrift, Armeria vulgaris. An enormous crop of Charlock comes up year after year here, and while adding nothing to the beauty of the bank it destroys and overpowers better things. This might be kept in check by cutting the stems off before they produce seed. Lepidium draba, too, is obtaining a footing in too obtrusive a manner, and will oust better things. Nevertheless, just now its billowy masses of white flowers are very effective, and evidently much appreciated by bees—a hint for bee keepers. Of shrubs in the gardens here, amid many that are interesting none are more brilliant than the variety of Euonymus japonicus, whose leaves open of a golden-yellow, and remain so for many weeks, but not throughout the year.

ABIES PINDROW.

Among Indian botanists doubts are entertained as to the identity of this species, and its difference or otherwise from A. Webbiana. The two trees, however, occupy different districts of the Himalaya, and, at any rate in British plantations, there is no difficulty in distinguishing the two forms. The illustration of A. Webbiana, which we gave on p. 405, vol. xxii., 1884, may be compared with the one we now lay before our readers (fig. 154, p. 689). The bark of the shoots and younger branches of A. Pindrow is of a light ash colour, shining. The buds are in groups of three or four; the terminal one is largest, reddish-brown, globose, acute, densely covered with resin. The leaves on the cone-bearing shoots are in many rows spreading on all sides, not appressed, decurved not twisted at the base, about 1 inch long, linear-oblong flattish, midrib depressed on the upper, prominent on the lower surface, margins revolute, upper surface dark green, lower surface with two glaucous bands on either side of the midrib. As is often the case, the leaves on the cone bearing shoots are shorter and more pointed than those on the sterile branches. Cone 3 by 1½ inches, and 3 inchess broad, solitary, erect, cylindric-oblong obtuse, deep purple, glabrous, scales rounded. Bracts concealed. Seeds soft, angular, full of turpentine, and ripe in October.

The tree is described by Mr. A. D. Webster as a vigorous grower, making annual shoots 2 feet in length and 1½ inch in diameter. But although this may be the case in the damp climate of North Wales, we cannot speak of it in the same terms as seen about London.

The plant will grow well in poorer soil than suits A. Webbiana, and in its native habitat favours damp glens near the sources of streams. The tree is found in Kumaun at from 7000—9000 feet of altitude, where it is found in forests of unusual gloom and thickness. In Bhotan the tree is met with in abundance at altitudes ranging from 11,000—12,000 feet. In this country it is found advisable to plant young trees on the northern side of plantations or hills, so as to protect it in some degree from the sun, it being apt to suffer in the spring; otherwise it is quite hardy.

For particulars as to Picea Webbiana we refer our readers to the *Gardeners' Chronicle*, vol. xxii., 1884, p. 467. We also give in this number a shoot of P. Webbiana bearing male catkins (see fig. 153).

WINDOW GARDENING.

The following appropriate paper on the above subject was read at a recent meeting of the Clonmel Industrial Association by Mr. W. J. Murphy:—

1. Windows and their Arrangements for Plants.

People who have never been out of a provincial town like Clonmel can have no conception of the perfection attained in the culture of window plants in Paris, London, Dublin, and even in smoky towns in Lancashire. Take an illustration from each. I once stopped in the Rue de Rivoli, Paris, to watch a lady move out a glass window or "Wardian" case from the drawing-room to the balcony. It was on rails; the window was accurately poised on pulleys; a pressure of the finger sent it up, and a similar pressure sent out the glass case from inside. It was the autumn, and though the days were very sultry, smart frosts frequently supervene at night; hence the advantage of such an arrangement. The case contained principally Ferns—in the more shaded inside corners were Killarney Ferns, and a fine specimen of Todea superba. In this case, centrally situated, was a miniature fountain, throwing its spray to the top and catching it below in a small basin, where some gold fish disported; the same water being used over and over again, being self-acting by its own pressure. The case was partially shaded except in front. The balcony was a blaze of brilliancy, creepers running up on both sides, such as Vitis purpurea and Ampelopsis Veitchii; while Clematis festooned overhead, and drooped over the ornanamental front of the balcony. Indiarubber plants, sweet Verbena, Fuchsias, Begonias (foliage and flowering), with Coleus and the more hardy Palms, alternated. So much for a window garden in one of the finest streets of the most brilliant city in the world. Yet a gentleman told me the whole window arrangements (florally) did not cost a £5 note. This is one of the lessons I would emphasise—bright and gorgeous effects are often owing more to taste than lavish expenditure, and this is characteristic of the French. I was subsequently shown an elaborate window arrangement in Oxford Street, London, in which a gentleman for a few hours displayed some rare Orchids—nothing imposing except to the initiated—yet one Cattleya, I was told, cost 200 guineas. I mention this by way of contrast, and as characteristic of wealthy London. I am not sure if a window-box noticed in Merrion Square, in Dublin, the cost of which must have been merely nominal, was not as effective and telling, though it contained no flowering plant, and its brilliancy being dependent on foliage. Sunk in the box were fine specimens of Coleus, of the richest tints, capable of being lifted readily and taken inside if storms threatened to shatter the soft foliage. Alternately with those were small plants of Mahonia aquifolia, Choisya ternata, variegated Aucubas, and Euonymus, while at each end, like feathery sentinels, waved two handsome specimens of Acacia lophantha. The box and window stool were draped with variegated Ivy, and running up from a lower storey and skirting the window sides was a Sweetwater Vine with brilliant foliage on the one side, and the Passion-flower—Passiflora cœrulea—on the other. This was not far from a brilliant balcony of flowers tended by "Speranza," whose poetry many Irish men and women are proud of. I have thus given three illustrations taken from three of the finest cities in the world, in some respects typical, and showing how beautiful window effects are not dependent on great wealth, nor on flowering plants alone, but that a more lasting result can be attained by combinations of foliage also.

2. The Most Suitable Window and Room Plants and their General Treatment.

I have given illustrations of typical window and balcony gardens from Paris, London, and Dublin; I now propose to mention what our local and artisan friends can have nearer home. The person who would succeed in growing to perfection any plant whatever in red shabby pots on a window-stool in the open air would deserve a prize. One day's hot sun will roast the roots, if not watered—while a heavy shower will, as a rule, make them waterlogged. A box is better, either with soil to put the plants in, or without soil, to drop the pots into. In either case holes should be bored through, to allow superfluous water to pass away. Various contrivances have I seen to take the water drainings away. An ingenious person can always manage that. One great advantage in having the plants outside the windows of a room is that light and air are not impeded, and a further advantage is the evaporation from the box or plants, which might be injurious in a bedroom, passes away. As I have already stated, windows intended for plants should either be mounted on pulleys, to move readily up and down, or at least be capable of opening inwards. Windows only capable of opening outwards cannot be readily utilised when plants are being tended. Too constant watering is avoided by planting the edges of boxes or large pots with Sedums or hardy Saxifrages, lining or covering with moss. What is best to have in your boxes of mould is the next question. I am not sure if I were limited to one annual alone I would not now purchase a few pence worth of Mignonette, keep the surface moist until it commences to grow, and have something to scent the rooms and the air all around, until cut off by frost next December. A greater variety would be produced by having Asters or Stocks, or some other handsome annual growing through the Mignonette, or the edging of blue Lobelia, with Sweet Peas,

Canary Creepers, or Nasturtiums, and having Pelargoniums of different sorts behind. This is the time to prepare for these arrangements. When your annuals begin to decline at once remove them—say next September or October—and plant bulbs of various kinds—Crocus, Snowdrops, Daffodils, Hyacinths, &c., and you will have a simple succession at trifling cost the whole year round. This is an illustration of how any one can be agreeably amused who may have but a window-stool to grow plants on. An indispensable requisite for this purpose besides the box is in some loamy soil, not always easy to be had in towns. So much for plants outside windows, suitable varieties for which could be counted by the hundred.

I will now refer to indoor or room plants. These are most varied. Personally, I am aware that, without any forcing arrangements, plants of various kinds can be had in bloom the whole year round, from Chrysanthemums and late Fuchsias during October and November; Early Hyacinths and Lily of the Valley at Christmas, Narcissi or Daffodils, Dielytra and the beautiful Nile Lily — best of all room plants — during the spring months; Pelargoniums, Tea and Perpetual Roses, with Fuchsias and the delightful Japanese and American Lilies — capital room and window plants—during summer; while or variety many of the foliage plants named, with Yuccas, Myrtles, Aloes, Cyclamen, Aspidistra, Choisya, Grevillea robusta, and several hardy Palms, as Phœnix sylvestris and P. reclinata, Chamærops excelsa and C. Fortunei, with proper treatment and attention to their wants, last healthy for years. In fact any plant with fleshy or coriaceous foliage will stand well the dry atmosphere. Generally, in conclusion, small pots are to be preferred; some one member should take charge of the plants; sponging or syringing of the foliage is most desirable; and lastly, water should not remain in saucers with the one exception of the Musk plant. Although I have but touched on the fringe of the subject, I feel I cannot further intrude on your attention now, and shall conclude as I begun, by saying gardening and the love of plants and flowers, whether the space extends to several acres or is limited to the windows of a room, with which I have been dealing, it is the purest and the most self-satisfying of pleasurable occupations. Give a man, and still more a woman, this taste, and the means of gratifying it, and you have given them a pleasing and healthy occupation for life; something to think of during the hours of labour, and to which they may judiciously, return when their mental or bodily toil has ceased, as to a refreshing variety—an oasis always welcome on the tiresome road of life.

HOME CORRESPONDENCE.

The Market Fruit Gardens.—These are now in all the pride of Apple blossom, and of course very beautiful, and especially when there are large breadths of Wallflowers beneath the trees. In some cases the grower has an eye for fine effect as well as for producing a marketable commodity. I witnessed such an instance in the neighbourhood of Brentford lately, and shall expect a treat in the middle of June. The red and the white were there, but the blue was wanting. On either side of a 10-foot path about 150 yards long was a zone of white Lilies—L. candidum—three or four bulbs wide. There are probably 2000 strong plants, each giving promise of a huge cluster of snow-white bells. In front of these on each side is a row of Cabbage Roses and Pæonies. I would venture to suggest the addition of the primary blue, and the effect would be grand—strong clumps of Delphiniums of the varying tints of blue displayed by that fine old plant. It is one of the handsomest perennials in cultivation, but perhaps also, as the market might say, one of the least profitable. The fruit prospects, so far as we were able to judge, were very favourable, and, let us hope, now secure from the effects of frost. *T. W.*

Labrador Kale.—About fifteen years ago our attention was drawn to a Kale with the above name, and a recommendation was given us to the effect that when cooked it possessed a flavour similar to green Peas. During the Siberian winter of 1879 we discovered that when Broccoli, Curled Greens, and all other Kales had disappeared, owing to the rigour of the weather, the Labrador Kale remained intact, and as soon as the weather allowed we had a large supply of delicious sprouts. Our attention has again been prominently drawn to this excellent Kale, for while winter vegetables have been more or less destroyed, not one plant of this hardy vegetable has been lost, and as in 1879 so now, so soon as the weather moderated up sprung a full supply of its delicious sprouts. This hardy quality and great value in spring having been so clearly demonstrated, that we send you a dish of the sprouts, so that your opinion may be given on its delicate flavour, and we wish to draw attention to this Kale as a reliable winter vegetable suited to our fickle climate. *Clarke, Bros. & Co., Carlisle.*

Fritillary. — The common Fritillary, Fritillaria Meleagris, or, as country folk call it, the Snake's-head or wild Tulip, is tolerably plentiful in one district of Middlesex: it is undesirable nessary to mention the exact locality, as the gatherers for sale would quickly exterminate it. The flowers were of the normal colour, a rich purplish-brown chequered with the small, lighter coloured squares from which it derives its name *fritillus*, a chess-board. There were a few pure white specimens among those we saw. In the meadow-grass, among which the Fritillaries grew, some one had scattered a handful of Myosotis, and the effect was charming. *T. W.*

Campbell's Powder-Distributing Bellows.—The bellows shown in the annexed illustration (fig. 155) will be useful to the horticulturist for discharging insect powder. It has been patented by Mr. G. T. Campbell, of Howard Street, San Francisco. Secured to the top board of the bellows is a box for holding the pulverised substance it is desired to distribute. The box is connected with the bellows nose by a flexible tube, as shown in the sectional view (2). A wire gauze partition is fitted at the inner end of the box nozzle, to prevent choking up of the powder passages by lumps or foreign substances. The box is filled through an opening bordered by a screw neck upon which the cap fits. When the handles are operated to force the air through the nose of the bellows some of the air will pass into a box through a check valve pressed down lightly by a spring. This valve (3) is so constructed as to admit air to the box at two levels, thereby insuring thorough agitation of the powder in the box, and a more effective distribution of it through the tube and into the nose, where it is met by the main air blast, and ejected forcibly from the nozzle, which is, preferably, provided with a rose head. "*English Mechanic*," *March* 5.

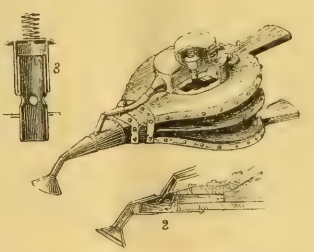


FIG. 155.—CAMPBELL'S POWDER-DISTRIBUTOR BELLOWS.

A Good Late White Chrysanthemum.—At the spring meeting of the Royal Agricultural and Horticultural Society of Guernsey, held on the 12th and 13th inst., a beautiful lot of cut blooms of a pure white Japanese Chrysanthemum named Ceres, were exhibited, the average size being from 4 inches to 5 inches in diameter. It is very much like Elaine, but with a better centre when fully expanded. A most useful variety surely, seeing that it can be had in such good condition in the middle of May with such pure whiteness. *H. Britten, Castle Carey, Guernsey.*

Schedules of Shows.—In the prize list just issued by the Chiswick Horticultural Society, under cottagers' classes, and open to children attending the various Board schools of the district, we notice what may be called an innovation—certainly a step in the right direction. The class referred to reads thus:—"For the best arranged vase of flowers, to be arranged in the gardens on the morning of the show." It must be evident to visitors at shows of this description that the arrangements of bouquets, vases, &c., supposed to be done by the children, have, in many cases been done by children who do not attend the Board schools. In plain words the work has been that of their elders, and the children have received the credit, and—what perhaps the elders had an eye to—the prizes. Now the new clause inserted in the above Society's schedule will effectually stop this—to say the least of it—questionable kind of proceeding, and will have the effect of putting the youngsters on their mettle, and, better still, afford a practical means of inculcating ideas of taste in arrangement in the minds of the young decorators, ideas which are not, unfortunately, included in the three R.'s at school. The good seed, in fact, will be sown which will produce fruit, it may be, at some future period in their lives—in giving them notions as to how to display to the best advantage some of Nature's fairest, purest, and most beautiful gifts to mankind. *B.*

Peas. — It will now soon be time to get in the principal crop of these, but to have them stand the weather and bear well, special preparation must be made for them, as they are sure to become distressed by drought unless their roots can go deeply down. To enable them to do this the ground should be deeply dug, or, better still, wide trenches sunk, after the manner of those made for Celery, and the bottoms heavily manured with mild rotten dung, after which they should be nearly filled again, when the seed may be sown. Before doing this the thing is to make choice of some good kind that is not subject to mildew, as that is one of the worst enemies to contend with and assails some sorts much more than it does others. Those which I have generally found to have the greatest immunity from it are Ne Plus Ultra and the British Queen, both of which are sterling varieties that are as yet quite unrivalled in quality and flavour. Both of these attain to a height of 6 feet, and should therefore have plenty of room between the rows, a good plan with them being to arrange the trenches 10 feet apart and have Celery midway between. This suits both crops, and the Peas are greatly benefited by so much light and air playing on their sides, as not only does it make them more sturdy and prolific, but it enables them to resist, and be more proof against parasites than they are when closer together, which causes them to draw and the leaves to become tender. The next important matter to starting Peas with plenty of depth of rich loose soil is to mulch, for without that it is next to useless to water, for when the ground is not covered alongside of the rows, the watering often does more harm than good, especially if heavy soakings be not given, as it draws the roots to the surface in search of moisture, and the ground cracks and opens, letting in the hot air, and the young feeders perish wholesale and leave the plants starved. A heavy mulching prevents all this by shading the earth and keeping it cool; besides which, evaporation is intercepted and the soil remains in a more equable condition than is possible when there is nothing to ward sun and air off. The best material to use for the mulching is half-rotten stable manure, unless seaweed can be had, and it should be laid on about 3 inches thick and 2 feet or so wide on each side of the rows, when the water may be poured rapidly without washing the soil, but in using the water it is well not to wet the base of the haulm, as it often does harm to the skin. If sewage or liquid manure can be obtained, a soaking of either now and then will be highly beneficial, as the plants will receive such a stimulus as will assist them greatly in swelling up and filling their pods. These should all be picked when full and ready, as nothing distresses plants so much as seed-bearing, which is very exhausting and prevents a fresh yield of bloom. *T. S.*

Diplacus glutinosus. — An elegant shrubby Mimulus from California, with salmon-coloured flowers and shining clammy leaves. During the past week I have inspected some forty Devonshire gardens and have met with this plant but three times—of course, as usual, in old-fashioned places. With the old gardeners it was much esteemed—a fact supported by a remark of an aged gardening friend who upon my showing him some of its flowers and foliage was delighted, and said that he had lost sight of it for years—indeed so long that he had forgotten it, save its specific name. It is difficult to tell why such a free and continuous bloomer should be thus neglected, as it is of simple culture. It is quite at home in the ordinary greenhouse and a compost of loam with leaf-mould and rotten manure suits it nicely. *W. Napper, Alphington Cross, May* 24.

Sutton's Late Queen Broccoli.—This I consider to be one of the best late kinds grown, as you may see by the two specimens which I send for your inspection. My plants are planted out early in well manured ground, and usually between the rows of Early Rose and Beauty of Hebron Potatos. They stand 30 inches apart, so that the Potato haulm does not smother them, and there is enough space for them fully to develope without any crowding of sorts. Veitch's Self-protecting, Sutton's Early Superb and Safeguard, Brimstone and Knight's Protecting, are chiefly grown, and to the number of 3000, the requirements of the establishment being very large. In November the plants are all of them laid with the heads pointing north, all decaying foliage being kept

rigidly cleared off, and by this treatment very few heads were lost during last winter. *C. F. P., The Holloway Sanatorium, Virginia Water.* [The specimens sent were large, but had been insufficiently protected from the sun, and were consequently discoloured. When of a smaller size it would be excellent. Ed.]

Pelargonium Chelsea Gem.—"R. D." asks for the parentage of the above. It was raised here some six years ago from Leamington Lassie. *E. Crump, Ranelagh Gardens, Leamington.*

Bougainvillea glabra. — Nowhere have I yet seen this charming Brazilian climbing plant in better perfection than at Colehayes, Bovey Tracey (Mrs. Levett). The stove there is span-roofed with upright sashes and glass ends. The south end is given up to and covered by two plants of the Bougainvillea glabra, each occupying a limited bed above the floor-line at either corner. The gardener's object in planting them there was to help to shade tender plants—an extremely showy shading, too. There is none of that strict training and formal laying in of shoots that is usually met with at organisd flower shows, where, by the way, Art is too often successful in overpowering Nature—all that is done is to fasten the primary branches, and from these have sprung a multitude of flowering shoots, each furnished with their much admired and beautiful rosy-coloured bracts in the greatest profusion. I shall not soon forget the loveliness of the sight. *W. Napper, Alphington Cross.*

Seeds.—By this day's mail (March 10) we have two copies of the *Gardeners' Chronicle* up to date January 23, one of which contains a letter from Messrs. Carter & Co. on my complaint of receiving bad seeds from a London house. In the first place, I can tell Messrs. Carter that I have abundant testimony to prove all my assertions. Touching their statement as to my ignorance of the London seed trade, I may say that I have a keen desire not to become too intimately acquainted with it. May I ask if they will deny that there is such a trade or occupation as killing seeds in London? At any rate, we have not yet arrived at this stage of dishonesty in this colony. Then, again, we may not have the necessary qualifications to test seeds, but we can, at any rate, tell whether they grow or not. Perhaps, if I had procured my seeds from Messrs. Carter & Co. I might have been saved an immensity of annoyance, a great loss, and the trouble of this correspondence. By this mail I send you for inspection a sample of four kinds of seed which escaped being destroyed, received from the house I complain about, to let you see some justification of my grievance. Another house in London charged me £3 10*s.* for what they called specially drying my order of seeds, which order was charged at the rate of 150 per cent. above the London trade rates, half of these turning out the veriest rubbish. Surely even the Messrs. Carter will agree that I have something to complain of. These charges I have abundant evidence to prove and am prepared to do so. Let me say that I expected something more courteous from Messrs. Carter, and to remind them other houses export seeds besides themselves. *T. Smith, Timaru, N.Z.* [The samples sent were all old, the Turnip apparently bad, but we have no time to test their germinating power; and a double passage across the line is not likely to have improved them. Ed.]

The Hillsborough Pernettyas.—In the *Gardeners' Chronicle* of May 22 I observe, in an article of Mr. A. D. Webster, that he finds these Pernettyas do not fruit with him. Our experience with them is quite the contrary, as we find they fruit so freely as to retard their growth a good deal, but they require to be planted in very exposed situations. I enclose some specimens from plants put out seven years ago on an exposed bed near the Castle, where few plants would stand the blast. We had a bed of these Pernettyas in a shaded sheltered part of the grounds for two years that did not fruit, but when transplanted to an exposed place they became fruitful the following season. *Mrs. Ryan, Castlewellan.* [We have nowhere seen Pernettyas so densely loaded with berries. Ed.]

Scarlet Runners.—These, like everything else, pay for good cultivation, and the way to manage them is to prepare a wide deep trench by throwing out the top spit and digging up and heavily manuring the bottom, after which it should be filled up again and the seed sown, or rather planted, in a double row about 6 inches apart. As the plants so favoured will grow strong and fine, it will be necessary to give them tall stout stakes, and to thrust them well into the ground, so as to give them proper support and prevent the wind from blowing them over. With the staking done the next thing is to mulch, as Scarlet Runners must have their roots kept uniformly moist for the flowers to set well. To ensure their doing this, and to assist the Beans in swelling, heavy waterings or soakings of sewage should be given, if the weather be dry, and to maintain the plants in a full bearing condition it is necessary to pick the pods before they get old. The finest kind to grow is the Champion, but it is a question if this is so free bearing as the old common sort, which is very prolific. *J. S.*

Double White Pyrethrum. — This plant I raised three years ago with others less pure in the white, which I discarded. It is equal to the finest strain of Golden Feather in the dwarfness of its habit and colour, flowering about 4 inches high. It was a sheet of pure white up to Christmas, and the flowers like miniature China Asters. It seeds tolerably freely, and comes true. *G. Smith, Walworth.*

A Double Fedia.—Some time since Messrs. Dammann & Co., of S. Giovanni a Teduccio, Naples, obligingly forwarded to us specimens of a double Fedia which possesses much interest. We are not accustomed to consider Fedias as anything but weeds, or at best as salad-plants, but here is one which when seen in the mass must be very effective. The individual flowers



FIG. 156.—DOUBLE FEDIA.

are small, but they compensate for lack of size in their number, and in their rich reddish-violet colour, not unlike that of wild Thyme, but deeper. They have a further interest botanically in being, so far as we know, the first and only illustration of double flowers in the Valeriana family. The flowers are so double that we imagine the plant must be propagated by cuttings, but in any case the plant is so pretty as amply to repay any trouble in its cultivation.

Choisya ternata and Metrosideros floribunda.—These two plants against a south wall in the open air have flowered very freely this season; they received no protection whatever during the past severe winter, and are not the least injured. *J. R., Castlewellan, Co. Down.* [The shoots sent were well flowered. The latter must make a gorgeous plant on a wall. Ed.]

Chrysanthemums.—Visiting the beautiful gardens of Heckfield Place the other day I was interested to observe that Mr. Wildsmith is going in somewhat largely for the growth of Chrysanthemums, and even aspires to make an appearance on some of the metropolitan show tables during the coming autumn. The Heckfield plants present just now all the elements of excellence. Ere now probably the majority have been shifted into their blooming pots, which vary from 9 to 10 inches; but in some of the latter two plants are blocked, as it is found that moderate growers do well so grown. A broad open space, yet admirably sheltered, has been deeply floored with ashes, and here the plants will stand till it is time to remove them into the houses. Of course each plant will have the support of a wooden stake, but to enable the fullest amount of support to be given a stout wire is strained across this space at about 5 feet intervals, and to these wires the stakes are secured, thus making all taut and tidy. The position is well sheltered from winds — a matter of some considerable importance in the case of plants which grow from 8 to 12 feet in height, and even taller in some cases. The position is equally well open to the sun, for one indispensable element in the production of fine blooms is that the wood or plant stems should be not only stout, but well ripened. Badly ripened wood will inevitably fail to produce fine massive flowers, and these alone win prizes. But something more than exposure to ample sunlight seems needed to effect that desideratum. There seems also to be some art in potting, and soil loose and light, whilst for the moment, perhaps, stimulating root action, and consequently rapid growth, will none the less lead to failure at a critical moment, for the plants must have capacity to hold out till the last, as well as to make big stems and robust leafage now. That the compost is good in which the plants are potted is evident; it handles well, and almost smells well. It contains so much of sweet fibry loam that there is danger it may prove in the end too light and porous; but the operator is equal to the occasion, and as the soil is placed in the blooming-pots it is well rammed to form a foundation, and when the plant, with its now moderate-sized ball of roots and soil, is stood upon that foundation, being kept well up also, the fresh added soil is further rammed firmly, until the pot is severely strained to withstand the lateral pressure thus put upon it. Some 600 plants cannot be in this fashion in a moment, but happily, some can well wait for a week longer in their present pots without bad results. Novices in the art of physiognomy have often wondered at the remarkable capacity shown by a shepherd in singling out by a knowledge of some facial features various members of his flock. Where the divergences of feature are so infinitesimal, no wonder those unfamiliar with sheep marvel. The same wonder may well be expressed when we see, as I was privileged to see, a Chrysanthemum grower displaying such remarkable familiarity with leafage, that through it, and perhaps the colour of the stem, he could tell every kind, even of scores, with perfect correctness. To most of us perhaps, with some exceptions, one kind in leafage may resemble another as two Peas, but growers who have made every trifling divergence and feature subjects of special study know better, and find literally a language of plants that, if of no other use, at least proves valuable aid to correct nomenclature. Mr. Wildsmith is but a type of many others, professional and amateur, who have succumbed to what hypercritics will call the Chrysanthemum fever, whilst true florists will wisely characterise the strong sentiment shown as genuine enthusiasm. If Daffodils, Roses, Carnations, or Dahlias produce emulation each year, why not Chrysanthemums? Perhaps more than any other garden-flower they are literally everybody's, hence to a large extent their wondrous popularity. We find amongst them some sections upon which the formal and impressive hand of the florist has been heavily laid. These must display form, solidity, and evenness. Incurved, reflexed, anemone, and pompon alike tell of the florist's grip. But the Japan section are absolutely outside the florists' circle, and no rules or regulations will hold them in keeping. Destroy all those varied, quaint, and irregular forms found in the Japanese kinds, and they are Japanese no longer, but mutilated hybrids that none will care for. There can be no doubt but that the Chrysanthemum owes renewed life and popularity to these Japanese forms. Not only are they much more fecund in variety, both in form and colour, than are the incurved forms, but they are even more easily grown and enduring. They have found hosts of admirers where the others failed to obtain favour, because too rotund and devoid of charm. Happily now all classes of Chrysanthemum fanciers may be amply satisfied, whilst it is certain that a long life is now in store for all the members of a genus, which now, in one form or another, provides us abundantly with flowers all the year round. *A. D.*

Deaths amongst the Swallows. — Regarding the above numerous notes have appeared during the past week in our daily papers, but I fear that rather indirectly than directly has the cold damp weather to be blamed. The fact is, insect life, on which the swallow lives, is, from the cold season, unusually scarce, and the consequence of which is that these birds are starved to death, their lean emaciated condition making this only too apparent. I examined a number huddled together and scattered about singly in an old sand-pit here, and they were literally but "skin and bones." At Capel-Ogwen, on the sea

coast, a number were found dead in the byres and outhouses, which plainly showed that starvation more than cold had to do with their death. *A. D. W.*

Broccoli May Queen.—I do not know who named or sent out this Broccoli, but as shown at Bath recently it was so fine as to command general admiration. It has the appearance of being a late selection from Knight's Protecting; it has all the character of this well known variety, but looks like a refined type, of good size, beautifully white, and with a full "curd." I wonder who the Knight was that named and gave to gardeners this capital Broccoli. It is an old sort, not so old as two or three others still cultivated, but one that has been grown for many years. It has the reputation of rapidly deteriorating, and if this is true it should be frequently and carefully selected. This Broccoli is called Protecting because the leaves fold over and hide the curd from being damaged by weather, and especially by frost. One of the old names of this Broccoli is the Invisible, and it is appropriately named so, because the curd is invisible under the covering of leaves. The curd of May Queen is solid, and of a delicate cream colour. It appears to have a deep curd also, not merely a flat one on the surface, but reaching down low, which is an excellent quality in a Broccoli. *R. D.*

Queen Wasps.—If correct, the assertion made by Mr. C. Wolley Dod (*Gardeners' Chronicle*, p. 662), will result in a great saving to owners of gardens, whose gardeners have, in many cases been paying at the rate of 1*d.* or 2*d.* each for every wasp killed during the spring months. *A. D. Webster.*

Reports of Societies.

ROYAL HORTICULTURAL: May 25.

A CAPITAL addition to the other attractions of the Colonial and Indian Exhibition was offered by this meeting, which was partially a competing one, where Azaleas, Orchids, Roses, and Pelargoniums were staged in pleasing groups of colour. Hardy plants and Australian fruits also contributed to the interest of the whole.

Cut Roses were a notable feature, and the Rosesshown in pots were excellent specimens of modern culture as opposed to the antiquated, highly trained objects which we were accustomed to see at shows. The plants were dwarf, well furnished with foliage, and young, hence the robustness visible in leaf and flower.

In Azaleas we noted a falling off in qualtity; though the taste of the day does not run after rigidity in training, all like to see these showy plants shown in gorgeous masses of bloom set off here and there by glimpses of healthy foliage.

Pelargoniums of the show and fancy types were in considerable numbers, and were generally well flowered; a few novelties in show and decorative varieties were noticed.

Scientific Committee.

Sir J. D. Hooker in the chair.

RHODODENDRONS.

Hon. and Rev. J. T. Boscawen exhibited five trusses of R. arboreum "improved," being a hybrid between R. arboreum and R. atro-sanguineum. The truss stands well above the foliage, and is more continuously flowering than R. arboreum. The tree from which they were cut is now 15 feet high.

MALFORMED PARSNIP.

Mr. Smith exhibited a specimen which had grown through the neck of a medicine bottle; the result was a quaint hourglass-like form.

CRYBE ROSEA.

Mr. O'Brien suggested that the Orchid so named and exhibited at the last meeting was probably an Aubletia. He also exhibited for Dr. Duke, of The Glen, Lewisham, a fine plant of Catasetum atratum.

LIPARIS LOISELII.

Mr. Ridley exhibited plants of this Orchid; the pot in which the rhizomes had been was allowed to become perfectly dried; but in breaking up the earth and watering this spring they have recovered, and are flourishing vigorously. Colonel Clarke remarked on the tenacity of life of Orchid bulbs (*e.g.*, O. Morio) under great drought.

OPHRYS BERTOLONII.

Mr. Brockbank exhibited a specimen of this Ophrys received from Nice.

TOBACCO CULTIVATED IN GREAT BRITAIN.

Colonel Clarke exhibited dried leaves of various kinds:—1. Plants sown early and gathered early, of yellowish-brown colour (1884)—this was the best quality. 2. Plants left too long in the ground, the leaves being much longer and greener. 3. Nicotiana rustica, a very coarse form. 4. Hybrid between N. rustica and the Havana Tobacco; it bore the form, habit, and colour of the latter.

ELMS.

Mr. Boulger showed a fruiting branch of a tree from Barham Court Park (R. Lee, Esq.), supposed to be a "Wych" Elm; but Mr. Boulger observed it has many suckers, is very smooth, with the seed-vessel above the middle of the samara, and therefore it belonged more nearly to Ulmus campestris. He believed it to be U. lævis.

GALL ON VIOLET.

Mr. Boulger also showed a specimen of gall of Cecidomya violæ, from Kent, which in 1884 was found in Essex, and believed to be new to Britain. It occurred on Viola sylvatica.

ÆCIDIUM ON CHIVES.

The following communication was received from Mr. Plowright:—Mr. Phillips two years ago drew attention to a Puccinia accompanied by Uredo-spores upon Chives, which he found near Shrewsbury. This was called Puccinia mixta, Fckl. Dr. George Winter, however, classes it with other Uredines upon various allied species of host plant under the name Puccinia poeri (Sow.). Later in the same year I found specimens of this Puccinia upon Chives at Downham. During the present month (May) on visiting the Downham habitat I was fortunate in finding upon plants which bore the Puccinia the Æcidio-spores which answer Dr. Winter's description. The Æcidium is distinct from the Æcidium on Allium ursinum, which has a heteræcismal origin.

RED SPOTTED POTATOS.

Mr. Plowright also sent the following remarks on this subject:—In 1844 it will be in the memory of the committee that a number of tubers grown at Chiswick in connection with the Jensenian experiments, which were found upon inspection to be spotted inside, as if from the effects of the Phytophthora: so much, indeed, did they represent truly diseased tubers that some members of the committee regarded them as such. Specimens were, however, sent to the three gentlemen in Europe to whom we owe most of our knowledge of the Potato disease—namely, to Professor De Bary, of Strasburg, Dr. J. Kühn, of Halle, and M. Jensen, of Copenhagen. Without throwing any light upon the true nature of these spots, all three of these gentlemen were unanimous in their opinion that the spotting was entirely unconnected with the Phytophthora. An instance of this spotting disease came under my notice the same year near King's Lynn, and I took the opportunity of making a few observations upon the affection. First and foremost, although resembling the Phytophthora spots in colour, there is this great difference—the Phytophthora spots always originate upon the surface of the tuber and pass inwards, this being, as De Bary has long ago shown, the essential nature of the disease. Secondly Phytophthora spots are soon followed by decay (wet rot); the spotted tubers under discussion do not tend to decay at all. I had under observation about half a bushel of suspected tubers, for the tubers show no indication of the spotting until they are cut open, from October till May, but none of them showed any signs of decay. I obtained these tubers from the grower, who resided near King's Lynn, and who suffered considerable loss from the affection, because it was impossible to tell how many were spotted until they were cut open; the consequence was that the crop was unsaleable, and, as a matter of fact, was used for feeding pigs.

In the following spring (1885) my tubers began to sprout just as healthy tubers would.

On May 24, 1885, five tubers were selected, which on section showed the internal spotting in a very marked degree; they were planted in my garden and carefully watched. In due course they threw up healthy shoots, which bore healthy leaves and grew in all respects as healthy Potatos ordinarily grow. On October 16 they were dug up and examined. They had produced forty-eight tubers, each of which was cut up into slices and closely examined for the internal spots, but not a trace of the disease could be detected.

Hence it would appear that, whatever may be the nature of the affection which gives rise to this internal spotting, it cannot be very readily transmitted to the young tubers by using diseased sets, and although this negative result is all that I was able to arrive at, yet it seemed to me of sufficient interest to lay before the Scientific Committee.

BLIND FLOWERS OF DEUTZIA SCABRA.

Mr. Henslow reported on his examination of these flowers, brought to the last meeting by Dr. Lowe, and found that they differed from the normal flowers in the following particulars:—The sepals were much smaller, as also were the petals. The stamens had short filaments entirely devoid of the wing-like appendages in the usual flowers; the anthers were shrunken and devoid of pollen. The ovary was much smaller, with the placentas incoherent in the axis, and with rudimentary ovules; the style much shorter; and lastly, the stigmas smooth and not papillose. One or two normal flowers were occasionally present on the same raceme as the abnormal. The conclusion drawn from the above appearances was that from some unknown cause the flower-buds had been insufficiently supplied with nutriment, causing arrest of structure in every part of the flower. Colonel Clarke observed that he had frequently noticed that the earlier flowers were reduced in size, but as the season advanced the normal flowers followed, so that those sent by Dr. Lowe represented a still further reduced condition—no doubt caused by atrophy.

Floral Committee.

Present: J. O'Brien, Esq, in the chair; and Messrs. Shirley Hibberd, R. Dean, G. Paul, J. Dominy, H. M. Pollett, A. F. Lendy, J. Douglas, E. Hill, H. Bennett, W. Bealby, W. Wilks, Amos Perry, H. Ballantine, J. Hudson, J. Walker, H. Herbst, H. Cannell, H. Turner, W. Holmes, T. Baines, W. B. Kellock.

COMPETING CLASSES.

Roses, twelve, not less than ten varieties, in pots not exeeeding 9 inches in diameter (nurserymen).—The 1st prize was taken by Messrs. Paul & Son, The Old Nurseries, Cheshunt, some very good plants being seen in the exhibit of the following:—Celine Forestier, White Baroness, Lord Frederick Cavendish, Comte de Paris, Madame Lacharme, and Merveille de Lyon. Mr. C. Turner, Royal Nurseries, Slough, was 2d—Caroline Kuster and Innocenta Pirola being charming plants; Mr. W. Rumsey, Waltham Cross, was 3d, with small plants, well bloomed.

Orchids, nine, distinct (amateurs).—The 1st prize was awarded to Mr. F. Hill, gr. to H. Little, Esq., The Barrons, Twickenham, for specimens of which the following were the best flowered:—Dendrobium Dalhousianum, D. thyrsiflorum, a plant with twenty-five racemes of bloom; D. densiflorum with five racemes. There were a Cattleya Mendelii grandis with an extra deep coloured lip and pale sepals and petals; and several more Cattleya Mossiæ and others. The 2d award was taken by Mr. A. Luff, gr. to R. R. Hyatt, Esq., Hethersett, Streatham, who had a very fine specimen of Cattleya Mossiæ with thirteen blooms; Cypripedium villosum of a large size; and Phalænopsis Luddemanniana.

Orchids, nine, distinct (nurserymen).—In this division the 1st and only prize fell to Mr. H. H. James, Castle Nursery, Lower Norwood, whose Cattleya Mossiæ, C. Mendelii, and Odontoglossum Pescatorei (the last with eight spikes), were good plants.

Azaleas, twelve, not less than ten varieties (open).—The 1st prize was here taken by Mr. C. Turner, with plants averaging 3 feet in height, and of globular form. All of them were well bloomed, and consisted mainly of well-known kinds; Cordon bleu, Roi d'Hollaud, Bernard Andreas alba, were choice in colour and shape of flower.

Pelargoniums, eighteen, any class (open). — Mr. Charles Turner showed an excellent group, obtaining the 1st prize. Amongst those of special excellence were Rosetta, purplish-rose; Rosy Morn, Duchess de Morny, Kingston Beauty, Madame Thibaut, Emperor of Russia, Duchess of Bedford. The 2d prize was taken by Mr. F. Hill—a nice lot, but which from some cause showed arrested growth.

Calceolarias, twelve (amateurs). — A 2d prize was awarded to Mr. A. Luff, for plants of loose habit but large flowers of chiefly yellow-brown spotted kinds.

Carnations, tree or perpetual (open). — Mr. C. Turner was the only exhibitor, showing tallish plants, of which many were unnamed seedlings. Pride of Penshurst seems still to be the best yellow Carnation of any shown. A 1st prize was given.

MISCELLANEOUS.

Hardy Plants and Cut Flowers.—Mr. T. S. Ware, Tottenham, whose exhibit will remain during the continuance of the Colonial Exhibition, made a large show that occupied one-half the length of the conservatory. Tree or Moutan Pæonies were a feature of the collection, the colours clear, and the plants fresh. The flowers had opened under glass, but without any assistance from artificial heat. Two of the Pæonies, viz., P. m. Orgeuil de Hong Kong and P. m. odorata, have scented flowers, the latter alone agreeably so. P. m. Madame Laffay, bearing a flower of 9 inches in diameter, of bright flesh tints, was pre-eminent for size and fulness of petals, as is also P. m. Lambertiæ. Lithospermum graminifolius, a dwarf-habited plant, with narrow, acute, lanceolate foliage, and brilliant blue flowers, is a valuable rock plant seen in this collection; Primula mollis, P. capitata, and Disa grandiflora; Cypripedium parviflorum, with the odour of Almonds; and C. acaulis, pink-flowered, were noted. A Silver-gilt Banksian Medal was awarded.

Messrs. P. Barr & Son, Covent Garden, had an interesting collection, in which was noticed many Irises, Scilla nutans in variety, a new white Anemone, The Bride, bearing large flowers; a large number of species of Sedums and Saxifrages were shown to illustrate their effect in masses. A Silver Banksian Medal was awarded.

Groups of Roses.—Messrs. W. Paul & Son, Waltham

Cross, had a handsome group of these, disposed bank-wise against the evergreen plants of the conservatory. None were over 3 feet high, and all were vigorous and loaded with flower; a row of Adiantum in front properly finished off the whole. Of newer forms may be noted Professer Edward Regel (H.P.), a bright red; Masterpiece (H.P.), bright crimson; and Souvenir de Madame Alfred Vy, a prettily cupped, moderately full purplish-rose coloured flower. This firm likewise showed twelve boxes of cut blooms of Roses of mostly fine forms for the season. A Silver Banksian Medal was awarded.

Messrs. Paul & Son, Old Nurseries, Cheshunt, had likewise a bank of Roses in pots, but of very varying size, some being large, whilst others were half-specimens; a selection which took off all stiffness in effect. The plants were uniformly well flowered, and among the smaller ones were noted Sunset, their new Tea Rose, Madame Cusin, Rubens, Perle des Jardins, and La France. A Siver Banksian Medal was awarded.

Mr. W. Rumsey, Waltham Cross, showed eight boxes of cut blooms of Roses, some of which were of good quality for indoor grown flowers. A Bronze Banksian Medal was awarded.

Azaleas.—Messrs. H. Lane & Son, Nurseries, Great Berhamstead, showed a collection of trained and untrained Azalea indica, Madame d'Hammale, Count Oswald de Kerchove, and Secretaire Claus, being some of the finest kinds. A Silver Banksian Medal was awarded.

Calceolarias.—Mr. James, Farnham Royal, Slough, exhibited a group of his unrivalled strain of these plants; the colours were of the richest tints imaginable, the plants healthy, and flowers of the largest size. A Bronze Banksian Medal was awarded.

Groups of Orchids.—A Bronze Banksian Medal fell to Mr. Cummins, gr. to A. H. Smee, Esq., Wallington, for a collection of thirteen Cattleyas, mostly of the Mossiæ section, some Odontoglots, as crispum, cordatum, and Phalænopsis; and Cattleya amethystina superba, with a highly coloured and boldly frilled lip.

Mr. C. Turner, Slough, showed Pelargoniums for Certificates. Although several were of superior form and novel as to markings, only one, Purpurea (Foster), a large, regularly formed flower, with upper petals of maroon, centre white, and lower petals rose colour, was deemed worthy of a certificate. Mr. Wiggins, gr. to W. Clay, Esq., Elm Lodge, Kingston, showed seven varieties of seedling Pelargoniums; five were also exhibited by Messrs. Hayes, Edmonton, but none came up to the demands of the committee.

Messrs. F. Sander & Co. showed a grand variety of Cattleya Mendelii Duke of Marlborough, the flowers large, the petals about 3 inches broad, delicately tinged with purple; the lip is over 2½ inches in breadth, veined with yellow in the throat, the apical portion crimson of a rich tint, that also runs round the margin.

Mr. B. S. Williams, Holloway, exhibited Houlletia odoratissima antroquensis; his other plants were Oncidium tetracopis, Lælia purpurata, Russeliana, a pale form of the type, and with flowers of the average size; Alocasia Regina, with sagitate leaves of much substance, 9 inches long, silvery on the upper surface, the habit of the plant dwarf; Amaryllis Her Majesty, a crimson-coloured flower, veined with a deeper hue, and Lælia purpurata Reginæ, with sepals and petals mauve coloured and the lip of rich purple.

Major Lendy, Sunbury (gr., Mr. West), showed a well-flowered plant in a basket of Saccolabium curvifolium, receiving a Cultural Commendation; and many spikes of varieties of Lælia purpurata and Cattleya Mossiæ.

Mr. A. Luff showed a singularly mottled form of Cattleya Mossiæ, of no beauty whatever.

H. M. Pollett, Esq., Bickley, brought an Odontoglossum vexillarium named Sunrise, in which some departure worthy of the name is observed. The lip is of deep rose colour; the eye, as in the type, yellow, is surrounded with a white area; whilst the sepals and petals are white, with some rose colour intermixed; it is a distinct and pretty variety.

Messrs. J. Laing & Co., Forest Hill, showed Dendrobium devonianum, carrying two splendid spikes of bloom.

Mr. F. Hill showed Cattleya Mossiæ Littleana, pure white, with an orange throat, but partaking of the characteristics of C. Wagneri in foliage and flower; C. Mendelii Masterpiece, a flower with white sepals and petals, and frilled lip of purple, the throat marked with orange-yellow.

Captain Vipan showed Vanda cœrulescens alba, a minute flower, white, with rose-purple lip—a curiosity, demonstrating the necessity of the Society possessing a Botanical Certificate.

Messrs. H. Cannell & Sons showed Gloxinia Miss Cannell, a white flower of the erect section, of a bluish-white colour, with a pentagonal marking surrounding the tube.

Messrs. Hooper & Co., Covent Garden and Twickenham, exhibited a double pink-flowered Petunia of much merit, the habit compact in growth and flower.

Messrs. J. Carter & Co., High Holborn, exhibited a showy strain of Mimulus tigrinus, named Queen's Prize.

MM. Krelage & Son, Kleinen Houtweg, Haarlem, showed cut blooms of late Tulips.

A good late flowered Chrysanthemum of the Queen of England form came from Mr. Easton, Rose Cottage, Sunbury.

First-class Certificates.

To Messrs. H. Cannell & Sons, for Gloxinia Miss Cannell.

To Mr. C. Turner, for Pelargonium Purpurea.

To Mr. T. S. Ware, for Pæonia Moutan Madame Laffay.

To Mr. T. S. Ware, for Lithospermum graminifolius.

To Captain Vipan, for Vanda cœrulescens alba.

To Mr. B. S. Williams, for Houlletia odoratissima.

To Mr. B. S. Williams, for Amaryllis Her Majesty.

To Mr. H. M. Pollett, for Odontoglossum vexillarium var. Sunrise.

To Messrs. Sander & Co., for Cattleya Mendelii var. Duke of Marlborough.

Fruit Committee.

Present: T. F. Rivers, Esq., in the chair; and Messrs. J. H. Lane, H. Veitch, G. T. Miles, W. Denning, W. Warren, T. J. Saltmarsh, J. Woodbridge, J. Burnett, P. Crowley, T. B. Haywood, G. Bunyard, Harrison Weir, R. D. Blackmore, and A. Sutton.

Special Prizes.

Messrs. J. Carter & Co.—For the best brace of Carter's Model Cucumber the 1st prize fell to Mr. T. Lockie, gr. to the Hon. G. O. Fitzgerald, Oakley Park, Windsor; the 2d to Mr. Waite, gr. to Hon. W. P. Talbot, Glenhurst, Esher; and the 3d to Mr. J. Neighbour, Bickley Park Gardens, Kent. Seven lots were shown.

Messrs. Sutton & Sons' Prizes.—For the best brace of Suttons' Purley Park Hero or Sutton's Improved Telegraph Cucumbers, the 1st prize was taken by Mr. T. Lockie, the 2d by Mr. W. Robins, gr. to E. D. Lee, Esq., Hartwell House, Aylesbury; and the 3d by Mr. J. Neighbour. Six lots were shown.

Melons.—For the best brace of Sutton's Imperial Green-flesh, Sutton's Scarlet Invincible, or Sutton's Hero of Lockinge, the 1st prize was awarded to Mr. Lockie, for Hero of Lockinge; 2d, to Mr. H. W. Ward, Longford Castle Gardens, for the same variety; and the 3d to Mr. G. Malcolm, gr., Wellington Hall, Tarporley, Cheshire, for the same. Four lots were shown.

A collection of Australian fruits were shown by Sir Alex. Stewart, New South Wales Commissioner, which consisted of Apples, Pears, Grapes, Medlars, Oranges. Some Belle Angevine Pears of large size were exhibited that weighed respectively 2 lb. 14 oz., 2 lb. 12 oz., and 2 lb. 15 oz. A Silver Knightian Medal was awarded.

Messrs. J. Veitch & Sons showed Apples Bismarck and The Sandringham, the latter having kept quite sound.

Mr. C. Herrin, gr., Chalfont Park, Gerrard's Cross, exhibited well developed Citrons; and Mr. Chittleburgh, six specimens of Onion Golden Tripoli, sound in appearance.

Messrs. J. Green & Nephew were awarded a Bronze Banksian Medal, for a stand of flower vases and glasses of forms at once pleasing in form and colouring; also a collection of the well known so called Munstead glasses.

CRYSTAL PALACE: May 21 and 22.

This show was quite equal in some particulars to those held at the same period in former years, but in others there appeared to be a considerable falling off. Azaleas seem to be falling off greatly in quality, there being only one or two creditable exhibits, if we except the group of small specimens shown by Mr. C. Turner, Slough. The arrangement of the different sections of the exhibits into separate groups, around which the beholders could promenade and gratify their curiosity, was a good innovation on the interminable long table arrangement of former shows. This was productive of much comfort, and crowding was entirely avoided.

Groups.

For groups of miscellaneous plants effectively arranged Messrs. J. Laing & Co., Forest Hill, took the 1st prize; this group contained many good plants—some novelties—and was put up with a generous hand, so that we think it gained the prize on the best of grounds. Messrs. Hooper & Co., Covent Garden, took the 2d prize, their plants being fewer, although very well grown and staged; some good pieces of Dendrobium Dalhouseanum, Crotons, and Amaryllis were observed. The 3d fell to Mr. Henry James, Lower Norwood, who had concentrated his best efforts in other directions, thereby affecting his chances unfavourably in this.

Orchids (Open).

For six exotic species, Mr. A. G. Catt, gr. to W. Cobb, Esq., Silverdale Lodge, Sydenham, took 1st prize; a good Dendrobium thyrsiflorum, with twenty spikes, fine pieces of Cattleya Mendelii, Lælia purpurata, Odontoglossum citrosmum, and Oncidium concolor being the best plants; Mr. Luff, gr. to R. Hyatt, Esq., Streatham, took 2d prize, a very large Cypripedium villosum being a telling plant in his lot, although it contained other well flowered plants; Mr. Salter, gr. to J. Southgate, Esq., Selborne, Streatham, was 3d, the group containing a fine Cypripedium Lawrenceanum, with fifty blooms, which was spoilt by some abominable training; Dendrobium nobile was a good specimen, slightly pruned apparently.

In the group of not less than forty plants in bloom Mr. Salter made a full show of the resources of Selborne, and displayed on a large square table many choice plants. Among those shown we noted Cattleya Schilleriana and C. Skinneri, several Masdevallias, as Chimæra, Houtteana, and the curious radiosa; the pale greenish-yellow Cymbidium madidum, a slender upright spike 1½ foot long, on which are displayed the slightly open flowers, placed rather closely together; Oncidium cucullatum, C. Lowianum, several Dendrobes, well flowered, as Farmeri, Falconeri, Brymerianum, Devonianum, and Ainsworthi. The whole lot was of much beauty and interest. Mr. H. James displayed a considerable number in the same way as Mr. Salter, taking the 2d prize, the 3d falling to Mr. Luff.

Ericas.

In the class for nine, no 1st prize was awarded, the 2d going to Mr. J. F. Mould, Pewsey, Wilts, whose plants of E. ventricosa coccinea, E. Victoria Regina, and E. Lindleyana, were very good examples of cultivation.

Stove and Greenhouse Plants.

The 1st prize for nine went to Mr. H. James, the E. Lindleyana being one of the best plants we have seen. Anthurium Scherzerianum was unequalled for number of flowers if not for size. Darwinia Hookeriana was likewise an excellent example. Mr. W. Chapman, gr. to J. Spode, Hawkesyard, Rugeley, Staffordshire, took the 2d, and Mr. Mould the 3d.

Indian Azaleas were shown by Mr. C. Turner, Slough; Roses by Messrs. Paul & Son, the Old Nurseries, Cheshunt; Mr. C. Turner and Mr. Rumsey, who took prizes in the order of their names. Dwarf plants comprised the bulk of the plants shown, which were quite up to the standard of previous years, being, moreover, such as any good grower could obtain in two or three seasons. A considerable number of Gloxinias of much beauty was shown. Calceolarias formed a much admired portion of the show, and consisted chiefly of the large flowered dwarf habited kinds.

The prizes for the best stove plant were awarded to Mr. W. Chapman, 1st; Mr. H. James, 2d; and Mr. W. King, gr. to P. Crowley, Esq., Waddon House, Croydon, 3d; and for the best greenhouse plant, Mr. H. James was 1st; Mr. Reece, gr., Portland House, Lee, 2d; and Mr. W. Chapman, 3d.

Fine-foliage Plants, &c.

Mr. C. Rann, gr. to J. Warren, Esq., Handcross Park, Sussex, took 1st honours with Palms, Cycads, Bonapartea stricta, useful healthy plants; Mr. Penfold, gr. to the Rev. Canon Bridges, Beddington, came 2d. Nothing amongst all the foliage plants shown indicates any novelties whatever, our gardeners seeming to keep to the time-honoured species, without a thought as to there being anything as good or better among recent introductions.

Caladiums, Dracænas, and Crotons were shown in moderate numbers. The Crotons (nine) of Mr. J. R. Bird, gr. to J. A. Causton, Esq., Lodgemore, Alleyne Park, West Dulwich, were well coloured and healthy specimens of well-known varieties, measuring from 4 to 5 feet in height. Those of Messrs. Hooper & Co., Covent Garden, were much smaller plants, but included such newer varieties as Morti, Etna, and Baron James de Rothschild.

Pelargoniums.

These were not so numerous as usual, the best prizes, both in the class for eighteen and in that for nine show and fancy, going to the ever victorious Mr. C. Turner, Slough, the plants being profusely flowered in all cases. Mr. F. J. Hill, gr. to H. Little, Esq., The Barrons, Twickenham, took 2d; and Mr. D. Phillips the 3d; the last-named being likewise the winner of the 2d prize for nine plants. Sarracenias and Nepenthes were shown in good style by Mr. H James and Mr. Luff.

Amateur Classes.

For six stove and greenhouse plants in bloom, distinct, Mr. W. Chapman, was 1st; Mr. C. Rann, gr. to J. Warren, Esq., Handcross Park, was 1st for six foliage plants; and Mr. Rann was 1st for six stove and greenhouse Ferns, these last consisting of large perfect specimens of Thyrsopteris elegans, a noble looking Fern, with stout broad fronds and the look of Davallia; Dicksonia squarrosa, and two Gleichenias. Mr. Bolton, gr. to W. Spottiswood, Esq., Coombe Bank, Kingston, who took the 2d prize in this class, had Cibotium regale and Cyathea medullaris in fine examples. Mr. Chadwick had in an unsuccessful group a beautiful plant of the elegant Lygodium scandens, 6 feet in height, trained as a pillar.

Dracænas, Crotons, Gloxinias, Pelargoniums, Roses, Calceolarias, and cut flowers formed a showy portion of the amateur section, the prizes falling generally to the different exhibitors whose names already appear in the first portion of our notice.

Table decorations, bouquet and other devices of a floral order were shown in considerable numbers, and were in the usual style and make, now so commonly met with, the designers carefully avoiding the once prevalent fault of crowding flowers together, thus showing that the good standard insisted on by the best judges is beginning to tell, at least at our best shows and elsewhere.

COLONIAL NOTES.

CAPE TOWN.

THE Director issues his annual lament at the unfortunate and undignified position in which the Botanic Garden is placed by being treated as a commercial establishment, and the consequent extreme difficulty of doing the proper work of such an institution. Many details of scientific and practical importance are necessarily suppressed by the Director, lest the information should be turned to the advantage of rivals in business, and to the consequent loss to the pecuniary resources of the garden. This system is not only humiliating, and unjust alike to the garden and to the legitimate trader, but extremely short-sighted on the part of the Colonial statesmen. Allusion is made to the Herbarium, and to the excellent specimens distributed from thence.

KING WILLIAM'S TOWN.

From the report of the Botanic Garden, it appears that the condition of the establishment has been improved in every way by the Curator, Mr. Leighton. This, too, is principally a commercial establishment assisted by convict labour. Assam Tea is said to succeed better than the Chinese variety. The mean maximum temperature was 83°, the mean minimum 55°, the rainfall only 21 inches in seventy-nine days.

ROYAL BOTANIC GARDENS, CEYLON.

Dr. Trimen's report indicates continued progress and usefulness in the gardens under his charge. A Thwaites Memorial, in the shape of an octagonal building in the ordinary Kandyan style, and modelled after a Cingalese temple, has been erected in the garden. No rain fell in January at Peradenyia, but the total for the year was 92 inches, distributed over 146 days. At Hakgalla the rainfall was 83 inches, over 215 days. The maximum air temperature at this station was 79°, on August 31; the minimum 43°.5, on February 3. Coffee planting is steadily diminishing, but Tea has been exported very largely, and Cinchona bark also. In spite of an estimate of 70,000,000 of trees, and an acreage of 48,246 under Cinchona, Dr. Trimen counsels the further extension of planting. Caoutchouc and Gutta-percha trees of various kinds are mostly doing well; Sechium edule is mentioned as a promising vegetable, while the beautiful Carica cundinamarcensis is spoken of as "a very valuable introduction. Stewed, or cooked in tarts and puddings, it has very much the flavour of Apples, and for mincemeat it is quite equal to them. It is also very good, when fully ripe, eaten raw with a little sugar." The Kumara, Ipomœa chrysorhiza has turned out very suitable for culture in Ceylon as a substitute for the Potato. A second edition of Dr. Trimen's useful Hand-guide has also been issued, with maps.

IN A NEW ZEALAND BUSH.

Your Jersey contributor, in drawing attention to our New Zealand Flax and its domestic value, reminded me of one of my peregrinations into one of these bushes some years ago, which, by-the-bye, you must understand are evergreen, and, therefore, most difficult to get out of without a good pocket compass. You would call them in England woods or forests—here they are called bushes, on account, I suppose, of their density of foliage. My chief object upon this occasion was to see Dicksonias and Cyatheas at home in their native stately grandeur, and in this I was well rewarded. Here also were in endless variety Ferns of lesser pretensions, amongst others Blechnums, Adiantums, and Polystichums, intermixed with innumerable Lichens, in every conceivable position, some clinging to trees, some suspending themselves in the most grotesque way to branches interwoven into a complete network, others skipping and creeping over the ragged boulders, their object seeming to be to make a natural greenery below. In these solitudes there is always a deep profound stillness, which seems to pervade everything (only broken by the echoes of the shrill cries of the native birds, which rarely ever leave these haunts, their native homes) and which is peculiarly soothing. This dense green canopy produces a moist, subdued, gloomy light, the very conditions for Fern life—indeed a Fern world. There is also a sense of security felt in these bushes from the subtle attacks of reptiles or snakes, for unlike the bushes of Australia, we here enjoy an immunity from these things. After doing this bush pretty well I emerged into a thicket of flax 7 or 8 feet high, and about 30 acres in extent; where in close proximity I heard some grunters (wild pigs). In less time than it takes to write this I had cleared, as we say in the colonies, for the nearest tree; but how I reached that particular tree I have never yet been able to tell. By-and-bye, after a little reflection, I found some broken skin and some work for the tailor. Since then I have discovered that although these wild animals (legacies of Captain Cook) are to be found in most bushes of New Zealand, more or less, they are not dangerous unless attacked. The New Zealand Flax as a product for cordage purposes certainly could not be excelled if some substance could be introduced into its manufacture to enable it to resist moisture. It is used here for many purposes, but if exposed to the weather it soon rots and becomes useless. I may add, for the information of your contributor, that the settlers here always regard it the best of land where Flax is to be found growing, although it delights in moisture. *T. Smith, Timaru, New Zealand.*

THE PRODUCTS OF BORNEO.

In a report from Buinei, Borneo, it is stated that amongst the staple articles of produce, sago and gutta-percha hold a prominent place; the planting of new lands with Sago Palm is making steady progress to meet the demand. During the year 1884 the supply of gutta-percha fell off, "but this was owing, to some extent, to the increasing scarcity of the gutta-yielding trees, which are destroyed for the sake of the immediate larger yield, and no system of planting being introduced to make up for the continual drain, the work of collection is gradually becoming more burdensome and less and less profitable. For a like reason the collection of gutta susiu, or india-rubber, shows a falling off, though in this case a rise in the market value would with less difficulty be met by an increased production. The cultivation of Gambier (Uncaria gambir) and Pepper, now amongst the settled industries of the country, do not make such progress as the resources of the jungle lands could well stand, nor do the liberal terms on which the Government are willing to make grants of land for agricultural purposes appear to attract the attention from outside which they deserve; still the production of Gambier last year was larger than in any previous year." "Rattans form another important item in the exports from Sarawak, with the prospect of the trade increasing as the Baram district gets more thoroughly opened to collectors."

A NEW ZEALAND DYE.

Amongst the additions that are constantly being made to the Kew museum is a fine sample of Tanekaya bark, Phyllocladus trichomanoides, a coniferous tree growing some 60 feet high in the northern island of New Zealand. The wood is white, of an excellent quality, and is used for planks and spars as well as for posts, rails, floors of verandahs, decks of vessels, &c. The young saplings of the tree, it is said, were much valued by the Maories for walking-sticks. The bark, which is somewhat thick, is used for dyeing yellow in Otago, and is imported into this country, and used specially in dyeing the so-called Dogskin gloves the well-known deep golden-yellow colour now so fashionable. The specimen, which has been presented to the museum by Messrs. Anning & Cobb, of Lime Street, measures some 6 feet long, and when fractured exhibits the colour in a marked degree. *John R. Jackson, Kew.*

Law Notes.

ANDREWS *v.* THE GREAT EASTERN RAILWAY COMPANY.—This action, of the greatest interest to nurserymen and gardeners, was commenced on Friday, May 21, in the Court of Queen's Bench, before Mr. Justice Field and a special jury.

The plaintiff was a nursery gardener, seedsman, and florist, carrying on business on extensive premises at Temple Mills Lane, Stratford, Essex, abutting upon the defendants' lines and railway. The complaint was "That upon numerous occasions both before and in the months of January and February, 1884, and both in the daytime and at night, the defendants' company, its servants, workmen, and agents, have for a long, unnecessary and unreasonable period of time unlawfully kept and continue to keep a large unnecessary number of locomotive engines stationary upon certain portions of defendants' line adjoining the plaintiff's premises, and have caused or permitted such engines while so remaining stationary to emit and let off large and dense volumes of offensive, poisonous, and unwholesome smoke, vapours, gases, and other noxious matters which spread themselves over and fall and come upon the plaintiff's premises. Similar complaints were made with reference to passing engines, which amounted upon a daily average to many hundreds in number. Negligence was also alleged in the working and management of the engines so as to create and make excessive and constant noise both by night and day in the neighbourhood of the plaintiff's premises by the use of steam-whistles and otherwise. The smoke, vapours, gases, and other noxious matters were said to have damaged and injured the frames, greenhouses, and other outbuildings upon the premises, and also to have damaged and injured the shrubs, plants, trees, fruit, and flowers, and other products and things growing and being on the plaintiff's premises, and injuriously affected their growth and done irreparable damage thereto, and the plaintiff had in consequence suffered great damage and injury in his business of a nursery gardener, seedsman, and florist, whereby the plaintiff was prevented from carrying on such business in as beneficial a manner as he otherwise might and would have done; and had been deprived of large profits which would have accrued to him from carrying on his business. The smoke, gases, &c., and the noise also, rendered the plaintiff's dwelling-house unwholesome and uncomfortable to live in, and unfit for occupation, and constituted an intolerable annoyance and nuisance to the plaintiff and his family and servants. The plaintiff claimed £500 damages, and a perpetual injunction to restrain the company from permitting any locomotive or other engine to remain stationary and emit or let off near the plaintiff's premises any smoke, vapours, gases, or other noxious matters, so as to come and fall upon the plaintiff's premises, or anything growing on the same, and from so using or working any locomotive or other engine as to cause by the emission of smoke or other vapours therefrom, or by noise and damage or injury to the plaintiff's premises, or to the plants, flowers, trees, fruit, and other things growing on the premises, or to the trade or business of the plaintiff, or so as to cause any nuisance or annoyance to the plaintiff or his family and servants, or to occupiers for the time being of his dwelling-house. The company in their statement of defence set out the various Acts authorising them to carry on the railway, and said, "That the traffic upon the railway is very great, and for the proper and efficient working of the said traffic it is necessary that locomotive engines should from time to time, both in the daytime and at night, be kept standing upon the railway near to the plaintiff's premises, and also that the drivers of engines passing to and fro upon the line should sound their steam-whistles. No greater number of engines are kept standing upon the railway near the plaintiff's premises than are sufficient for the proper and efficient working of the traffic, nor are any engines kept so standing for a longer period than is necessary, and the engine drivers do not cause more noise with their steam-whistles or otherwise than is essential for safety." The defendants denied that there was any negligence, and generally traversed the allegations of the plaintiff; but they said: "If any damage, injury, annoyance, or nuisance has, in fact, been caused to or suffered by the plaintiff by reason of any acts of the defendants, their servants, workmen, or agents (which the defendants do not admit), the same has arisen unavoidably in the carrying on by the defendants of their undertaking, and in the exercise of their statutory powers."

Mr. Crump, Q.C., Mr. Cock, Q.C., and Mr. Crisp were counsel for the plaintiff; Mr. Moulton, Q.C., and Mr. Walker for the defendants.

Mr. Edwin Andrews, the plaintiff, said that his premises covered about 1¼ acre, upon which he had about 40,000 square feet of glass. He commenced business in 1872, and in the early part of 1880 he began to find that he was seriously injured in his business by the smoke and so forth emitted by the engines. His grounds happened to be between two block signals, and the nuisance became intolerable as the shunting yards of the defendants were increased in extent. The plants, both inside the greenhouses and outside, were covered with a sooty greasy black deposit, and there seemed something in the atmosphere which burned the edges of the foliage. He could not grow a crop of Grapes. The leaf of the Vine was affected, and the tops of the leaders were burned. Great damage was also done to the Cucumbers, and also to the Camellias, Roses, and other flowers. In order to prevent the smoke coming in they had frequently to keep the ventilators closed, which of course injured the growth of the plants. He had kept no books in his business, but his average profits during the three years preceding 1880 was £600 or £700 a-year; they had gradually decreased, and were now less than half that sum.

Mr. Moulton, Q.C., commenced to cross-examine the witness in detail, when

His Lordship, interrupting, asked whether something could not be done in a case of this kind? The plaintiff's ground being situated between two block signals, there could be no doubt that the evil complained of was very great.

Mr. Moulton: But we must have signals of this kind.

His Lordship: I am not dealing with it now as a question of law, but as a matter between two neighbours. This man is carrying on a business which he may or may not (I cannot tell till I have heard the evidence) have a right to carry on. There must undoubtedly be a great injury to his flowers and so forth, and I should think the company might do something for him.

The Witness: My Lord, I offered them £100 if they would take their shunting station a bit further, so as not to affect my premises. They have power to take my land.

His Lordship: Then, Mr. Moulton, had not you better take his land and extend your yard? Then you can send out as much smoke as you like. I mean—quite irrespective of the law—would it not be best to meet the plaintiff, who is (perhaps unavoidably) sustaining injury? It seems to me, looking at the lie of the land, that some day or other you will be bound to want the plaintiff's land: why not take it from him?

Mr. Walker: The plaintiff knew we should want his land when he took it.

The Plaintiff: That is false; I did not.

Consultation then took place between the learned counsel, but with no definite result, and it was decided to leave the matter to the learned Judge to decide in what manner the plaintiff should be reasonably compensated. Accordingly the leading counsel on each side went with his lordship to his private room, and on their return it was announced that owing to the different views taken by the parties the case must proceed.

Cross-examination continued: The principal thing I complain of is the shunting traffic and signal stopping traffic, and also that the firemen take advantage of the necessity of stopping the engines to "fire up." I have noticed engines stopping and emitting smoke for as long as ten minutes together. I understand that, owing to my complaints, some of the engine-drivers have been fined, but the nuisance has not been substantially decreased.

Do any special kinds of plants suffer more than others? Yes; hard-wooded stuff suffers more than soft. In the greenhouses the Camellias have all their buds destroyed; Gardenias, Palms—I could go on with the names for twenty minutes—I may say all the flowers I had are damaged to a substantial extent. The plants mentioned in my particulars, including Rose trees of all sorts, Holly trees, Rhododendrons, Azaleas, Cedars, Spruce Fir, Cypress, Junipers, common Irish Yews, Golden Yews, English Yews, common Laurel, &c., have all been damaged. Some shrubs which I used to grow I have had to give up growing altogether. The damage done may depend on the quarter the wind is in. If the wind is in a certain direction the nuisance will not be great, and as soft-wood plants are of rapid growth they may not be so much injured. The exact character of the injuries which the plants receive is that the leaves get covered with coal-dust and soot, which prevents them living; again, the black on the glass roofs prevents the light getting to the flowers. I produce a number of leaves which I picked yesterday morning, and which are a fair sample; in fact, these were taken from a place which is not so much exposed as others. Since the commencement of the action the nuisance has somewhat abated. I also produce a ventilator, to show the filthy condition of the glass. I was told by the analyst that owing to that condition seventy-three degrees of light are taken away from the plants. So great were the injuries to the Rose trees that I have had almost to give up growing them.

Mr. Wm. Young, Fellow of the Institute of Chemistry, public analyst to the Vestry of Poplar and St. George's-in-the-East, and to the Lea Conservancy Board, said he visited the plaintiff's grounds in February, and from tests he then made he was able to say that in consequence of the smoke emitted by the engines the atmosphere contained sulphuretic hydrogen, which would be highly injurious to plants. He found the leaves of the plants covered with a fine dust, and they were curled up as well as stained and spotted. This was caused by sulphurous acid; in fact, after microscopically examining the greasy deposit upon the leaves, he had no doubt it came from the locomotive flues; it was a heavy mineral oil, such as would be condensed in coal smoke. The effect of sulphurous acid was to deprive substances of their colour.

Cross-examined: He could not point to any book which stated the effect of sulphurous acid upon plants. The spots might be caused by other acids, such as nitric and nitrous acids. These were to be found in manufacturing districts, but there were no manufactories at Stratford which would emit them. He could not say whether parasites would not cause the effects described. He had placed the leaves under a microscope, and examined for parasites, but found none.

Mr. Wm. Fox, Fellow of the Chemical Society, member of the Society of Public Analyists, said he had had fourteen years' experience in testing for acids. In June, 1884, he went into plaintiff's greenhouses; the leaves were covered with a greasy sooty deposit. He took a sample of leaves and washed them in water, and in the water he found sulphurous and sulphuric acids. The leaves had a withered appearance, and were pitted here and there with small yellow spots. That was due to the action of some corrosive acid, probably sulphurous acid, which would become converted into sulphuric acid on the plants. The deposit he saw on the leaves would come from the combustion of coal. Coal burnt with an insufficient supply of oxygen would give off sulphuretic hydrogen. The glass of the greenhouses was very dirty; and on examining the sooty deposit he found a mineral grease. The coal used in locomotive engines might be either anthracitic or bituminous: the latter would give off more smoke.

Cross examined: The withered appearance of the leaves was undoubtedly due to acid; it was not the fact that under the influence of sulphurous or sulphuretic acid the leaves remained moist: they got yellow and died. The greasy dust on the leaves would generally affect the healthiness of the plant; it prevented it absorbing the carbonic acid; it settled on the upper side of the leaf and prevented absorption on that side. There might be plants having no pores on the upper side. The leaves he tested with were from Pelargoniums, Vines, Camellias, Gardenias, &c. He would not be surprised to hear that the Camellia had no pores on its upper surface. That would not alter the general effect of his evidence.

Upon the point made by this witness about the different kinds of coal; the Company's answers to interrogatories were put in, in which it was admitted that they did not use anthracite coal, but a coal of a smaller value.

Mr. G. Taylor, Fellow of the Chemical Society, said he had been accustomed to making chemical analyses. On examining under the microscope the deposit on leaves from the plaintiff's greenhouses he found it to be composed of ashes and finely divided coal. That would decidedly interfere with the growth of the plants; its effect was shown in their withered and generally unhealthy appearance. The deposit on the glass he found to contain finely divided carbon, as well as ashes and coal dust. That was sufficient to materially interfere with the access of light to the greenhouses. The appearance of the leaves suggested the presence of either sulphurous or sulphuretic acid.

Mr. H. Taylor, who occupied one of the cottages at the back of the plaintiff's premises, said he had seen four or five engines at a time standing on the line and emitting smoke. He was a card-box maker, and the smoke, coming in through his windows, spotted his white boxes as if they had been sprinkled with lampblack and water.

This concluded Friday's proceedings.

On resuming on Saturday, the first witness called was Mr. R. Moser Hiscock, architect and surveyor of Clapham, who proved plans and formal matters.

Mr. W. H. Thomas, C.E., said: that he had had some experience in judging of the effect of coal smoke upon vegetables. In April last he examined three of the Company's engines and found them constructed with a fire-brick arch; there was a hood or protector over the fire-box door, and the most improved kind of blower, and everything was calculated for quick combustion. The effect of a deficient supply of atmospheric air was was that there would be imperfect combustion. A deficient quantity of oxygen left more sulphuretted hydrogen, and a very large quantity of unconsumed carbon in the form of black smoke. With the engines of the kind which the Company used there must have been negligence and carelessness, or there would have been perfect combustion.

Cross-examined: It was the fact that sulphuretted hydrogen could be produced in a locomotive if the draught of air was not sufficient to consume the hydrogen. He could not think of any book which would confirm that opinion. He was not a chemist and had never made any experiments himself.

Mr. F. Wood said: He had been engaged as a stoker from about 1858 to 1881. If proper care were taken in making up the locomotive fires there should not be smoke for more than two minutes, and volumes of black smoke were produced by carelessness in firing when the steam was off The emission of black steam was caused by the boiler being too full.

Mr. Fox recalled: stated that the combustion of coal always evolved sulphuretted hydrogen.

Mr. R. C. Wynne said he had been in business as a fruit and vegetable salesman for forty years, and had been in the habit of buying Cucumbers of the plaintiff up to about 1880, but since then had ceased doing so, owing to their having deteriorated very much.

Mr. Long, nurseryman, of Leyton, said he had been in the habit of visiting plaintiff's premises since 1878. The condition of the greenhouse plants was good up to 1881. He had then noticed, but more particularly in 1882, a change, the leaves being curled, with yellow spots, and coated with a kind of dust or cinder-ash. Upon one occasion he had noticed that the shoots of a young Vine, which two or three weeks before were quite robust and healthy, were drooping. This was due, in his opinion, to some noxious atmosphere.

The observations of the Royal Meteorological Society as to the direction of the wind were put in, and the Judge read to the jury several of the plaintiff's interrogatories with the defendants' answers.

Mr. Walker, on the part of the defendants, contended that by the Railway Clauses Act, sec. 114, the obligation cast upon the railway company was solely to have engines constructed on the principle of consuming, and so as to consume their own smoke. All they had to do was to prevent the emission of smoke which was black, and they were not responsible for any of the other products of combustion.

Mr. Moulton, in addressing the jury on behalf of the defendants, said it was admitted that the plaintiff suffered annoyance from the railway, but that annoyance was one of the necessary consequences of the working of railways. The evidence of the plaintiff's witnesses was that his plants had been poisoned by sulphurous acid, and not by sulphuretted hydrogen, and no one had suggested that sulphurous acid was the product of anything but the proper and legitimate combustion of coal. The whole of the sulphur in coal when completely burnt was sent into the air. To burn coal completely was not only one of the privileges, but the duty of a railway company. The fine white ash, which was the incombustible or earthy particles of the coal, could not be prevented from going up the chimney of the locomotive. Railway companies had to construct their locomotives so as to consume the majority of the fine particles of carbon. There was no question of the company having the best engines, but did they use them properly? Did they pour into the air an excess of smoke? He was going to call evidence as to the amount of that. Everything had been done by the railway company to keep it down. Owing to the number of engines it was impossible to prevent occasional acts of negligence, but if he could prove that those acts of negligence were practically inseparable from the working of so large a concern, he contended that his clients were not liable. If, however, the jury found that the company had not confined the smoke to as little as possible, then what portion of the damage suffered by Mr. Andrews was attributable to this excess? It was not solely due to the excess; the traffic was so great in front of Mr. Andrews' premises that the lubricating oil used was sufficient to deposit a coating on the top of the glasshouses.

Mr. J. W. Worsdell, now locomotive superintendent of the North Eastern Railway, and in the employ of the Great Eastern Railway until a few months ago, said he had had thirty years' experience in the working railways. He had received the first complaint from Mr. Andrews in March, 1882. He immediately inquired into the facts, and fines were imposed, and notices were put up in the running sheds cautioning all the engine-drivers not to emit unnecessary smoke. Over 450 engines passed in front of the plaintiff's premises during twenty-four hours. This number included shunting-engines, and allowed for each passing on an average twice a day. It was not possible to prevent particles of the ash escaping from the funnel. The men were fined for carelessness in managing their fires, but it was not possible, under all circumstances, to prevent some escape of black smoke into the air.

At this stage the proceedings were adjourned till Monday.

On Monday Mr. Worsdell was recalled. He said the firing up should take place in the engine-shed at Stratford, and not on the siding next to the plaintiff's premises. No doubt, however, the firemen would fire up, if it was necessary, at any part of the line where they became stationary. The amount of smoke that would be evolved would depend upon the degree and perfection of the combustion, and as the combustion depended upon the draught of air, it followed that there would be more smoke when the engine was in motion than when stationary. He had not had many complaints made to him by Mr. Andrews. About the middle of 1882 he heard that the plaintiff had been personally complaining to the engine-drivers. He had not himself gone to the spot to see if the complaints had any foundation, but had asked the subordinate officials to report to him. All the engines of the Great Eastern Railway Company were fitted with the best known appliances for promoting perfect combustion.

Mr. Alexander Keir, locomotive foreman on the Loughton district of the Great Eastern Railway, said he had been foreman for twenty years. He knew the plaintiff's nursery quite well. The first complaint he received of the smoke was in March, 1882, when he sent his inspector to examine the nursery, and put up a notice. He thought there was no unnecessary smoke from the traffic on the line near the plaintiff's premises. He had sent a man down to watch the engines several times.

Mr. Harveyson, travelling inspector on the defendant Company's railway, said he was well acquainted with the Loughton Junction traffic. He received special instructions to visit the place in order to see if there were any irregularities, and to report whether there was any foundation for plaintiff's complaints. He went along the line as far as the Loughton Junction box, and on the several occasions of his visits he saw no smoke emitted from the engines in front of the plaintiff's nursery.

Mr. G. Shrimpton, signalman at the Loughton Junction for the last seventeen years: His box was just beyond the plaintiff's grounds. In the course of his avocation he had the opportunity of noticing whether the engines smoked; they only smoked to a certain extent.

Mr. R. Fairman, locomotive inspector, said that Mr. Andrews' complaints were referred to him, and he went down the line to examine into them. In the case of fifteen drivers there was a little carelessness and he reported them and some were fined. The nuisance upon this abated, and no more smoke was emitted than was necessary in the working of the traffic.

Cross-examined: He only reported special cases, but what he did was sufficient to stop the other men working carelessly.

This concluded the defendants' case, and the learned counsel on each side addressed the jury.

His Lordship, in summing up, told the jury that the statements on which the defendants relied undoubtedly gave the Company the right to every facility which could be reasonably required in the working of their undertaking, but they must take every ordinary care, and they were liable if the injury complained of by the plaintiff was traceable to any negligence on the part of their servants. He then went carefully and at length through the evidence that had been given. The defendants, no doubt, had proved that they had done their best to stop the nuisance by fining some of their drivers; but the very fact that they had had recourse to that step seemed to prove that there had been negligence; whilst the fact that the nuisance had been abated would go to negative the contention of the defendants, that it was unavoidable. The question they would have to ask themselves was, Had the plaintiff shown that he had sustained such a substantial and material loss as to entitle him to compensation? and if so, was it proved to their satisfaction that instead of that loss being due to the inevitable effects of the defendants carrying on their undertaking in a reasonable and legitimate manner as authorised by statute, it was due to negligence on the part of the company's servants, or to their exceeding their statutory powers? If they answered that question in the affirmative, they would find a verdict for the plaintiff. It might be that they would consider some particulars of the injury to have been caused by something which was inevitable and unavoidable in the legitimate working of the railway, and some portion to be due to negligence. If so, they would have to separate the two. The plaintiff had kept no books, but in assessing the loss which he had sustained they must show their common sense as business men.

After a short consultation the jury returned a verdict for the plaintiff, damages £500.

Mr. Moulton: Will your Lordship stay execution in order that my clients may consider whether they will take the case further?

His Lordship: Oh, no. I give judgment for the plaintiff for £500 and costs.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON

FOR THE WEEK ENDING WEDNESDAY, MAY 26, 1886.

Month and Day.	Barometer.		Temperature of the Air.					Hygrometrical Deductions from Glaisher's Tables 7th Edition.		Wind.		Rainfall.
	Mean Reading at 32° Fahr.	Departure from Average of 30 Years.	Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Dew Point.	Degree of Humidity. Sat. = 100.	Average Direction.		
May	In.	In.	°	°	°	°	°	°	°			In.
20	29.75	+0.01	63.5	48.5	15.0	56.0	+ 2.3	53.3	91	S.S.W.	0	0.07
21	30.00	+0.26	68.0	44.3	23.7	56.9	+ 3.0	45.2	64	S.	0	0.00
22	29.97	+0.23	66.8	52.0	14.8	58.2	+ 4.1	52.5	81	E.	0	0.12
23	29.96	+0.29	62.0	48.1	13.9	53.4	— 0.9	50.6	91	S.E.; S.S.W.; E.N.E.; N.N.E.	0	0.35
24	29.70	— 0.05	54.8	52.0	2.8	53.0	— 1.6	52.0	95	S.W.	0	1.36
25	29.51	—0.25	57.8	45.0	12.8	51.0	— 4.0	45.1	81	S.S.W.	0	0.02
26	29.48	—0.29	60.3	47.8	12.5	53.5	— 1.7	42.1	65	S.S.W.	0	0.02
Mean	29.77	+0.02	61.9	48.2	13.7	54.6	+ 0.1	48.7	81	S.S.W.	1	0.92

May 20.—Dull morning, rain at about noon, finer from 3 P.M.
— 21.—Very fine bright day.
— 22.—Thunderstorm between 4 and 4 30 A.M., dull but fine day.
— 23.—Thunderstorm at about 5.45 A.M., very dull day, thunder in afternoon.
— 24.—Heavy rain at 8 A.M, and throughout the day and night.
— 25.—Dull morning, sun shining about 1 P.M.
— 26.—Fine and bright in early morning, dull day.

LONDON: *Atmospheric Pressure.*—During the week ending May 23, the reading of the barometer at the level of the sea increased from 29.85 inches at the beginning of the week to 29 98 inches by 9 A.M. on the 16th, decreased to 29.67 inches by 1 P.M. on the 18th, increased to 30.04 inches by 9 A.M. on the 19th, decreased to 29.90 inches by 9 A.M. on the 20th, increased to 30.18 inches by 1 P.M. on the 21st, and was 30.14 inches by the end of the week.

The mean reading of the barometer for the week was 29.97 inches, being 0.25 inch higher than last week, and 0.06 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 68°, on the 21st; on the 16th the highest was 53°.5. The mean of the seven high day temperatures was 62°.2.

The lowest temperature was 41°.3, on the 16th; on the 22nd the lowest temperature was 52°. The mean of the seven low night temperatures was 47°.2.

The greatest range of temperature in one day was 23°.7, on the 21st; the smallest, on the 17th, was 9°.7. The mean of the seven daily ranges was 15°.

The mean temperatures were, on the 16th, 46°.3; on the 17th, 52°.7; on the 18th, 59°; on the 19th, 50°.3; on the 20th, 56°; on the 21st, 56°.9; on the 22d, 58°.2; of these the 16th, 17th, and 19th, were below their averages by 6°, 0°.1, and 3°.3 respectively; the rest were above by 5°.8, 2°.3, 3°, and 4° respectively.

The mean temperature of the week was 54°.2, being 5°.5 higher than last week, and 0°.8 above the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 125°.5, on the 21st. The mean of the seven readings was 102°.2.

The lowest reading of a minimum thermometer placed on grass was 33°.9 on the 16th. The mean of the seven readings was 40°.8.

Rain.—Rain fell on six days to the amount of 0.60 inch.

ENGLAND: *Temperature.*—During the week ending May 22, the highest temperatures were 70°.1 at Cambridge, 69° at Brighton, 68° at Blackheath; the highest at Plymouth and Newcastle 60°, at Bradford 60°.8. The general mean was 63°.5.

The lowest temperatures were 35°.5—at Wolverhampton, 36° at Cambridge 38° at Sunderland and Newcastle; the lowest at Plymouth was 48°, at Brighton 42°.8, at Blackheath 41°.3. The general mean was 40°.

The greatest ranges were 34°.1 at Cambridge, 26°.7 at Blackheath, 26°.2 at Brighton; the least ranges were 12° at Plymouth, 20°.4 at Bradford, 21° at Preston. The general mean was 23°.5.

The mean of the seven high day temperatures was highest, 65°.4, at Cambridge, 62°.6 at Brighton, 62°.2 at Blackheath; and was lowest at Sunderland, 56°.2, at Bradford 56°.3, at Newcastle 56°.8. The general mean was 58°.9.

The mean of the seven low night temperatures was highest at Plymouth, 49°.1, at Truro 48°.1, at Brighton 48°; and was lowest at Wolverhampton, 42°.3, at Sunderland 42°.5, at Newcastle 43°.2. The general mean was 45°.7.

The mean daily range was greatest at Cambridge, 21°.7, at Wolverhampton 15°.3, at Blackheath 15°; and was lowest at Plymouth, 7°.9, at Bradford and Preston 10°.6, The general mean was 13°.2.

The mean temperature was highest at Blackheath, 54°.2, at Brighton 53°.6, at Truro and Cambridge 52°.9; and was lowest at Sunderland 47°.7, at Wolverhampton and Newcastle 48°.3. The general mean was 50°.7.

Rain.—The largest falls were 1.33 inch at Wolverhampton, 1.26 inch at Brighton, 1.18 inch at Nottingham; the smallest falls were 0.34 inch at Sunderland, 0.40 inch at Newcastle, 0.53 inch at Sheffield. The general mean fall was 0.83 inch. Rain fell on every day in the week at Nottingham, Sheffield, and Bradford, and on four, five, or six days at other stations.

SCOTLAND: *Temperature.*—During the week ending May 23, the highest temperature was 68°.1, at Paisley; at Greenock the highest was 59°. The general mean was 63°.2.

The lowest temperature in the week was 33°, at Perth; at Leith the lowest temperature was 38°. The general mean was 35°.6.

The mean temperature was highest at Leith, 50°.1, and lowest at Perth, 47°.3. The general mean was 48°.6.

Rain.—The largest fall was 1.87 inch at Edinburgh, and the smallest fall was 1.17 inch at Paisley. The general mean was 1.54 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

DESTRUCTION OF WEEDS ON GRAVEL WALKS.—In applying Calvert's No. 5 fluid carbolic, 1 oz. to half-a-gallon of water, for destruction of weeds on gravel walks, is there any danger of injury to tame pigeons, peacocks, or other birds who would be likely to pick up and swallow the gravel? If there be danger, can any correspondent recommend a cheap and safe (other than salt, which is so unsightly) application for destruction of weeds on gravel walks? *F. T.*

Answers to Correspondents.

CAMELLIAS: *C. D.* As the plants are large, and have stood three years in the border, the best time to remove them would be in August or early in September. Some mutilation of the roots will take place, but if the plants are carefully lifted no great harm will be done; and if they are kept close and shaded for a fortnight rooting will take place. Give no artificial heat, but keep the house at about 65° by day, and let the glass fall as low as 50° during the night, even if you must admit air to do so. By this mode of treatment you will preserve the flower-buds and not induce shoot-growth.

CORRECTIONS.—In our report of the show of the National Horticultural Society of France, p. 667, line 14 from commencement, for "Messrs. Chantin Frères, with their seedling Dracænas, Crotons, and Anthuriums," read Messrs. Chantrier Frères, Mortefontaine, Oise, &c.—The plant of Cymbidium Lowianum, in Stevens' sale, stated at p. 658 to have been sold for 200 guineas, fetched 36 guineas, but it had 200 flowers on it.

CUCUMBERS: *G. B. W.* The roots could not present a healthier appearance, but the leaves are rather too thin in texture—perhaps from hard forcing under deficient light. They look as if they had been in contact with deleterious fumes, or had suffered from scalding.

CURL ON NECTARINE LEAVES: *A. W.* See our Answers to Correspondents, May 15 last.

DISEASED TOMATOS: *Gardener, Liverpool.*—The Tomatos are infested with the fungus described by Mr. Plowright under the name of Dactylium lycopersici. The fungus appears to have spread greatly during the last few years. We know of no remedy except careful hand-picking and burning, but this often fails, owing to the vast number of spores belonging to the fungus, which quickly germinate.

GUMMING IN PEACHES: *T. Wickson and B. Paine.* This is oftenest seen in trees growing in soil too rich in manures, which induces rank growth, and the severe use of the saw and knife; the fewer wounds made by pruning the better. There is no cure but that of transplanting into poorer soil, and the avoiding of rich mulchings over the roots. The disease is attributed to a fungus (Corynium Beijerinckii), which inoculates the wounded parts of the trees; it could also infect the fruit. See *Gardeners' Chronicle* for February 23, 1884, p. 238, and March 29, 1884, p. 410.

HIVE OF BEES IN A VINERY: *T. T.* So many bees in the house would be more likely to result in harm than good, for they would consume much of the pollen of the flowers, besides causing other injury by constantly visiting them. Shake the rods smartly, or draw the hands gently downwards over the bunches when they are in bloom; and do not keep an arid atmosphere in the house, but give sufficient air, especially at the top of the vinery, to keep a moving and buoyant state of the air inside. An occasional syringing will do no harm.

LEAF-MINER ON MARGUERITES: *R. Maher.* Cut off the infested leaves and burn them.

NAMES OF PLANTS: *E. Jenkins.* Prunus Padus.—*G. P.* Staphylea trifoliata.—*A. H. R.* Prunus Padus.—*Mr. Allen.* Masdevallia Bonplandi.—*Teyner.* Prunus Padus.—*P. B. & Son.* The blue flowers appear to be Polemonium cæruleum; the others are such scraps that we can do nothing with them.—*A. C.* Sobralia macrantha; Dendrobium Schroederi album.—*H. J. Peck.* Dendrobium nobile var., not nobilius.—*T. Ryan.* Brassia verrucosa.—*J. Fraser.* Akebia quinata.—*C. E. T.* 1, Saxifraga rotundifolia; 2, S. Geum.—*H. M. T.* 1, Staphylea pinnata; 2, Geranium pheum.—*Percy T. Ingram.* 1, Salix fragilis; 2, Alchemilla vulgaris; 3, A. alpina; 4, Veronica glauca (please inform us if this is from a garden, or found wild, and where); 5, Veronica chamædrys; 6, Lychnis diurna.—*C. W.* Prunus Padus.—*T. B.* Teucrium fruticans.—*J. F. H.* Spartium junceum (Spanish Broom).

NARCISSUS POETICUS: *Barr & Son.* Many of the forms are good, and others—well, we should rogue the bed thoroughly.

PANSIES: *J. F. H.* The Pansies sent were very pretty, some of them being up to florists' standard. They present a vigour of growth that is rare with us here in the South.

VINES DISEASED: *R. B., Bristol.* The leaves sent have been injured by the insects still present. The moulds are all growing on injured and decaying places caused by excessive moisture in the air. The injuries would be rectified by better culture and attention to ventilation. The mouldy leaves should be removed and burnt.—*Green Turf, Hants.* The leaves appear to us to have been injured by dry air and excessive sulphuring.

WEED DESTROYERS: *F. F.* Where danger is likely to accrue to birds and other animals from the use of the poisonous substances employed, salt mixed in boiling water should be used, choosing a dry time to apply it. It should be used as near the boiling-point as possible.

COMMUNICATIONS RECEIVED:—Canon Ellacombe.—M. D.—A. D. W.—J. W., Sion.—D. Massange de Louvrex (next week).—J. Rashleigh.—H. G. Rchb. f.—E. Harvey (next week).—W. F. Lloyd.—C. W., Maidstone (next week).—W. B. - G. N.

DIED, on the 22d inst., at Burnt Ash Lane Nurseries, Lee, MARY, widow of the late Benjamin MALLER, aged sixty-three years.

Markets.

COVENT GARDEN, May 27.

TRADE brisk. Prices firm, with no alteration. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0	4 0	Melons, each	2 0	3 6
— Canadian, barrl.	8 0	21 0	Peaches, per dozen	8 0	21 0
Figs, per dozen	3 0	6 0	Pine-apples, Eng., lb.	2 0	3 0
Grapes, per lb.	2 6	5 0	— St. Michael, each	2 6	10 0
Kent Cobs, 100 lb.	40 0	..	Strawberries, per lb.	2 0	6 0
Lemons, per case	8 0	10 0			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0	..	Mint, green, bunch	3 0	..
Asparagus, Eng., 100	2 0	5 0	Mushrooms, punnet	1 0	1 6
— French natural, per bundle	1 6	6 0	Mustard and Cress, do.	0 4	..
Beans, Kidney, lb.	2 0	..	Onions, per bushel	5 0	..
Beet, red, per dozen	1 0	2 0	Parsley, dozen bunch	2 0	3 0
Broccoli Sprts., bush.	5 0	..	Parsnips, per dozen	1 0	..
Carrots, per bunch	0 6	..	Potatos, per cwt.	4 0	5 0
Cauliflowers, per doz.	3 0	4 0	,, kidney, per cwt	4 0	5 0
Celery, per bundle	1 6	2 0	Seakale, punnet	1 6	..
Coleworts, doz. bunch	8 0	..	Shallots, per pound	0 3	0 9
Cucumbers, each	0 4	0 6	Spinach, per bushel	3 0	6 0
Endive, per dozen	1 0	2 0	Sprue Asparagus, per bundle	1 0	..
Herbs, per bunch	0 4	..	Tomatos, per lb.	1 6	2 0
Leeks, per bunch	0 6	..	Turnips, bunch	0 6	..
Lettuce, per dozen	1 0	1 6			

POTATOS:—Old: Magnums, 60s. to 85s.; Regents, 70s. to 90s. per ton. New: Jersey Kidneys, 6d. lb.; ditto, small, 3d. lb.; other samples lower; Malta Kidneys, 14s. to 20s.; ditto, Rounds, 12s. to 16s. per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18 0	Ficus elastica, each..	1 6–	7 0
Arum Lilies, dozen..	9	0–12 0	Ferns, in var., dozen	4 0–	18 0
Azaleas, per doz. ..	24	0–42 0	Foliage Plants, various, each	2 0–	10 0
Bedding Plants, various, per dozen ..	1	0– 2 0	Genistas, per dozen	4 0–	6 0
Begonias, per dozen	6	0–12 0	Hydrangeas, doz. ..	9 0–	18 0
Bouvardias, doz ..	12	0–18 0	Lilies, per dozen ..	12 0–	24 0
Calceolarias, per doz.	5	0– 8 0	Lobelias, per dozen	4 0–	6 0
Cinerarias, per doz.	5	0– 8 0	Marguerite Daisy, per dozen	8 0–	12 0
Cyperus, per dozen..	4	0–12 0	Mignonette, per doz.	4 0–	8 0
Dracæna terminalis, per dozen ..	30	0–60 0	Myrtles, per dozen..	6 0–	12 0
— viridis, per doz..	12	0–24 0	Nasturtiums, dozen	3 0–	6 0
Ericas, various, per dozen	12	0–24 0	Palms in var., each	2 6–	21 0
Euonymus, in var., per dozen	6	0–18 0	Pelargoniums, per dozen	9 0–	18 0
Evergreens, in var., per dozen	6	0–24 0	— scarlet, per doz.	3 0–	6 0
			Spiræa, per dozen ..	6 0–	12 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Arum Lilies, 12 blms.	4	0– 6 0	Myosotis, or Forget-me-Nots, 12 bun.	3	0– 4 0
Azaleas, 12 sprays..	0	6– 1 0	Narcissus, various, 12 bunches	2	0– 6 0
Bluebells, 12 bunches	0	9– 1 0	Pansies, 12 bunches	1	6– 3 0
Bouvardias, per bun.	0	6– 1 0	Pæonies, 12 bunches	6	0–18 0
Camellias, 12 blms..	1	0– 4 0	Pelargoniums, per 12 trusses	0	9– 1 0
Carnations, 12 blms.	1	0– 3 0	— scarlet, 12 trusses	0	4– 0 6
Eucharis, per dozen	4	0– 6 0	Primulas, double, per bunch	0	6– 1 0
Forget-me-Not, or Myosotis, 12 bun.	2	0– 4 0	Pyrethrums, 12 bun.	6	0–10 0
Gardenias, 12 blooms	1	0– 4 0	Roses, Tea, per doz.	0	9– 2 0
Lapageria, red, 12 blooms	1	0– 2 0	— red, per dozen ..	2	0– 4 0
Lilac, French, bunch	5	0– 7 0	Spiræas, 12 bunches	6	0– 9 0
— English, 12 bun.	4	0– 8 0	Stephanotis, 12 sprs.	1	6– 3 0
Lily-of-the-Valley, 12 sprays	0	6– 1 0	Tropæolums, 12 bun.	1	0– 2 0
Marguerites, 12 bun.	3	0– 6 0	Tuberoses, 12 blms..	1	0– 1 6
Mignonette, 12 bun.	3	0– 9 0	Tulips, doz. blooms	0	3– 0 6

SEEDS.

LONDON: *May* 26.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, London, E.C., state that to-day's market, as might be expected, was most sparsely attended, and the business passing as nearly *nil* as possible. The sowing demand is now, of course, over, and very little speculation has as yet shown itself. Spring Tares are still wanted. Full prices are asked for Mustard and Rape seed. There is no change to be noted in Canary and Hemp seed. White Millet rather dearer. Steadiness still characterises the trade for blue boiling Peas and Haricot Beans. Enquiries continue. Feeding Linseed commands late rates, but few transactions are taking place.

CORN.

MARK LANE: *May* 24.—Prime dry samples of English Wheat upheld last Monday's rates, but secondary sorts were 6*d.* lower where sales were pressed. Flour tended in buyers' favour, and for some kinds of foreign 6*d.* less would have been taken. Malting Barley engaged no attention, and grinding sorts were very quiet. Beans 1*s.* dearer for all other than Egyptian, which remain at late value. Peas and Lentils quiet and unchanged. Oats were a steady trade generally for 38 lb. averages, at 16*s.* to 17*s.* 6*d.*, but 40 lb. Russian, which from scarcity brought fancy prices, came down to their fair value in relation to other grades, and were quoted at 18*s.* 9*d.* to 20*s.*

May 26.—Wheat was dull, with a tendency to droop rather than otherwise, but nothing transpired to alter existing quotations. Barley was quiet. Beans were firm, Peas quiet and unchanged. Oats met a quiet demand at previous rates, and flour was dull of sale.

Average prices of corn for the week ending May 22.—Wheat, 32*s.* 4*d.*; Barley, 25*s.* 6*d.*; Oats, 20*s.* 10*d.* For the corresponding period last year:—Wheat, 35*s.* 10*d.*; Barley, 18*s.* 11*d.*; Oats, 22*s.* 6*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *May* 26.—Moderate supplies of vegetables; trade fair; prices good. Quotations:—Spinach, 2*s.* to 2*s.* 6*d.* per sieve; Cauliflowers, 7*s.* 6*d.* to 15*s.* per tally; Cabbages, 3*s.* to 8*s.* do.; Asparagus, 17*s.* 6*d.* to 20*s.* per dozen bundles; Radishes, 2*s.* 6*d.* to 3*s.* 6*d.* per tally; spring Onions, 4*s.* to 6*s.* per dozen bundles; bunch Greens, 4*s.* to 6*s.* do.; do. Carrots, 2*s.* 6*d.* to 4*s.* do.; do. Parsley, 1*s.* 6*d.* to 2*s.* do.; Onions, 4*s.* 6*d.* to 6*s.* 6*d.* per cwt.; Carrots, 20*s.* to 45*s.* per ton; Mangel, 17*s.* 6*d.* to 22*s.* 6*d.* per ton.

STRATFORD: *May* 25.—A good trade done at the undermentioned prices:—Cabbages, 4*s.* to 5*s.* per tally; Spinach, 1*s.* 6*d.* to 2*s.* per bunch; Carrots, household, 50*s.* to 60*s.* per ton; do. cattle feeding, 20*s.* to 25*s.* do.; Parsnips, 3*s.* per cwt.; Mangels, 16*s.* to 20*s.* do.; Onions, 120*s.* per ton; Rhubarb, 1*s.* 6*d.* to 2*s.* 6*d.* per dozen bunches; Radish, 6*d.* to 8*d.* do.

POTATOS.

BOROUGH AND SPITALFIELDS: *May* 25.—Arrivals of new are light, but the demand is slow; there is, however, very little, if any, change in the value of either new or old. Quotations:—Regents, 70*s.* to 110*s.*; Magnum Bonums, 50*s.* to 90*s.*; Victorias, 60*s.* to 90*s.*; Champions, 55*s.* to 65*s.* per ton. New Jersey round, 9*s.* to 11*s.*; and kidneys, 18*s.* to 22*s.* per cwt.

COLUMBIA (East London): *May* 26.—There was an improved demand at higher prices, and for fair supplies. Quotations:—Magnums, 65*s.* to 90*s.*; Regents, 60*s.* to 70*s.*; Victorias, 60*s.* to 75*s.*; and Champions, 50*s.* to 65*s.* per ton.

HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite.
BENJAMIN FIELD, F.R.H.S. (Son-in-law and Successor to J. Kennard), Swan Place, Old Kent Road, London, S.E.
Established 1814.

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Greatly Reduced Prices per Roll of 50 Yards.



Mesh.	2 ft. wide. s. d.	3 ft. wide. s. d.	4 ft. wide. s. d.	6 ft. wide. s. d.
3-in.	3 9	5 8	7 6	11 3
2-in.	5 4	8 0	10 8	16 0
1½-in	6 6	9 9	13 0	19 6
1-in.	10 0	15 0	20 0	30 0



STEEL BARB WIRE.

100 yard Reels .. 7s. 0d.
260 ,, ,, ½ cwt.. 13s. 9d.
530 ,, ,, 1 cwt.. 27s. 6d.
Special Quotations for large quantities.

5 per cent. Discount for Cash with Order.

J. J. THOMAS & CO.,
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285 and 362, EDGWARE ROAD, LONDON, W.

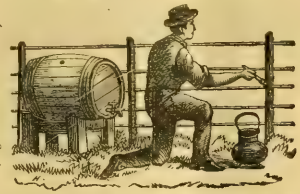
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SCRIM CANVAS, 1 yard wide, 3*d.*; 1½ yard, 4½*d.*; and 2 yards, 6*d.* per yard.
TIFFANY, 38 inches wide, in 20 yard pieces, 3*s.* 6*d.* per piece.
SHADING BLINDS made up any size.
RICK CLOTHS, TARPAULINS, Corn and Potato SACKS, FLAGS, TENTS, &c., for Sale or Hire.

Oil Paint no Longer Necessary.
HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.



This VARNISH is an excellent substitute for oil paint or any outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of forty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of most of the Nobility and Gentry, from whom the most flattering testimonials have been received.

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1¼ to 30 inches diam.
1 doz. or 100,000 sent.
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LONG TOMS, and others.
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SEND FOR *PRICE LIST.*

DOULTON & WATTS,
LAMBETH POTTERY, LONDON, S.E.
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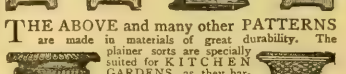


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Tiles for Lining Walls of Conservatories.
ART POTTERY, including JARDINIERES
AND OTHER
Table Decorations, and Vases, Fountains, &c., for the Conservatory, in
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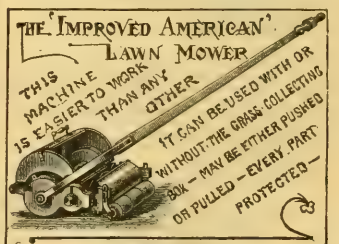


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GRASS BOXES EXTRA
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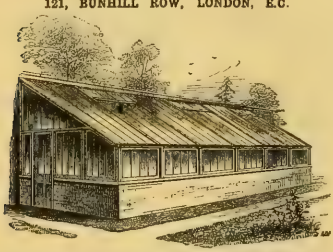


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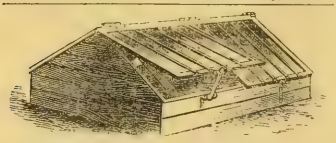
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6 feet long, 4 feet wide, packing cases free				£2 15 0
12 feet long, 4 feet wide,	,,	,,	,,	4 15 0
6 feet long, 5 feet wide,	,,	,,	,,	3 15 0
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The glass is nailed and puttied in.

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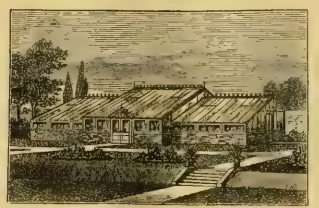
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HEATING APPARATUS.—No reliable price can be given for this off-hand, as the heat required in the different divisions varies so much, but estimates will be forwarded when information is obtained as to the purpose for which the various divisions are to be used.

Length.	Width.	Width of Centre Part.	Price.	
24 ft. ..	8 ft. ..	10 ft. ..	£43 10	
30 ft. ..	10 ft. ..	12 ft. ..	55 10	ESTIMATES
36 ft. ..	12 ft. ..	14 ft. ..	67 10	FOR
48 ft. ..	12 ft. ..	14 ft. ..	83 10	HEATING
60 ft. ..	12 ft. ..	14 ft. ..	100 0	APPARATUS
72 ft. ..	12 ft. ..	14 ft. ..	118 0	ON
84 ft. ..	12 ft. ..	14 ft. ..	135 0	APPLICATION.
96 ft. ..	12 ft. ..	14 ft. ..	151 0	

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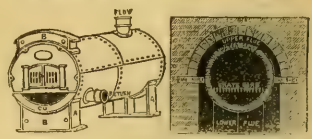


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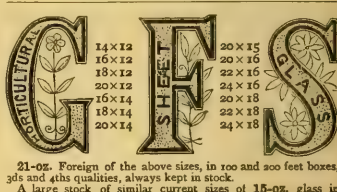


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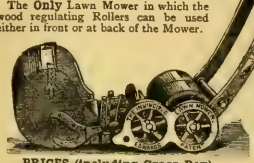
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WHEEL BARROWS.

Horse-Power Lawn Mowers. Side Delivery.

SAMUEL EDWARDS' PATENT.
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The **Only** Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



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PRICES (including Grass Box),

6 in.	7-in.	8-in.	9 in.	10-in.	12-in.	14-in.	16-in.	18-in.	20-in.	24-in	Side Delivery. 30-in.	36-in	42-in.
30s.	40s.	50s.	60s.	70s.	90s.	110s.	130s.	150s.	170s.	190s.	£22	£26	£30

Sole Makers: JOHN CROWLEY & CO., Sheffield.

EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½*d.* per yard; 4 yards wide, 3*d.* per yard; or 2 yards wide, 10*s.* per 100; 4 yards wide, 20*s.* per 100 yards. New TWINE NETTING, 1 yard wide, 2*d.* per yard; 2 yards wide, 4*d.* per yard; 4 yards wide, 8*d.* per yard. COTTON NET, nine meshes to square inch, 1¼ yard wide, 7*d.* per yard run. W. CULLINGFORD, Forest Gate, E.

PURE WOOD CHARCOAL FOR VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES, AND GENERAL HORTICULTURAL PURPOSES. HIRST, BROOKE & HIRST, Manufacturers, Leeds, YORKSHIRE.

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LAND STEWARD, or ESTATE MANAGER; married, without encumbrance.—H. LANE & SON, The Nurseries, Great Berkhampstead, are desirous of specially recommending to the notice of the above, the services of a thoroughly experienced man, having a first-class knowledge of Agricultural and Sanitary improvements, Building, Forestry, Ornamental Planting and Fruit Culture. High reference.

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PROPAGATOR (OUTDOOR).—CLARK BROS. & Co., has now in their employment a young man who desires a change.—W. F., Clark Bros. & Co., Nurserymen, Carlisle.

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JOURNEYMAN (FIRST), in a good establishment.—J. TUBBS wishes to recommend a young man as above. Has had good experience of Plants and Fruit Growing.—The Lodge, Teddington, Middlesex.

JOURNEYMAN, in the Houses.—Age 21; good reference. Abstainer.—H. BAILEY, 8, Princes Road, Norbiton, Kingston-on-Thames, Surrey.

JOURNEYMAN, in the Houses, in a good establishment.—Five years' experience. Good references.—Mr. WARD, The Gardens, Stoke Edith Park, Hereford.

JOURNEYMAN, to work in Kitchen Garden and help in Houses.—Age 21; two and a half years' experience.—H. ISON, Chaffey Row, Fulbourn, Cambridgeshire.

JOURNEYMAN, in a Gentleman's establishment.—Age 20; used to Bothy and Houses. Three years' good character from last place.—C. B., Lake House Cottages, Chiddingfold, near Godalming, Surrey.

JOURNEYMAN, in the Houses, in a good establishment.—Age 23; seven years' experience; three years in present situation. Bothy preferred.—T. SHELBOURN, The Gardens, Belvoir, Grantham.

JOURNEYMAN, in a good Forcing establishment.—Age 20; four years' experience and very highly recommended by late master.—ALBERT KEMBER, Mr. Graham, The Nurseries, Newmarket.

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JOURNEYMAN (SECOND), in the houses. Age 22; can be highly recommended. Good references.—GARDENER, Manor House, Ham, Surrey.

IMPROVER, in Gentleman's Garden or Nursery.—Age 19; four years in last place. Good character.—H. MORRIS, St. Mary's Street, Wallingford, Berks.

IMPROVER, in the Houses, in a Gentleman's Garden, where Gardening in all branches is carried on.—Age 20; three years' reference.—W. L., Long Cross House, Chertsey.

IMPROVER, in the Houses in a Gentleman's Garden, where gardening in all its branches is carried on.—Age 22; two years' reference.—M. LANE, Aspley-Guise, Woburn, Beds.

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GROWER, or HELPER.—Age 20; can Drive well. Country preferred.—H. K., 58, Londesborough Road, Stoke Newington, N.

TO GENTLEMEN'S and MARKET GARDENERS.—Wanted a situation in a Gentleman's or Market Garden. Age 19 next September. Four and a half years in a Gentleman's Garden. Willing to learn.—P. COPELAN, Reading Rooms, Mylor, Penryn, Cornwall.

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To Nurserymen.

NURSERY CLERK.—age 21; good references and experiences.—R., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

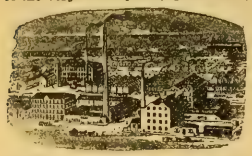
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THE

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GARDENERS' CHRONICLE PRIZES
FOR YOUNG GARDENERS.

The Awards (£10, £5, and £2) will be made known at the meeting of the Royal Horticultural Society, at Liverpool.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE!—COMMITTEE MEETINGS, Fruit and Floral, at 11 A.M., in the Conservatory; Scientific at 1 P.M., in the Lindley Library, on TUESDAY NEXT, June 8.
SHOW OF ORCHIDS, &c.
N.B. Open to Fellows at 12 o'Clock, and the Public at 1 o'Clock.

ROYAL HORTICULTURAL SOCIETY. GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5, 1886.
GREAT EXHIBITION of PLANTS, FLOWERS, FRUIT, VEGETABLES, &c., in the BOTANIC GARDENS and WAVERTREE PARK.
Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.
NOTICE.—Entries close JUNE 21.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
EXHIBITION of PLANTS, FLOWERS, and FRUIT, WEDNESDAY, June 9
Tickets and Schedules of Prizes to be obtained at the Gardens only. Entries should be sent in as soon as possible.

ROYAL HORTICULTURAL SOCIETY.—GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5.
GREAT EXHIBITION of IMPLEMENTS, GARDEN STRUCTURES, TOOLS, and APPLIANCES, in the Wavertree Park.
Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.
NOTICE.—Entries Close June 12.
Applications for Advertisement Space in the Official Catalogue should be made at once to ADAMS AND FRANCIS, Advertising Agents, 59, Fleet Street, London, E.C.

COLCHESTER and EAST ESSEX HORTICULTURAL SOCIETY'S SUMMER SHOW will be held at the "Holly Trees," East Hill, Colchester, on THURSDAY, July 1. Schedules of J. C. QUILTER, Sec.
5, Head Street, Colchester.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.
The SOCIETY'S TWENTY-FIFTH ANNUAL GRAND FLOWER, FRUIT, and ROSE SHOW, and MUSICAL PROMENADE, will be held in the Public Hall, High Street, and Calverley Hotel Grounds (behind the same), on FRIDAY, July 2. Schedules of Prizes and every information connected with the Show may be obtained of the undersigned, to whom Subscriptions and Donations may now be paid.
E. F. LOOF, Secretary.
26, Parade, Tunbridge Wells, May 18.

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MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, June 9.

On view morning of Sale, and Catalogues had.

Wednesday Next.—(Sale No. 7172.)

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY NEXT, June 9, at half-past 12 o'Clock precisely, a very fine COLLECTION of ORCHIDS in FLOWER and BUD, comprising many grand varieties of Masdevallia Harryana, M. roseo, M. ignea, Cattleya Mendelii, splendid forms of C. Mossiæ, C. labiata Warnerii, fine types of Odontoglossum Alexandræ and Hybrids, O. vexillarium, O. Pescatorei, Oncidium macranthum, Cypripedium superbiens (Veitchii), Dendrobes, &c.

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Thursday Next—(Sale No. 7173.)

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MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 10, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, splendid importations of AERIDES SANDERIANUM, ONCIDIUM AMPLIATUM MAJUS (in extra masses), TRICHOPILIA SUAVIS, VANDA BATEMANNI, ONCIDIUM CHEIROPHORUM, EPIDENDRUM STAMFORDIANUM, ANGULOA UNIFLORA, CATTLEYA TRIANÆ (Popayan vars.), ASPASIA species, WARSCEWICZELLA species, ACINETA HUMBOLDTII, a few plants of a probably new CATTLEYA, not seen in flower, ZYGOPETALUM CKINNUM, ODONTOGLOSSUM SCEPTRUM, and O. PESCATOREI, the whole in the best condition. Also several fine ODONTOGLOSSUMS in Flower, &c.

On view morning of Sale, and Catalogues had.

The Third Portion of the Collection of ORCHIDS, formed by the Rev. J. B. Norman, of Whitchurch Rectory, Edgware.

WITHOUT THE LEAST RESERVE.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 17, at half-past 12 o'Clock precisely, the third portion of the above famous COLLECTION of ORCHIDS, including many hundred plants of Odontoglossum Alexandræ (some unflowered), Masdevallias in variety, Cattleya gigas and C. Dowiana, Lælias, and many other ORCHIDS, ANTHURIUMS, &c.

On view morning of Sale, and Catalogues had.

Monday Next.

NEW CATTLEYA, received direct. Collected and sent home by Mr. F. Mare.

MESSRS. PROTHEROE AND MORRIS will include in their SALE by AUCTION, on MONDAY NEXT, June 7, a small but fine consignment of a New CATTLEYA, described as having very large white flowers, with a golden marking in the centre of the lip. Dried flowers will be shown. Also a small importation of CATTLEYA BOGOTENSIS.

On view morning of Sale, and Catalogues had.

Monday Next.

ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will include in their SALE on MONDAY NEXT, a selection of ESTABLISHED ORCHIDS, comprising Cattleya labiata (true autumn-flowering variety), C. Lawrenceana, Cypripedium insigne Chantinii, and many others.

On view morning of Sale, and Catalogues had.

Monday Next.

SPECIAL SALE of IMPORTED ORCHIDS collected and brought home by Mr. C. Patin.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. C. Patin to SELL by AUCTION at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on MONDAY NEXT, June 7, at half-past 12 o'Clock precisely, a large quantity of IMPORTED ORCHIDS, comprising Bollea Patinii, Uropedium Lindenii, (very rare), 200 plants of Lælia Patinii (new), Odontoglossum Patinii (new), producing as many as fifty to eighty flowers on a branched spike, Odontoglossum Wallisii, and many others; an importation of ORCHIDS from Burmah, a selection of ESTABLISHED ORCHIDS, and a quantity of PALM SEEDS in variety, &c.

On view morning of Sale, and Catalogues had.

Wednesday Next.

Last Sale this season of CARNATIONS and PICOTEES, all named; about 500 PLANTS, BEDDING and GREENHOUSE PLANTS, FERNS, PHLOX, choice PANSIES &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above at their Central Auction Rooms, 67 and 68, Cheapside, E.C., on WEDNESDAY NEXT, June 9, at half past 12 o'Clock precisely.

On view morning of Sale, and Catalogues had.

Friday Next.

ODONTOGLOSSUM ALEXANDRÆ, the best type, in splendid condition; CATTLEYA GIGAS, C. MENDELII, ODONTOGLOSSUM VEXILLARIUM.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Shuttleworth, Carder & Co., to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, June 11, at half-past 12 o'Clock precisely, a splendid lot of the above ORCHIDS, in very fine condition; also Oncidium Krameriauum, O. papilio majus, Cattleya aurea and gigas mixed, Epidendrum macrochilum, &c.; direct importations of Orchids from Burmah and the Brazils, and about 100 lots of ESTABLISHED ORCHIDS from a well-known private Collection in Scotland.

On view morning of Sale, and Catalogues had.

Orchids in Flower. Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their next SPECIAL SALE of ORCHIDS in FLOWER will take place on TUESDAY, June 29, for which they will be glad to receive notice of entries in due course.

Friday Next.

ESTABLISHED ORCHIDS from a well known Private Collection in Scotland.

MESSRS. PROTHEROE AND MORRIS will include in their Sale on FRIDAY NEXT about 100 Lots of well-grown ESTABLISHED ORCHIDS, consisting of several plants of Odontoglossum and Cattleya Trianæ, many very fine varieties amongst them; Masdevallias, Oncidiums, Cypripediums, &c.

On view morning of Sale, and Catalogues had.

Nursery and Florists' Businesses for Sale.

TO GENTLEMEN, NURSERYMEN, GARDENERS, and OTHERS.

MESSRS. PROTHEROE AND MORRIS publish a printed LIST, containing over fifty of the above, suitable for large Capitalists or those with a moderate amount at command, and will be happy to forward a copy of the LIST GRATIS on application.

Auction and Estate Offices, 67 and 68, Cheapside, E.C.

Kent, Mottingham (near to Eltham and Chislehurst).

By order of the Morrgagees.

The VALUABLE LEASE of nearly 80 years of the well-known ROSE NURSERY, embracing about 5a. 1r. of productive Nursery Ground, together with Ranges of Heated Glasshouses some 450 feet in length, pits, &c., and a comfortable Cottage Residence with Stabling and necessary Outbuildings. Possession on completion.

MESSRS. BAXTER, PAYNE AND LEPPER will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on WEDNESDAY, June 9, at 2 o'Clock precisely, the above PROPERTY.

May be viewed, and particulars with Conditions of Sale obtained of Messrs. FLADGATE AND FLADGATE, Solicitors, 40, Craven Street, W.C.; at the Mart; and of BAXTER, PAYNE AND LEPPER, Surveyors and Land Agents, Bromley and Beckenham, Kent, and 69, King William Street, E.C.

Elm Lodge, Towcester, Northamptonshire.

HIGHLY IMPORTANT SALE of exceedingly choice and rare EXOTICS, and valuable STOVE, GREENHOUSE, and BEDDING PLANTS.

MESSRS. MACQUIRE AND TARRY will SELL by AUCTION, on THURSDAY NEXT, June 10, in the Gardens of the above Residence, by order of the Executors of the late Thomas Ridgway, Esq., the CONTENTS of GREENHOUSES, HOTHOUSES, and CONSERVATORIES, comprising Pelargoniums, embracing all the most valuable and best known varieties; Polygalas, Calceolarias, Azaleas, Primulas, Euonymus, Lilium auratum, Roses (in pots), Camellias, including Beali, Donckelaari, Albaplena, Valtveradæ De Waldenghea, Cup of Beauty, Imbricata, &c; Orange and Lemon Trees, Epacris, Hydrangeas, Echeverias, Begonias, Caladiums, Orchids, Spiræa japonica, Stephanotis floribunda, Tradescantias, Coleus, Achimenes Fuchsias, Verbenas; very choice Maidenhair and other Ferns and Palms, including Adiantum cuneatum, A. Farleyense, A. gracillimum, Erica Hyemalis, Epacris, Livistona australis, &c; Mosses, and an immense quantity of Bedding Plants including all the choicest varieties. Also the GARDEN VASES, FORMS, GARDEN LIGHTS, MOWING MACHINES, ROLLS, CARTS, HARNESS, TOOLS, and other Garden Requisites.

The Sale will commence at 11 o'Clock.

N.B.—Elm Lodge is but five minutes' walk from the Towcester Station on the Northampton and Banbury Junction Railway.

Further particulars in Catalogues, which may be obtained of the Auctioneers, Northampton.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubra, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

Surrey.

FOR DISPOSAL, the Lease and Stock of a NURSERY situate within 8 miles of Covent Garden. The Nursery contains 2 acres of Ground, containing extensive Glass Erections, well fitted with every convenience, together with Dwelling-house, Shop, and Stabling, and held for an unexpired term of sixteen years at a very low rental.

Apply, N. M., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

To Nurserymen, Florists, and Others.

FOR SALE, or to LET, on LEASE, several ACRES in large or small quantities well adapted for all he requirements as above, and only a few minutes from Hampton Station. Price Freehold from £300 per Acre.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained, gratis, at 67 and 68, Cheapside, London, E.C.

SPECIALTY.—TOBACCO PAPER and CLOTH. Wholesale and Retail Trade Price (very low) on application. Sole London Agent for THOMSON'S VINE and PLANT MANURE. Trade supplied at Manufacturer's Prices. J. GEORGE, 10, Victoria Road, Putney, S.W.

BEST TOBACCO ROLL PAPER and CLOTH, at Lowest Price.

J. DENYN, Manufacturer, removed to 77, Downs Road, Clapton, E.

TOBACCO PAPER, Good and Strong. Price 6*d.* per lb. for Cash.—Apply to THOS. NICHOLLS AND CO., Tobacco Manufacturers, Chester.

TOBACCO PAPER and CLOTH.—Best imported, 6*d.* per lb., 14 lb. 6*s.* 6*d.* Spécialité Tobacco Paper, cannot be surpassed. 7*d.* per lb., 14 lb. 7*s.* 6*d.*

T. HAMBLY AND CO., 2, Thomas Lane, Bristol.

SILVER SAND.—Best, 24*s.* and 30*s.* per truck of 4 tons; Peat, best, 6o*s.*, 8o*s.* and 10o*s.* per truck of 10 cube yards. Orchid and Decorative Moss, &c.

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1st Prize Royal Aquarium 1886
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Silver Medal Royal Botanic Society 1883
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Large Bronze Medal, Royal Botanic Society 1884
Banksian Medal, Royal Horticultural Society 1884

Finest MIXED SEED, containing every shade of colour,

Price 1s. 6d., 2s. 6d., 3s. 6d., & 5s. pkt., post-free.

SEEDSMEN to Her Majesty the QUEEN and His Royal Highness the PRINCE OF WALES,

237 & 238, HIGH HOLBORN, LONDON.

CLEMATIS JACKMANNI ALBA (new).—Strong flowering Plants (4 feet bine), of this free-bloomi g "White Jackmanni," now ready, 3*s.* each, 30*s.* per dozen. Choice varieties of CLEMATIS, in pots, 1*s.* 6*d.*, 2*s.*, to 2*s.* 6*d.* each. The usual allowance to the Trade.

GEO. JACKMAN AND SON, Woking Nursery, Surrey.

Hardy Perennials and Alpines.

Readers of the *Gardeners' Chronicle* should send for the Thirty fi st Annual Edition of

W. THOMPSON'S DESCRIPTIVE CATALOGUE of FLOWER SEEDS, which includes a large collection of the above, with many choice and rare varieties not to be procured elsewhere; all at very moderate prices. 34, Tavern Street, Ipswich.

100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.

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CARNATION "PRIDE OF PENSHURST."—The most beautiful yellow (First-class Certificate Royal Horticultural Society). Vigorous grower, perpetual bloomer, suitable for either pot culture or borders, perfectly hardy, forces well. Healthy, well-rooted plants, established in pots, of this lovely variety, 12*s.* per dozen; sample plant post-free for fifteen penny stamps.

F. WEBBER, Quarry Hill Nursery, Tonbridge, Kent.

WANTED, quotations for White Roman HYACINTHS, CHRISTMAS ROSES, NARCISSUS, DAFFODILS, &c.

MORLE AND CO., Seedsmen, &c., 1 and 2 and 162, Fenchurch Street, E.C.

DAHLIAS, Single and Double, best varieties grown, our selection, 12*s.* 6*d.* per 100, 2*s.* per dozen. Cash.

MORLE AND CO., 1 and 2, Fenchurch Street, E.C., and Child's Hill Nursery, N.W.

Souvenir de Charles Turner (Owen).

NEW DOUBLE IVY-LEAVED PELARGONIUM (1886). A grand new telling variety, of great merit. Flowers large, full, and well formed. Colour deep rose, shaded violet-amaranth. Splendid habit and free bloomer. A decided acquisition. Awarded a First-class Certificate by R.H.S., London, August 11, 1885. Price, 3*s.* 6*d.* each; extra strong, 5*s.*

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To the Trade.

FRESH PALM SEEDS.—Before ordering Cocos Weddelliana, Areca lutescens and rubra (quickest growing), Pandanus utilis, Phœnix of sorts, &c., write for special low offer and samples to

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DAHLIAS.—New Cactus, Pompon, and Single Dahlias, by parcel post or rail. Plants sent [each.

NEW CACTUS DAHLIA, MRS. TAIT, 4*s.* per dozen, 6*d.*
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" " COCHINEAL GENERAL GORDON, LORD LYNDHURST, PRINCE IMPERIAL, 6*d.* each.
DAHLIA CONSTANCE, White Cactus, 3*s.* dozen, 4*d.* each.
" JUAREZI, Scarlet Cactus, 3*s.* per dozen, 4*d.* each.
" PARROT, Scarlet Cactus, 3*s.* per dozen, 4*d.* each.
" Pompon, the finest new varieties, } 3*s.* per dozen,
" Single, superb, the finest varieties, } 4*d.* each.

Terms cash with order.

JAMES HUNT, Nurseryman and Florist, Great Yarmouth.

To the Trade.

RAPE-SEED and WHITE MUSTARD.

HAND F. SHARPE have fine Samples of the above-named Seeds, extra cleaned for seed purposes, and will be pleased to submit them with lowest prices on application.

Seed Growing Establishment, Wisbech.

FOR IMMEDIATE SALE, four dozen Show and Fancy PELARGONIUMS, true to name, all fine varieties, 12. each. Also five dozen Zonal PELARGONIUMS, the best named varieties, 9*d.* each. All the above are strong healthy plants.

Apply, C. BOWMAN, Forest Lodge, Winkfield, Windsor.

PANSIES.—PANSIES.—VIOLAS.—Of all the leading and best varieties of both Show and Fancy, having about 30,000 more than we require for Retail purposes. Just ready for blooming, in strong, healthy Plants, 20 varieties, 12*s.* per 100, £5 per 1000. Purchaser's selection in 50 varieties, 15*s.* per 100, £6 10*s.* per 1000. Package free, and cash with all orders to

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BEDFORD and BEDFORDSHIRE HORTICULTURAL SOCIETY.
ANNUAL SHOW at Bedford, July 14. Special Prizes for ROSES and CUT FLOWERS. Open to all England. Entries close July 6. Schedules and Entry Forms to be obtained of
Stoneleigh, Bedford. HENRY TEBBS, Hon. Sec.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.
A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of
PHILIP MAC MAHON, Curator,
Hull Botanic Gardens.
The following, amongst other valuable Prizes, will be awarded:—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

BEDFORDSHIRE AGRICULTURAL SOCIETY'S SHOW at Luton on WEDNESDAY, July 21.
A GRAND SHOW of FLOWERS and FRUITS, open to the United Kingdom, will be held in connection with the above, when the following VALUABLE PRIZES, amongst others, will be offered:—
10 ORCHIDS. 1st, £10; 2d, £6; 3d, £4.
6 ,, 1st, £6; 2d, £4; 3d, £2.
12 STOVE and GREENHOUSE PLANTS, 1st, £15; 2d, £10 3d, £5.
6 ,, ,, ,, 1st, £7; 2d, £5; 3d, £3.
Also for ROSES, FRUITS, &c. For Schedules and particulars apply to
Park Square, Luton. Mr. S. C. OLIVER, Hon. Sec.

CHORLEY CHRYSANTHEMUM SOCIETY.
ALL CLASSES THROWN OPEN.
The THIRD ANNUAL EXHIBITION of CHRYSANTHEMUMS, &c., of the above Society will be held in NOVEMBER NEXT. Valuable Prizes offered. Schedules and other particulars from
Bolton Street, Chorley. THOS. S. KITSON, Hon. Sec.

NATIONAL CHRYSANTHEMUM SOCIETY.
Schedules for the Exhibition to be held in SEPTEMBER, NOVEMBER, and JANUARY NEXT, at the Royal Aquarium, Westminster, are ready, and will be forwarded free on application. New Members may now be enrolled, and are invited to communicate with Mr. WILLIAM HOLMES, Hon. Sec., Frampton Park Nursery, Hackney, E.
Rule 5:—The subscription shall not be less than 5s. per annum, but members subscribing 21s. per annum and upwards shall be entitled to become Fellows of the Society.

A GRAND ROSE SHOW

WILL BE HELD IN

MALVERN ASSEMBLY ROOMS

AND PLEASURE GARDENS,

On THURSDAY, July 1,

(OPEN TO ALL ENGLAND),

For Nurserymen and Amateurs.

For SCHEDULE of PRIZES and other information address—
THE SECRETARY.

EIGHTY THOUSAND CLEMATIS, in Pots, of all the finest Double and Single Varieties (some of the flowers of which become 10 inches across, and are of every shade, from pure white to the darkest purple), for climbing and bedding, from 12s. to 24s. per dozen, strong plants. Descriptive LIST on application.—RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

CYCLAMEN — CYCLAMEN — CYCLAMEN.—Same grand strain and from the same celebrated growers that I have sent out for the last twenty years, but with all the latest improvements in colour, size, form, and habit. Fine year-old Plants, 1s. 6d. per dozen, 5s. for 50, 9s. for 100, all Carriage free.
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New Chrysanthemum.
YELLOW PETITE MARIE.—This most desirable novelty will be in universal demand when it gets well known. It has been described as the best all-round summer bedding plant in existence. Its dwarf compact habit (1 foot only), freeness of bloom and hardiness will make it an universal favourite. Stout Plants, per dozen, 18s., each 2s. post free.
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CLEMATIS, strong in pots, for Climbing, Bedding and Greenhouse Culture; 70 of the finest varieties, including a large stock of extra strong Jackmanii, if planted out at once will make a grand display this summer; selections, 12s. to 21s. per dozen. TEA ROSES, in pots, best varieties, only, from 15s. to 21s. per dozen.
Descriptive LISTS of above free on application.
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100,000 VERBENAS.—VERBENAS.—Our Verbenas are again this year unusually strong, healthy, well-rooted, vigorous, and clean, quite equal to previous years, which according to testimonials received, show they have given great satisfaction. Purple, White, Crimson, Pink, Rose, and Scarlet, 6s. per 100, 50s. per 1000; in 12 choice Exhibition varieties, 8s. per 100, 70s. per 1000.
Carriage free for cash with all orders to
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AGERATUM, Cannell's Dwarf, 5s. per 100, 40s. per 1000.
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ALTERNANTHERA amœna, A. spectabilis, A. latifolia, A. spathulata, A. paronychioides, A. major, A. aurea, A. amabilis and A. magnifica, 1s. per dozen, 6s. per 100, 50s. per 1000.
DAHLIAS, Single, Double, and Pompons, 2s. 6d. per dozen, 16s. per 100.
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PYRETHRUMS, very choicest varieties, 4s. per dozen.
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PRIMULAS, Double, Rose and White, in 60-size pots, very good, 6s. per dozen, 45s. per 100.
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GERANIUMS, strong autumn-struck plants.
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CHRYSANTHEMUMS, selection of finest named Show varieties, strong, and well-grown, 2s. 6d. per dozen, 18s. per 100, from single pots.
Package free. Plants allowed for carriage. Terms cash.
CATALOGUE gratis.
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Our enormous stock and splendid flowers of Bedding BEGONIAS, unquestionably the best strain in existence, just coming into flower, and will make a display at once. 5s., 8s., and 12s. per dozen; special price per 100 and 1000. Would also be splendid varieties for the Greenhouse. The same with all other Bedding Plants. Low quotation for quantity. Send for a Catalogue.

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ILLUSTRATED CATALOGUE, containing "Hints on Fern Cultivation," 1s.
SMALLER CATALOGUE, of over 1300 species and varieties, including Descriptive "LIST OF NEW, RARE, AND CHOICE FERNS," and "HARDY NORTH AMERICAN FERNS," free on application.

W. & J. BIRKENHEAD,
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Two Prize Medals.

Quality THE BEST in the Market. (All sacks included.)
PEAT, best brown fibrous .. 5s. per sack ; 5 sacks for 22s. 6d.
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PREPARED COMPOST, best } 15s. per bush., 3s. per sack
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PEAT MOULD, „ ..
SILVER SAND, coarse, 1s. 6d. per bush., 14s. half ton, 24s. ton.
RAFFIA FIBRE, best only .. .. .. 1s. per lb.
TOBACCO CLOTH, finest imported .. 84 lb. 28 lbs. 18s.
TOBACCO PAPER, „ (Spécialité) 8d. lb., 28 lb 18s.
MUSHROOM SPAWN, finest Millbrook .. 5s. per bushel.
SPHAGNUM MOSS, all selected, 2s. per bush., 6s. per sack.
COCOA-NUT FIBRE REFUSE (by Chubb's special process), sacks, 1s. each ; 10 sacks, 9s. ; 15 sacks, 13s. ; 20 sacks, 17s. ; 30 sacks, 25s. ; 40 sacks, 30s. Truck-load, loose, free on rail, 25s. Limited quantities of G., special quality, granulated, in sacks only, 2s. each. Terms, strictly Cash with order.

CHUBB, ROUND & CO.,
WEST FERRY ROAD, MILWALL, LONDON, E.

NATIVE GUANO, price £3 10s. per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4s. per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5s.

Extracts from Tenth Annual Collection of Reports —Native Guano for Potatos.—H. S. EASTY, Great Totham, Essex :—"Used for Potatos. Good. Consider this manure about the best for Potatos. Very economical. Took about twenty prizes." Native Guano for Vegetables and Fruit Trees.—J. SMITH, Head Gardener to the Right Hon. Lord Rosebery :—"Used for Pears, Onions, Lettuces, Cabbages, Potatos, Turnips, and Fruit Trees. Onions a splendid crop. Other crops most satisfactory." Native Guano for Vines, Roses, Strawberries, Pot Plants, &c.—J. TOWNSEND, Florist, Putney :—"Used for Celery, Roses, Cucumbers, Tomatos, Chrysanthemums, Pelargoniums, Fuchsias, &c. Excellent results. Best and safest manure I have tried." D. WILLIAMS, Gardener to Lord Wimborne :—"Used for Vines, Strawberries in pots, Peaches, Asparagus, Onions, &c. Very good on all kinds tried." A. F. BARRON, Royal Horticultural Society, Chiswick :—"Without doubt a very valuable manure, and easy of application."—Orders to THE NATIVE GUANO CO. (Limited), 29, New Bridge Street, Blackfriars, London, E.C., where Pamphlets of Testimonials may be obtained.

12-oz. Sample Packets, free by post 12 Stamps.
FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 46s. per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton per Truck, Sample Bag, 5s. ; 5 Bags, 22s. 6d. ; 10 Bags, 45s. Bags included Fresh SPHAGNUM, 10s. 6d. per Bag. SILVER SAND. Coarse or Fine. 52s. per Truck of 4 Tons. WALKER AND CO., Farnborough Station, Hants.

CRESYLLINE
(PATENTED)
WILL KILL
WIRE WORMS,
AND ALL NOXIOUS INSECTS, WITHOUT THE SLIGHTEST INJURY TO PLANTS.
7 lb., 3s. ; 1 Cwt., 22s. Carriage Paid.

PATENTEE and SOLE MANUFACTURER,
W. H. KEYS, Hall End, West Bromwich.

For Perfect Tennis Lawns, Bowling Greens, and CRICKET PITCHES, use
"BELLICIDE," the DAISY and WEED ERADICATOR. Manufactured by HURST AND SON, 152, Houndsditch, London, E. To be obtained (with needful instructions) from all Seedsmen and Florists everywhere. Sample Dredger-canister, 1s. per post.

Thomson's Improved Vine and Plant Manure.
This valuable Manure is made up solely on our premises here. Every Bag and Tin has our Name on it. It can be had from all Nurserymen and Seedsmen, and direct from us, 1 cwt. and over carriage paid.
Our London Agent is Mr. GEORGE, 10, Victoria Road, Putney, S.W.

WILLIAM THOMSON & SONS,
CLOVENFORDS, GALASHIELS, N.B.

SMITH'S WEED-KILLER.
The Original and Only Genuine.


A True Gardener's Friend.
Effectually Destroys Weeds, Moss, Dandelions, &c., on Garden Walks, Carriage Drives, Stable Yards, &c.
For Prices and full particulars, apply to
MARK SMITH,
Manufacturing Chemist,
LOUTH, LINCOLNSHIRE.

COWAN'S VINE and PLANT MANURE.—This is the same Manure as made and sold by us for several years under the name of "THOMSON'S VINE and PLANT MANURE." See testimonials from many of the leading Vine and Plant Growers. Circulars with full particulars on application. Bags containing 1 cwt., 18s. ; ½-cwt., 9s. 6d. ¼-cwt., 5s. ; ⅛ cwt., 3s. ; Tins containing 7 lb., 2s. 6d. ; 2¾ lb., 1s.
THE LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, The Vineyard and Nurseries, Garston, Liverpool.
Can also be had from all Nurserymen and Seedsmen.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

J. JENSEN & CO.'S
NORWEGIAN
FISH-POTASH MANURE.
Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

The Average Manurial Constituents are as follows :—

Cod Fish and Potash. Per Cent.		Herring and Potash. Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15 0
10.0	Magnesia	10 0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt.	of Dried Fish Flesh—Organic Matter.
4 „	of Dried Fish Bone—Phosphates.
3 „	Sulphate of Potash.
2 „	Sulphate of Magnesia.
1 „	of Moisture, and ingredients not of manurial value.
20	

The Prices are £10 per Ton (bags included) for the COD, and £9 for the HERRING, on Rails in the Docks, subject to Discount for prompt Cash.

Retail Prices, Carriage Paid, upon receipt of P.O.O.
IN TINS.—2 lb. for 1s. ; *and*
IN BAGS, 7 lb., 2s. ; 14 lb., 4s. ; 28 lb., 6s. 6d. ; 56 lb., 10s. 6d. ; 1¾ cwt., 20s. ; 2 cwt., 30s. Bags free.

☞ Apply to all Nurserymen and Florists, or to
J. JENSEN & CO.,
10, ST. HELEN'S PLACE, LONDON, E.C.



Sold in Packets, 6d. and 1s. each, and in
Sealed Bags only,

7 lb.	14 lb.	28 lb.	56 lb.	1 cwt.
2/6	4/6	7/6	12/6	20/-

CLAY & LEVESLEY,
TEMPLE MILL LANE,
STRATFORD, LONDON, E.
C. & L. also supply Crushed Bones, Bone Dust, Peruvian Guano, Sulphate of Ammonia, and Nitrate of Soda, in best qualities only.

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE.
4d. per bushel ; 100 for 25s. ; truck (loose, about 2 tons), 40s. ; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack ; 5 sacks 25s. ; sacks, 4d. each.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s. ; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel ; 15s. per half ton, 26s. per ton in 2-bushel bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT-MOULD, and LEAF-MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
MANURES, GARDEN STICKS, VIRGIN CORK, TOBACCO CLOTH, RUSSIA MATS, &c. Write for Price LIST.—H. G. SMYTH, 21, Goldsmith's Street, Drury Lane (lately called 17A, Coal Yard), W.C.

FLIES! FLIES!
ROOMS, GREENHOUSES, ETC., CLEARED
BY USING
MYOCOM FLY GUM,
In boxes, at 1s., 2s. 6d., and 5s.
MYOCOM FLY GUM has for the past six years commanded a large and increasing sale, both in the home and export market. No fly-catcher has ever proved so efficacious, and been received with more approval. The following testimonial has been selected from the great number received during the past six years :—
"Rear-Admiral SAUMAREZ will feel obliged for two more boxes of Myocom—the most perfect fly-catcher he has ever used."
There is nothing to equal it for
FLIES, WASPS, MOSQUITOS, and ALL INSECTS.
Ask your Chemist or Grocer for it.
Wholesale :
THOMAS CHRISTY & CO.,
155, FENCHURCH STREET, LONDON, E.C.
The Proprietors of Oilicure or Mistole, the famous Indian remedy for Rheumatism, all Stiffness, Nerve Pain, &c.

IMPORTANT TO GARDENERS.

BENTLEY'S WEED DESTROYER.
Invaluable for the Destruction of Weeds and Moss on Garden Walks and Carriage Drives.
Particulars sent Post-free.

BECK CHEMICAL WORKS
BARROW-ON-HUMBER, LINCOLNSHIRE.

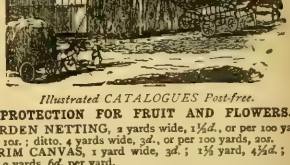
HORTICULTURAL SOILS, MANURES, SUNDRIES, and BERKSHIRE POTTERY. Catalogue Free per post, of every Horticultural Requisite.
BENJAMIN FIELD, F.R.H.S. (Son-in-law and Successor to J. Kennard), Swan Place, Old Kent Road, London, S.E.
Established 1854.

GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water ; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees ; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1s., 3s., and 10s. 6d.

GISHURSTINE keeps Boots dry and soft on wet ground. Boxes, 6d. and 1s., from the Trade. Wholesale from PRICE'S PATENT CANDLE COMPANY (Limited), London.

DARLINGTON BROS.'
ROLL TOBACCO PAPER AND Cloth (English) for Fumigating
is the best, strongest, and safest it is possible to obtain, and contains the pure Essence of Tobacco only. 14 lb , 10s. ; 28 lb., 20s. ; carriage paid to London or any railway station in Kent. 2¾ lb., 2s. 6d. ; 4¾ lb., 4s. ; 6 lb., 5s. ; 6¾ lb., 5s. 6d. ; delivered free to any address in the United Kingdom. Used in Royal Nurseries, the Gardens of the Nobility, by leading men of the Profession, &c. Best and strongest TOBACCO PAPER and CLOTH (imported). 14 lb., 8s. 6d. ; 28 lb., 16s. TRADE INQUIRIES SOLICITED.
Manufacturers, Merchants, and Importers,
DARLINGTON BROS.,
NEW ROAD, CHATHAM, KENT.
Post-office Orders, &c.—DARLINGTON BROS., Chatham.

EXTRA STRONG TANNED NET.—Ripe Fruit, Tennis Court, or Poultry Run, 1-inch mesh, 2 yards wide, 1½d. per yard ; 4 yards wide, 3d. per yard ; or 2 yards wide, 100 yards long ; 4 yards wide, 20s. per 100 yards. New TWINE NETTING, 1 yard wide, 2d. per yard ; 2 yards wide, 4d. per yard ; 4 yards wide, 8d. per yard. COTTON NET, nine meshes to square inch, 1½ yard wide, 7d. per yard run.
W. CULLINGFORD, Forest Gate, E.

HY. VAN & CO.
(The Oldest London House in the Trade, Estd. 1780),
17, Tooley Street, London Bridge, S.E.

Illustrated CATALOGUES Post-free.
PROTECTION FOR FRUIT AND FLOWERS.
GARDEN NETTING, 2 yards wide, 1½d., or per 100 yards, 10s. ; ditto, 4 yards wide, 3d., or per 100 yards, 20s.
SCRIM CANVAS, 1 yard wide, 3d. ; 2½ yard wide, 4½d. ; and 2 yards, 6d. per yard.
TIFFANY, 38 inches wide, in 20 yard pieces, 3s. 6d. per piece.
SHADING BLINDS made up any size.
RICK CLOTHS, TARPAULINS, Corn and Potato SACKS, FLAGS, TENTS, &c., for Sale or Hire.

DRESS MATERIALS

Of the very finest quality, guaranteed, and same as supplied to H.R.H. The Princess of Wales,



Sent direct from our own Mills



To the Public, at a Saving of **30 to 50 per Cent.**



(DARLINGTON MILLS.)

SPECIAL SERGES, &c., for MEN'S and BOYS' WEAR,

LADIES: PATRONISE HOME INDUSTRIES!!

AT the All-England Competition of British Manufactured Dress Fabrics, at the Bradford Technical Exhibition, opened by His Royal Highness the Prince of Wales, **THE PALM WAS WON BY THE GOODS** of **HENRY PEASE & CO.**, the **ONLY GOLD MEDAL** awarded by the **BEST** Judges—**THE CLOTHWORKERS' COMPANY**, London—being received by them.

HENRY PEASE & CO.'S

SUCCESSORS, DARLINGTON,

SPINNERS AND MANUFACTURERS,

ESTABLISHED IN 1752,

Send PATTERNS to any part of the World, POST-FREE,

And pay carriage on all Parcels value £1 to any Railway Station in Great Britain.

At the great Exhibition of 1851, at that of 1862, and at numerous other Exhibitions at home and abroad, **OUR GOODS ALSO ALWAYS RECEIVED THE HIGHEST HONOURS AWARDED.**

Being **BONA FIDE SPINNERS AND MANUFACTURERS**, and supplying the public direct from our own Mills, a Saving of fully Thirty to Fifty per Cent. is effected, while **THE QUALITY OF EVERY YARD IS GUARANTEED** the very best of its kind.

We believe we are within the mark in saying that we are **THE ONLY MANUFACTURERS** in Great Britain who **BUY WOOLS DIRECT FROM THE FARMER, SPIN THEM INTO YARNS, WEAVE THEM INTO CLOTHS,** and then supply direct to the Public.

WE INVITE ALL LADIES to SEND to US FOR PATTERNS of OUR CHARMING

DARLINGTON

GOLD MEDAL

DRESS FABRICS,

Which will be found to answer every requirement of the Season.

The *Daily News* says:—"Englishwomen no longer need patronise the produce of foreign looms, so far as Woollen Textures are concerned. England has outstepped the competitors who were some years ago ahead of her. The **DARLINGTON CROSS-WARP SERGES** are an instance of this. The texture is as soft and refined as anything we have had from abroad, and the union of warmth to lightness, so necessary to health, is in these materials brought to perfection, while the fineness of the wool of which they are composed—English wool, be it understood—imparts to the serges the admirable quality of draping in those soft folds now so essential from the point of view of fashion."

WARRANTED to WEAR and ALWAYS LOOK WELL.

NEW and SEASONABLE MAKES.

ANY QUANTITY CUT, AT WHOLESALE PRICE.

OUR CROSS-WARP SERGES, **10½d.** to **3s.** per yard, are practically Untearable either way of the cloth. Our GOLD MEDAL Cashmeres, **1s. 9d.** to **4s.** per yard; Merinos, **2s.** to **3s. 6d.** per yard; Ottomans, **1s.** to **3s.** per yard; Costume Cloths, **8¾d.** to **4s. 9d.** per yard; Cords, **6d.** to **1s. 6d.** per yard. All the above are plain and coloured. Ocean, Canvas, and Basket Cloths, plain and figured, at **10½d.** per yard. Nuns' Veilings, plain and figured, **8½d.** to **10½d.** per yard; Soleils, plain and figured, **1s. 4d.** to **3s.** per yard.

HENRY PEASE & CO.'S SUCCESSORS,

SPINNERS AND MANUFACTURERS, THE MILLS, DARLINGTON.

Ladies!! Send for Box of Patterns of our Charming Summer Novelties, Post-free.

HUGHES' SOLUBLE FIR-TREE OIL INSECTICIDE

1s. 6d., 2s. 6d., and 4s. 6d. a Bottle; Gallon, 12s. 6d., less in larger quantities.

HUGHES' APHICIDE, 1s. 6d. By post 1s. 8d.

HUGHES' GREEN SHADING 1s., Post 1s. 3d. Also CREAM SHADING. 9d. per Box, per post 1s.

HUGHES' FLORAL CEMENT, in Bottles, 1s. and 2s.

HUGHES' TROPICAL BEETLE POWDER, most effectual in Greenhouses, 6d., 1s., and 2s. 6d. Post 3d. extra.

A TREATISE on FIR TREE OIL as an INSECTICIDE, sent Post-free, on receipt of address, by **E. G. HUGHES,** Operative Chemist, Victoria Street, Manchester. Wholesale from all the London Seed and Horticultural Sundries Merchants, Wholesale Druggists, and Patent Medicine Houses.

PURE WOOD CHARCOAL

FOR

VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES,

AND GENERAL HORTICULTURAL PURPOSES.

HIRST, BROOKE & HIRST, Manufacturers, Leeds, YORKSHIRE.

THOMAS'S GALVANISED WIRE NETTING.

Greatly Reduced Prices per Roll of 50 Yards.



Mesh.	2 ft. wide.	3 ft. wide.	4 ft. wide.	6 ft. wide.
	s. d.	s. d.	s. d.	s. d.
3-in.	3 9	5 8	7 6	11 3
2-in	5 4	8 0	10 8	16 0
1½-in	6 6	9 9	13 0	19 6
1-in.	10 0	15 0	20 0	30 0



STEEL BARB WIRE.

100 yard Reels .. 7s. 0d.
260 ,, ,, ½ cwt. 13s. 9d.
530 ,, ,, 1 cwt. 27s. 6d.

Special Quotations for large quantities.

5 per cent. Discount for Cash with Order.

J. J. THOMAS & CO.,

87, QUEEN VICTORIA STREET, E.C.;

285 and 362, EDGWARE ROAD, LONDON, W.

To Nurserymen, Seed Merchants, and Florists.

J. BLACKBURN AND SONS are offering Archangel MATS lower than any other house in the Trade. Also Petersburg MATS and MAT BAGS, RAFFIA FIBRE, TOBACCO PAPER, and Shading Materials. Prices free on application.—4 and 5, Wormwood Street, London, E.C.

RALPH WALLER AND CO. (Limited), 25, Dale Street, Manchester, MANUFACTURERS of GARDEN NETTING for Protecting Fruit Trees from Frost, and Hothouses, Orchids. Cheap SUMMER SHADINGS, Light and Durable; TIFFANIES.

Samples and Prices on application.

Russia Mats—Raffia.

MARENDAZ AND FISHER can offer the above at lower prices than any firm. To the Trade only. James Street, Covent Garden, W.C.

Those interested in the Proper Growth of Trees, SHRUBS, FRUIT BUSHES, or VINES, should send for our New

ILLUSTRATED PRICE LIST of Tree Pruners, Pruning Hooks, Saws, and Switches. These specialties, with exception of the celebrated "Standard Tree Pruner," are newly improved Tools.

Apply to the Sole Proprietors and Makers, The STANDARD MANUFACTURING COMPANY, Strand Arcade, Derby; or of the principal Ironmongers and Seedsmen.

KELWAY & SON, Langport, SOMERSET,

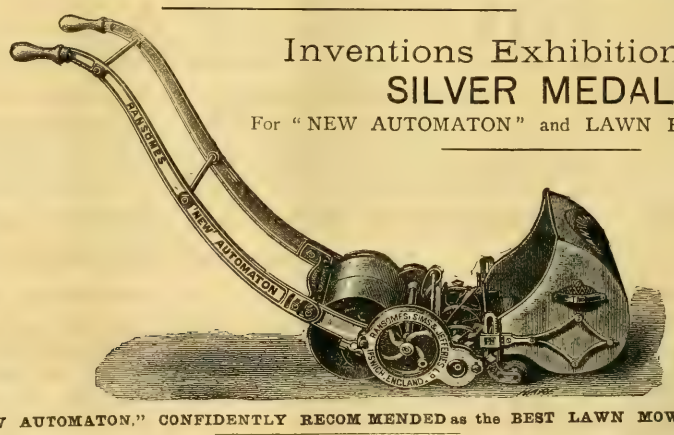
ARE GROWING:—

10,000,000 GLADIOLI (20 acres).
50,000 PÆONIES (5 acres).
100,000 PYRETHRUMS (5 acres).
100,000 HYACINTHUS CANDICANS (3 acres)
50 000 AMARYLLIS.
50,000 DAHLIAS.
50,000 ROSES (TEAS).
50,000 BEGONIAS.
50,000 PHLOXES.
50,000 PENTSTEMONS.
50,000 IRIS.

200,000 HERBACEOUS PLANTS.
10 000 KELWAY'S "MODEL" CALCEOLARIAS, for Seed, now in bloom.
10,000 KELWAY'S "MODEL" CINERARIA, now ripening their Seeds.
10,000 KELWAY'S "MODEL" PRIMULAS, now ripening their Seeds.
KELWAY'S CUCUMBERS, for *Seed*, occupying 20,000 feet of glass.
KELWAY'S "BRUCE FINDLAY" PEA, for *Seed* (10 acres).
KELWAY'S "MODEL" QUILLED ASTERS, for *Seed* (2 acres).

CATALOGUES GRATIS.

RANSOMES' LAWN MOWERS.



Inventions Exhibition, 1885, SILVER MEDALS

For "NEW AUTOMATON" and LAWN EDGE CUTTER.

OPINION OF "THE FIELD," AFTER A SEASON'S TRIAL:—

"It is scarcely possible for us to speak too highly of this machine."

RANSOMES' "NEW AUTOMATON," CONFIDENTLY RECOMMENDED as the BEST LAWN MOWER in the WORLD.

IMPORTANT NOVELTIES for 1886:—

"NEW AUTOMATON," the best gear machine
"CHAIN AUTOMATON," the best chain machine
"NEW PARIS," the best small machine, and
EDGE CUTTER, the best substitute for shears.

R., S. & J., Ld., also manufacture "WORLD" LAWN MOWERS, for long grass and rough work; and PONY and HORSE-POWER MOWERS, for large Lawns, Cricket Grounds, &c.

ALL MACHINES SENT CARRIAGE PAID and a MONTH'S TRIAL ALLOWED.

Illustrated PRICE LISTS free on application to all respectable Ironmongers, or,

RANSOMES, SIMS & JEFFERIES, Limited, ORWELL WORKS, IPSWICH.

GREEN'S PATENT "SILENS MESSOR" AND OTHER LAWN-MOWING, ROLLING AND COLLECTING MACHINES FOR 1886.

The Winners of every First and Highest Prize in all cases of competition.

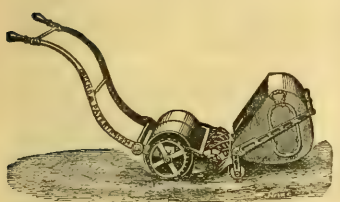
Patronised by—
HER MOST GRACIOUS MAJESTY THE QUEEN on many occasions,
HIS ROYAL HIGHNESS THE PRINCE OF WALES,
THE KING OF THE BELGIANS,
The Late EMPEROR OF THE FRENCH, The EMPEROR OF RUSSIA,
And most of the Nobility, Clergy, and Gentry of the United Kingdom.

Royal Horticultural Society's Show, South Kensington, London, June 3 to 7, 1881. The *"Journal of Horticulture," of June 9, says:*—"MOWING MACHINES.—After a critical examination the Silver Medal was granted to the old firm of world-wide fame, Messrs. T. Green & Son, of Leeds and London. As the Machines are known in all lands where good lawns are cherished, it is quite unnecessary to give any description of them."

Upwards of 130,000 of these Machines have been sold since they were first introduced in the year 1856,
And thousands of unsolicited Testimonials have been received testifying to their superiority over all others.

They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off the highest prize that has been given.

The following are their advantages over all others:—
1st. Simplicity of Construction—every part being easily accessible. 2d. They are worked with much greater ease than any other. 3d. They are the least liable to get out of order. 4th. They make little or no noise in working. 5th. They will cut either short or long Grass, wet or dry.



SINGLE-HANDED LAWN MOWER.

To cut 6 inches,	can be worked by a Lady	Price £1	15 0
To cut 8 inches,	do. do.	2	10 0
To cut 10 inches,	do. by a strong youth ..	3	10 0
To cut 12 inches,	do. by a man	4	10 0
To cut 14 inches,	do. do.	5	10 0

DOUBLE-HANDED LAWN MOWER.

To cut 16 inches,	do. one man on even lawn	£6	10 0
To cut 18 inches,	do. man and boy ..	7	10 0
To cut 20 inches,	do. do.	8	0 0
*To cut 22 inches,	do. two men	8	10 0
*To cut 24 inches,	do. do.	9	0 0

* If made stronger, suitable for Donkey, 30s. extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self Delivery Box, or Side Delivery, with Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness:—

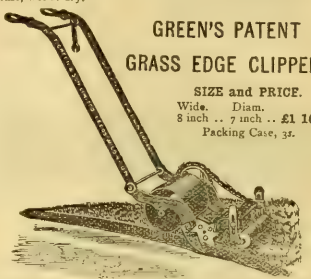
DONKEY and PONY MACHINES.

To cut 26 inches	£14 0 0
To cut 28 inches	16 0 0
To cut 30 inches	18 0 0
Leather Boots for Donkey	1 0 0
Leather Boots for Pony	1 4 0

HORSE MACHINES.

To cut 30 inches	£22 0 0
To cut 36 inches	26 0 0
To cut 42 inches	30 0 0
To cut 48 inches	34 0 0
Leather Boots for Horse	1 9 0

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse; and as the Machine makes little noise in working, the most spirited animal can be employed without fear of it running away, or in any way damaging the machine. Packing Cases as per List, except when for export.



GREEN'S PATENT GRASS EDGE CLIPPER.

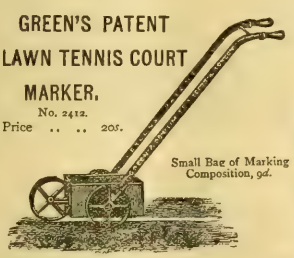
SIZE and PRICE.
Wide. Diam.
8 inch .. 7 inch .. **£1 16s.**
Packing Case, 3s.

Specially designed to meet a want that has long been felt in cutting the overhanging grass on the edges of walks, borders, flower-beds, &c., and do away with the tedious operation of cutting with shears.



GREEN'S PATENT "MULTUM IN PARVO" LAWN MOWER.

PRICES,
With Grassbox.
To cut 6 in. £1 5 0
To cut 7 in. 1 13 0
To cut 8 in 2 0 0



GREEN'S PATENT LAWN TENNIS COURT MARKER.

No. 2412.
Price .. .. 20s.

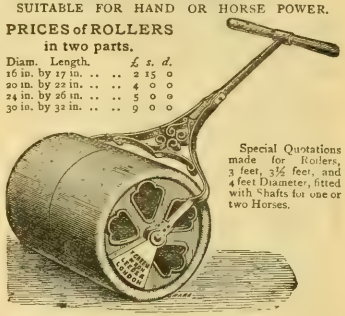
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GREEN'S Patent ROLLERS,

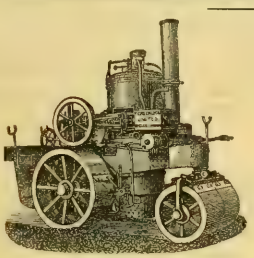
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SUITABLE FOR HAND OR HORSE POWER.

PRICES of ROLLERS in two parts.

Diam.	Length.	£	s.	d.
16 in. by 17 in.		2	15	0
20 in. by 22 in.		4	0	0
24 in. by 26 in.		5	0	0
30 in. by 32 in.		9	0	0



Special Quotations made for Rollers, 3 feet, 3½ feet, and 4 feet Diameter, fitted with Shafts for one or two Horses.



Weight Empty:—
6 TONS. 7 TONS.
Weight in Working Trim, with Water and Fuel:—
7 TONS. 8 TONS.

Green's Patent Steam Road Rollers and Traction Engines combined.

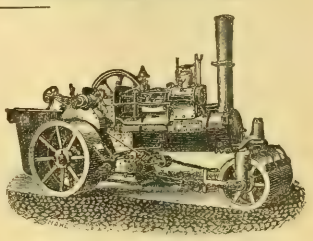
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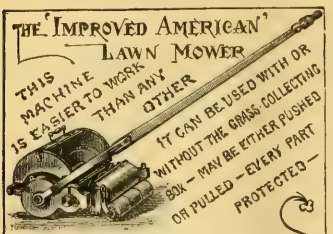
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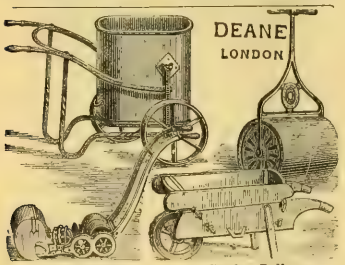


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SIMPLE, EASY, LIGHT & STRONG.



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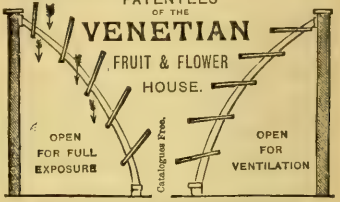

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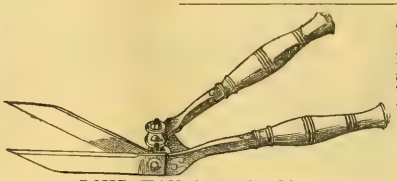
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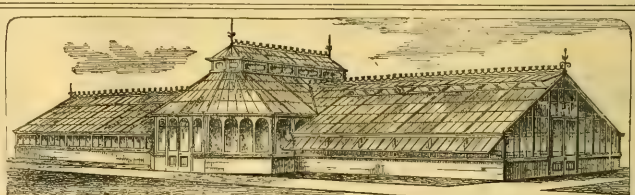
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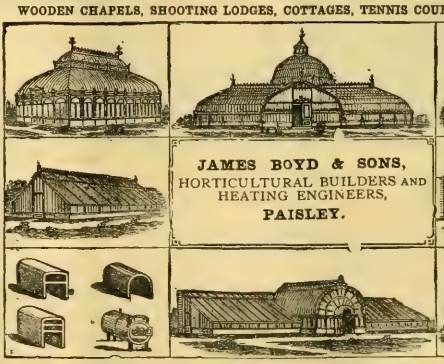
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ROSES in Pots, New Varieties, "Teas," &c.

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Carriage free.
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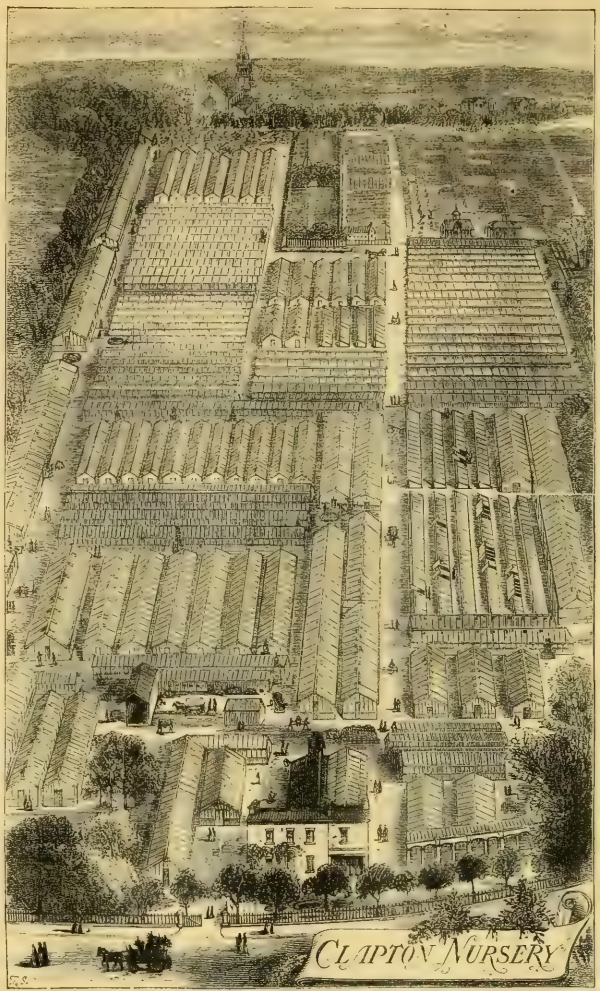
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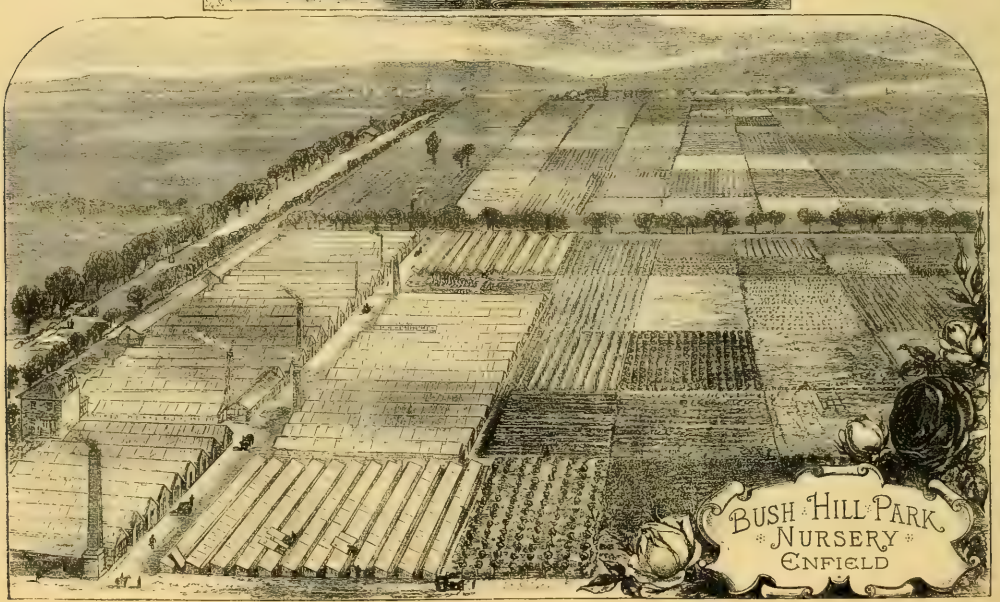
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ANTHURIUM CHELSEIENSE.
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IXORA CONSPICUA.
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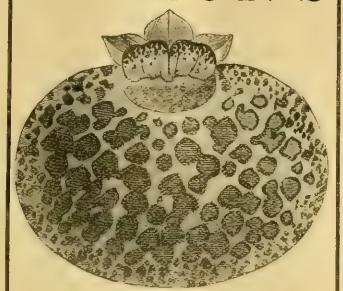
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THE

Gardeners' Chronicle.

SATURDAY, JUNE 5, 1886.

ROUND LIVERPOOL.

HORTICULTURISTS residing in distant parts of the kingdom and who propose to visit the forthcoming Provincial Show of the Royal Horticultural Society at Liverpool, will naturally be desirous of turning the opportunity to account by seeing such places as will give some idea of the state of gardening and the extent to which horticulture in its various branches is carried out in the locality. We therefore purpose giving in our columns a short notice of some of the places that may be taken as representatives of horticulture in this part of the country furnished us by our special reporter who has lately visited the neighbourhood with that object. A journey through the mining and manufacturing portions of Lancashire, as seen from the windows of the flashing trains, that appear to be no sooner out of one town than they are into another, gives the impression that the county is nothing but a succession of human hives clustered over the surface of the land, remarkable only for the endless miles of bricks and mortar broken by forests of towering chimney-shafts, the foul vapours emitted from which might seem to make gardening an impossibility.

Yet an estimate of this kind formed of even the most smoke-begrimed localities around the towns that cluster on the eastern and southern sides of the county would be opposed to facts. What with the merchant princes, the cotton-lords, and their hosts of *employés*, it may safely be said that within a given area there is nowhere else outside the Celestial Empire where such numbers are to be found who make gardening their hobby. The inhabitants of this country are proverbial for their love of gardening, and there are none who possess the means to indulge in the pursuit who have gone more liberally into it than have the merchants and manufacturers of Lancashire. Resident as they naturally are in the immediate vicinity of the towns, where their business lays, and where the value of land is such that a limited number of acres is equal in value to a parish in other parts of the kingdom, the grounds attached to their residences are consequently often much less in extent than where land is cheap. Yet it is a common occurrence to see gardening carried out in the best possible style even though the area occupied is not large. Orchids, specimen stove and greenhouse plants, Ferns, fine-foliage plants, or fruit—some or other of these are frequently taken in hand in comparatively small gardens, and from the skill and undivided attention brought to bear on them are produced in exceptionally fine condition. Of these, as well as such of the large establishments as are within easy distance of the great shipping emporium, we propose to speak briefly from week to week till the date of the show.

KNOWSLEY HALL.

Huyton station, 8 miles from Liverpool on the London and North Western Company's line from Liverpool Central Station to Manchester, is the nearest station to this seat of the Earl of Derby, which is about 2½ miles away. The grounds are extensive and well kept. The park is remarkable in many ways, not least for the scores of acres of Rhododendrons that go on spreading in all directions, coming up from self-sown seeds as freely as weeds, clothing the ground so densely that not a vestige of anything can exist under them in the immense beds they form, and which during the time they are in flower present an expanse of colour impossible to describe. Growing as they do here most luxuriantly their glossy deep green foliage, even in winter, is a noteworthy feature.

The noble piece of water in the park, some 95 acres in extent, is in keeping with the rest of the place. From the roads which traverse the park in many directions the views are extensive and varied. The timber, which, as might be supposed so near the coast, does not attain such dimensions as further inland, nevertheless thrives well, and has a healthy appearance about it. The planting has been skilfully done, the outlines being well arranged, with broad open spaces stretching out irregularly in all directions. The extent of the park will be understood by the length of stone wall —14 miles—that encloses it, and which is high enough to confine the herd of red deer within.

The dressed grounds reach eastward from the mansion over half a mile. Some additional planting which Mr. Harrison has carried out during the last few years hereabouts is a manifest improvement; it consists mostly of various small-growing trees and shrubs, many of which are flowering kinds, and which already enhance the appearance of the place.

Gardening in the several departments of fruits and plants outdoors, as well as under glass, is carried out on an extensive scale, and exceptionally well done. Not the least remarkable of the things which the visitor will notice is the large roomy houses occupied by Vines, Pines, Plums, Cherries, and Peaches. The advantage, especially in the case of the last-named fruit, of houses that are wide enough to allow the trees to extend sufficiently, may generally be seen, where such exist, but never more distinctly than at Knowsley, in the healthy condition of the trees which have room to extend without being annually subjected to the cutting back that becomes necessary in narrow structures.

There are nine vineries, most of which run from 60 to some 80 feet long, and wide in proportion; the Vines collectively are in fine order, carrying excellent crops. Muscats are well done here, and the show of fruit this season is abundant and promising; one of the large houses filled with this variety was in bloom, the condition of the Vines and their general appearance being all that could be deirsed. Of Black Hamburghs the same may be said, the mid-season house, one of the 80 feet divisions, of this most useful of Grapes, in particular looks well, good-sized even bunches, and the Vines in such order that there is little doubt of their finishing right. In one of the biggest houses, that used to be all Black Hamburghs, the Vines have been turned into a mixed lot, having been grafted with Buckland Sweetwater, Muscat Champion, Alicante, Alnwick Seedling, Mrs. Pince's, Gros Colmar, Gros Maroc, Madresfield Court, Muscat Hamburgh, and Ferdinand de Lesseps. Another of the 60 feet lengths is occupied by Black Hamburgh alone. These were lifted last autumn whilst the leaves were green, and they were showing a nice lot of medium sized bunches that will doubtless finish well, as they rarely fail to do after being thus treated. One of the 80 feet by 20 houses is all Black Alicante, showing a beautiful lot of bunches. The two principal Peach-houses, each of which is about 70 feet by 20, contain splendid trees in excellent condition on both the front trellises and the back walls. The Cherry and Plum house, with Peaches on the back wall, is 120 feet long by 15 wide. The trees of the two former fruits consist of a row of standards planted out in the border. This is an interesting house, being, alike in the character of the occupants and its extent, out of the ordinary run. The Cherries have been recently renewed. They are large trees, and have not yet got over shifting into their new quarters.

The cultivation of Pines appears as if it would almost die out altogether in this country, but this noble fruit is still thought much of here. The principal house is some 45 feet by 30, and contains a fine lot of fruiting plants. Cucumbers and Tomatos fill two large houses.

Plants of various kinds occupy a great extent of glass. Amongst Orchids, East Indian, intermediate and cool kinds are grown in considerable numbers for the production of cut flowers. Calanthe Veitchii and C. vestita are represented by a continuous row down each side of a 45-feet house. The size of last year's bulbs gives sufficient evidence of the treatment they get suiting them. One side of the same house is filled with Eucharis amazonica, that here keeps in a healthy, luxuriant condition, with big leaves, deep green in colour. In one of the houses is a grand specimen of Jasminum gracillimum, that produces flowers in such quantities as few plants are capable of. There is a nice collection of Amaryllis, consisting of a selection of named varieties and numerous seedlings. Mr. Harrison is successful with these beautiful bulbous plants, getting them on quicker than used to be looked on as possible. Epiphyllum truncatum, in the shape of large bushy-headed standards, is grown in quantity. Few things are capable of making such a display as this old plant when well managed.

In the cool end of the large conservatory, adjoining the mansion there is a fine lot of Camellias 10 or 12 feet high, planted out, that form dense banks on the side of the walks. Here also may be mentioned a splendid example of Luculia gratissima. Flowering plants are introduced in their season, to furnish the requisite colour. The warm end contains several things not met with everywhere; amongst these is Brownea grandiceps, one of the finest of flowering shrubs for a roomy structure, where there is enough warmth to grow it. Musas, Cycads, Palms, and other large growing things, go to make this house one of the most interesting in the place.

Hardy fruits, in common with the other things grown at Knowsley, are thoroughly well done. There is a large extent of wall covered with various kinds of fruit trees in beautiful condition which bear well. Of Apricots there is a full crop set, with Peaches and Nectarines equally plentiful. An extensive collection of Pears is grown, most of the best varieties, bearing well, not only on the walls, but in the shape of large bushes and pyramids, which occupy the sides of the walks; the same remarks apply to Apples, which, with the Pears, are models of skilful management.

Quantities of Amaryllis Belladonna are planted out in a narrow border just in front of several of the houses, and thrive and flower well.

JACKANAPES "VIOLA."—This seedling variety originated, we are informed, in Miss Jekyll's garden at Munstead. It is exceedingly bright and attractive. The flowers measure 1⅜ inch in their longest diameter. The two upper petals of a rich purplish-brown, the three lower ones canary-yellow, with a few short radiating purplish streaks around the eye. For bedding purposes it would seem well adapted from its bright cheerful look.

New Garden Plants.

ODONTOGLOSSUM MARIOTTIANUM, *Rchb. f.*

MR. F. SANDER kindly sends me a fine-flowered branch of this, received by him from A. H. Smee, Esq., The Grange, Hackbridge, Surrey, differing from the original inasmuch as the sepals and petals bear far larger spots, while the lip has some blotches, one in the fore part of the disc, and the column has fewer spots.

The transverse twisted character, reminds one of Odontoglossum Hallii, but gives it no claim to an especial name. I gladly thank Mr. Sander for the good materials, though a certificate *d'origine* might have proved very acceptable. It is a modern abuse of certain Continental tradesmen to send single flowers, not to spoil the market value of their flowering specimens. And how do such correspondents think it is possible to form an opinion on such material in such an abominable group of creatures, of unknown dignity, obscure origin, and oscillating characters? *H. G. Rchb. f.*

ODONTOGLOSSUM CRISPUM, *Lindl.*

Rev. Mr. Kindleside's striped form. Mr. F. Sander has sent me this twice. Sepals white to lightest mauve; petals with deep purple mauve stripes, partly longitudinal, partly radiating, and numerous cartilaginous teeth on the surface; lip convex, with serrate yellow keels, a brownish blotch in front, and similar stripes on each side; column normal. This year there were fewer teeth on the petals. I most sincerely hope that this trilabellary form may, by-and-bye, return to the normal state. The convex lip and the teeth on the surface of the petals, remind one of the side of a sturgeon. This remarkable plant belongs to Rev. Mr. Kindlesid, Sunbury House, Tunbridge Wells. *H. G. Rchb. f.*

The Rosery.

ROSE JOTTINGS.

THE dread 20th of May has passed without its usual "cold wave," and we are now waking up to the consciousness that the Rose season is close upon us, and that in a month's time we shall be in the midst of the strife, so that all lovers of the Rose like to be reminded that their time is coming.

The extended culture and intelligent interest that is taken in the growth of the Rose are continually suggesting to us new methods of cultivation (if I were to use the horrible cant terms of the day, I should say new departures); but I must own to not a little surprise the other day when visiting the new nursery of Mr. George Mount at Canterbury, he slily asked me, "What is the best time for budding Roses?" "Why, July, of course." "But why? Why not now?" "Oh!" was my reply, "I do not think you would get the bark to rise." "But tell me," he said, "at what time do they bark the Oaks—is it not now? And, as to the bark rising, look here." He took out his budding knife, made the slit as for budding, and nothing could be cleaner than the manner in which it rose. "Well," he said, "I tried it last year." He had a quarter last year of Brier cuttings, and owing to the combined influence of the extraordinary season, and perhaps the inexperience of his budder, there were many misses, and so he bethought himself that as soon as he could he would remedy the loss; he had any amount of buds in his houses, and so if he could only get the stocks thus early he would steal a march, for, starting now, they would probably be as far advanced as would be those budded last July, for to be of real service they must have been dormant all the winter, but then would not the frost injure them? This he had provided against by covering them slightly with long litter. When I saw them (May 19) some had been budded a fortnight. The buds were sound and plump, the shield easily came off, and budding in July could not have looked more prosperous than these.

It will be, I think, seen from this, that Mr. Mount is an enthusiast, and fertile in resources. He is another instance of the way in which the love of the Rose and its successful cultivation will lead a

man much further than he originally contemplated. He was for years an amateur in the truest sense of the term, for he was a blacksmith, and cultivated his Roses at the back of his cottage at Harbledown, close to Canterbury; so successful was he that in one year (1882) from about 400 Rose trees he exhibited twenty-eight times, gained nineteen 1st prizes, seven 2ds, and one 3d, as also a silver cup. Canterbury is early in its time of Rose blooming; indeed, its show is always amongst the earliest that takes place, and hence his prizes were taken in the shows of the latter part of June and the first week in July, but they were certainly marvellous proofs of good culture and assiduous attention. However, the space was too small for his ambition; he was "cribbed, cabined, and confined," and so he took a couple of acres of ground nearer to the good old city, and a very short distance from the station of the South-Eastern Railway. He has had much to contend with in the two dry summers he has experienced since he took the place; but I think now he is surmounting his difficulties, and that he may soon look for a return for his expenditure.

The nursery deserves a few words, for it is a good proof of what energy and good sense can effect. As the Rose was Mr. Mount's first love so it was to have the chief place in his nursery; indeed, it is essentially a Rose nursery, but he was more anxious to make it useful for supplying cut blooms than plants; the prices of plants having so much diminished of late years that there was no great inducement to enter on their cultivation. He therefore laid himself out for supplying cut Roses, and for this object he depended greatly on the Teas and Noisettes, and so his houses were soon planted with them. These said houses are a marvel of cheapness, for familiar with both the blacksmith's and the carpenter's business he has been enabled to erect them at a very reasonable rate. They are glazed by simply laying the squares on putty, and when painted immediately they effectually resist wet. The first house that he built is now filled with some of the most flourishing plants of Tea Roses that I have ever seen. As he knows how invariably sought after is Maréchal Niel he has it in every direction—trained to the rafters of the house, on the walls, on walls outside, in all aspects and on standards in the open. There is a notion which has found favour with some rosarians, that there are strains of Roses: as we know there are strains in Tulips, the same variety being found in the hands of different people, so it is believed it may be with Roses, and I do not see why not. Of climbing Devoniensis, it is well known that there are three distinct forms; one, which is a little more vigorous than the type, another more vigorous and free-blooming, and one that makes shoots 20 feet long in one season, but which is not floriferous, hence there is an idea that a strain known about Canterbury as "Mrs. Cooper" (in compliment to the wife of T. Sidney Cooper, the artist) is a very superior one, owing to its very free-flowering character and the beauty of its foliage; it is this, at any rate, that Mr. Mount favours, and of which he has some magnificent plants, as full as they can possibly be of flower. He has also in this house large quantities of well-known Tea Roses, such as Catherine Mermet, Jean Ducher, Etoile de Lyon, Madame Lambard, Perle des Jardins, Niphetos. When I last saw the house the first crop of buds had been gathered, and the plants were making rapidly a fresh growth, from whence the second crop of buds would be gathered. Then in the second long house he has another crop of plants, which will soon be as large and fine as those in the first house. Outside he has a Tea bed over which lights had been placed during the winter, protecting the plants from severe frosts and winds; these are now being removed, and will furnish blooms before those on the walls, which will again be succeeded by those in the open. It will thus be seen that Mr. Mount has provided for a constant succession of flowers of Tea Roses; and there is little doubt, I think, that in these classes, at any rate, we shall hear of him at our shows.

As Canterbury is thoroughly an ecclesiastical city Mr. Mount has, besides Roses, gone in for flowers for which there is a demand for the decoration of churches, mostly white ones. Large quantities of Narcissus poeticus, the double white Narcissus, Hellebores, Calla æthiopica, white Chrysanthemums, &c., are grown, and find a ready sale. His Chrysanthemums were as fine and healthy a set of plants as I have seen this season, and as they can be housed in one of the Tea-houses before the Rose plants are starting for growth, I have no doubt that they will give a grand display.

I have not noticed the quarters of Roses, hybrid perpetuals and others, but they, too, gave evidence of abundant bloom, and have not been injured by the spring frosts; indeed, it was a noticeable fact, that the frost which took place early in May had been more destructive in his sheltered garden at Harbledown than in the more exposed position at St. Dunstan's, although at the former the position of the garden is higher, and frosts are generally not so destructive on high grounds as on lower ones.

I have coupled these jottings on Roses with Mr. Mount's name, because it is well that it should be known that young and enterprising men are entering on the course over which many have run before them, and that we who love the Rose, and have watched the progress which Mr. Mount has made, hope for his success. There is no diminution in the love for the Rose; and, notwithstanding that many have deprecated the *furore* with which its exhibitors are actuated, and have sneered at the inelegant forms of our show Roses, it is those who thus cultivate it for that purpose who are in truth adding to its popularity. *Wild Rose.*

GRASSES—CHEMICAL COMPOSITION AND AGRICULTURAL VALUE.

(*Continued from p. 818, vol. xxiv.*)

AGROSTIS VULGARIS (Common Bent-grass).—This genus has many species, all characterised by having one-flowered spikelets, and creeping root stocks, which interlace so as to make a very firm sod. Much prejudice, as a rule, exists against the various members of this important genus, which are usually classed as Couch or Twitch grasses, owing to their stoloniferous root-habit, and in dry, light, arable soils they do undoubtedly prove exceedingly troublesome, and also exhausting to the soil. On the other hand, in the best feeding pastures of England, Agrostis constitutes a very fair proportion of the herbage; and it is the opinion of dairymen in those districts that the quantity of butter would suffer by its removal. In wet swampy meadows, lawns, and pleasure grounds, where its interlacing dense creeping roots and thick tufts of radical leaves consolidate the sward, making a firm matting, which prevents poaching, it is rightly considered most valuable.

The principal varieties of Agrostis vulgaris are A. alba (the Fiorin-grass of Ireland) and A. stolonifera, distinguished from the former by its broader foliage, more straggling habit of growth, and its more powerfully creeping roots.

Agrostis vulgaris is generally considered a valuable pasture-grass, although not the best one, cattle eat it readily when mixed with other herbage. The soils and situation in which it is found to thrive best in a natural condition are such as are of a free and porous texture, and well supplied with water. It is not injured by overflows, even though somewhat prolonged.

This species furnishes considerable grazing during the summer months if not too scorching, and also in warm spells of weather in both autumn and winter, but does not produce so much feed in early spring as some others, owing to its lateness of development. Cut before maturing seed it makes good hay, but deteriorates greatly after seeding.

The following table shows its composition at various stages of growth in the water-free substance:—

Percentage Composition of Agrostis vulgaris.

Description.	Protein.	Woody Fibre.	Carbo-hydrates	Fat.	Ash.
Panicle not out	13.19	20.97	53.88	3.77	8.19
,, just visible ..	13.16	20.87	54.13	4.05	7.34
In early bloom	12.73	21.64	54.46	3.62	7.55
In full bloom ..	11.02	22.02	56.82	2.87	7.27
Seed in milk	10.44	19.43	60.02	3.51	6.60
,, hardening ..	9.47	20.66	58.88	4.25	6.74
,, ripe	8.89	21.75	61.32	2.71	5.30

As the question of early or late cutting of grass for hay is one frequently raised it may be stated that young plants are relatively richer in albuminoids, and poorer in fibre and starchy matters than matured plants, and therefore generally more nutritious.

In young plants the albuminoids are formed rapidly, but after blooming these constituents are transferred from the leaves and stems to the seed, and then stored away in the form of carbo-hydrates. At the same time a continual formation of woody fibre goes on in the formation of the plant, so that a large proportion of the increase in the weight of plants after a certain point in their existence is due to this substance.

Alopecurus pratensis (Foxtail-grass).—A perennial fibrous-rooted grass, very similar in the appearance of its flowering spikes to Phleum pratense (Timothy-grass). It is one of the most forward species when fully established; but even under the best management it does not attain to its greatest productive powers after sowing till three or four years. This grass starts in growing very early in spring, and pastures well covered with it will afford a full bite at least one week earlier than those which do not possess it. Hence, Alopecurus pratensis is considered one of the best grasses for permanent pastures, and should never form a less proportion than one-eighth of any mixture of different grasses prepared for mixed herbage.

It does not flourish on very dry soils, but delights in lands of intermediate quality and moisture. It is very nutritious for stock, more so probably than Cock's-foot and common Bent-grass, and withstands the severest frosts. Its tufty detached habit of growth does not render it one of the best grasses for lawns, although frequent mowings or grazing do not injure it, and its early verdure may sometimes be a consideration. The favouring conditions for its growth are hardiness, rapid, vigorous, and early maturity. These qualities, combined with its deep roots, cause it to spread rapidly, and frequently to swamp the smaller growing species.

Percentage Composition of Alopecurus pratens's.

Description.	Protein.	Woody Fibre.	Carbo-hydrates	Fat.	Ash.
Spike just out ..	15.73	28.21	52.16	4.69	9.21
Before blooming ..	13.58	22.40	51.66	4.46	7.90
Just blooming	10.81	23.78	54.30	3.36	7.75
After blooming	8.61	25.36	54.35	3.52	8.17

Anthoxanthum odoratum (Sweet-scented Vernal-grass).—This fragrant, perennial, fibrous-rooted grass is much employed as an ingredient in mixed lawn grasses on account of its dwarf, close habit of growth and its bright green foliage. It grows naturally in dry pastures and soils, and, by its sweet pleasant smell during the process of drying, imparts the peculiar odour to newly made hay.

This species is not considered very valuable for grazing purposes, as it yields but a scanty portion of herbage, but when mixed with other grasses in sheep pastures it is said to improve the quality of the mutton. The characters specially favourable to this grass are its hardy constitution and its early growth, which enables it to compete with many of its associates, and to secure an early crop of seedlings each year, before the usual time of cutting for hay.

Percentage Composition of Anthoxanthum o'oratum.

Description.	Protein.	Woody Fibre.	Carbo-hydrates	Fat.	Ash.
Very young	10.59	17.17	61.58	4.27	6.39
In full bloom ..	9.47	20.63	59.45	3.36	7.09
After flowering ..	13.30	21.17	53.40	4.86	7.27
In seed	7.11	25.00	58.02	4.08	5.79

Festuca ovina (Sheep's Fescue).—This densely-tufted variety forms the great bulk of the sheep pastures of the Highlands of Scotland, where it is the favourite food of the sheep, and where the shepherds believe it to be more nutritious for their flocks than any other. Gmelin says that the Tartars choose to encamp during the summer where this grass is most abundant, because they believe that it affords the most wholesome food for their cattle, and sheep in particular.

Nature distributes this species among dry sandy and rocky soils, where scarcely any other grass would grow. It is without doubt a very valuable variety on dry poor soils and elevated moorish pastures; it being often found 4000 feet above the level of the sea. When once established its dense rooting faculty, its tufted habit and abundant offsets enable it to fight its way among the strongest opponents. The pearl-like mass formed by the species near the surface of the soil enables it to withstand most severe drought, and

its dwarf, close habit of growth in the turf adapts it admirably for lawns and pleasure-grounds.

The following table shows its nutritive value at various stages of development :—

Percentage Composition of Festuca ovina.

Description.	Protein.	Woody Fibre.	Carbo-hydrates	Fat.	Ash.
Very young	14.91	20.31	54.00	4 31	6.47
Before flowering ..	8.75	25.10	57.13	3.61	5.41
In bloom	9.90	23 79	58.20	2.51	5 60
After flowering ..	9 31	23.96	57.09	3 07	6.57

The foregoing data all point to the fact that if the only question were the quality of the fodder, the best results would be obtained by cutting or grazing as early as practicable. But the cultivator of grass herbage has not only to consider the quality of the fodder he grows for his stock, but the quantity of it which he can obtain from a given area. *J. J. Willis, Harpenden.*

(To be continued.)

THE GLOXINIA.

MESSRS. SUTTON & SONS, of Reading, have set apart a considerable portion of their hothouse department in the London Road Nursery, Reading, for the culture of Gloxinias, the principal object they have in view being the production of seeds. They have during recent years collected all the most approved varieties for the purposes of comparison with their Reading strain, to be incorporated with it if the varieties should have—what is considered of primary importance—good habit ; and by discarding every variety that has any traces of weakness in constitution, or even of straggling habit, they have obtained plants of vigorous constitution and uniform habit. The large handsome foliage is quite as striking as the flowers, which are also of large size, good form, and in great variety. I measured some of the flowers, and found them 3½ inches across the mouth of the corolla. One very fine variety had well-formed flowers, scarlet-shaded edge, and crimson throat ; others rich purple, white internally, pale lilac-purple throat, with excellent habit. The spotted varieties are remarkably pretty, but they have not such strong constitutions as the other type ; the habit is dwarf. They have a number of plants of G. gesnerioides, presumably a cross between a Gloxinia and Gesnera ; apparently they are neither more nor less than a bad type of Gloxinia ; they are of a tall loose habit. The Gloxinia is easily propagated from leaves, or even portions of leaves, and a considerable stock of any particular variety can soon be obtained, but those who have once raised plants from seeds and grown them up to the flowering stage will not easily be prevailed upon to grow named varieties. The seeds are all saved from hybridised flowers, as only in this way can great variety be obtained.

The culture of seedling plants consists in sowing the seeds in February—in a hothouse, of course. The best potting soil is leaf-mould, loam, and light peat, in about equal proportions ; some silver sand ought also to be added to it, if necessary. The soil must be kept moderately moist by being sprinkled with water from a fine rose water-pot ; the seeds will soon appear if the seed pots or pans are plunged in a gentle bottom-heat, and a temperature in the house or pit of about 55° at night. The seedling plants, even after the first or second leaves, besides the seed leaves, are formed, are of small size, and as many as twenty-five plants may be pricked out in a large 60-sized pot. From these they may soon be potted off singly into thumb-pots or small 60's, and when well established they grow very freely indeed, requiring soon to be potted again ; they will make fine flowering plants during the season in 5 or 6-inch pots. These seedlings will flower late—plants intended to flower as early as May must be grown from corms that have been preserved during the winter. As I write (May 25) we have some large specimens in 6-inch pots crowded with flowers, these have been kept in a cool house during the winter ; the pots containing the corms were merely laid on their sides or kept in some place where no water could come in contact with the roots. In January they were placed in heat, and as soon as they began to grow they were turned out of the pots, some of the outer soil was removed, and they were again repotted in good rich compost, a fourth part of decayed manure being used with the potting soil of peat, loam, and leaf-mould.

As stated above the plants can very easily be propagated from leaves, these are inserted in pots as cuttings, the leaves will remain green for some time, and a corm will form at the base ; this will remain dormant like the corms of established plants, during the winter, and may be started in the same way early in the year.

All through the growing season the plants require a stove or hot-house temperature, but when in flower during summer, they may be placed in the greenhouse or conservatory where they remain in beauty for a considerable period. *J. D.*

THE HIMALAYAN LARCH.

THE Himalayan Larch (Larix Griffithii, fig. 157) was discovered in the Bhotan Himalaya by the celebrated botanist and traveller, Dr. W. Griffith, whose enormous collections of plants lay, for many years after his death, buried in the cellars of the old East India House, in Leadenhall Street ; nor was the tree known to botanists till it was re-discovered by myself in the East Nepal and Sikkim Himalaya, in 1848. It is the only Indian species of the genus, and it is a remarkable fact that Larix is the only genus of Conifers which is common to Europe and India, and which is not found in the Western Himalaya. The genera are Pinus, Abies, Picea, Tsuga, Cedrus, Cupressus*, Juniperus, Taxus, of which all but Tsuga, Cedrus, and Cupressus occur throughout the length of that vast range, the exceptions being that the first of these is confined to the Central and Eastern Himalaya, and the two others to the western half, as Larix is to the eastern.

Turning now to the distribution of the other Old World Larches, L. europæa occupies a very narrow area, along the great mountain ranges of Central Europe, from Dauphiny to Styria, and is found nowhere to the north or south of these limits. The Siberian Larch, L. Ledebourii, has its western limit in North Russia and the Ural, reappearing Eastward at intervals throughout Northern and Central Siberia, and southwards in the Altai Mountains. L. dahurica begins in the country from which it takes its name, and advances thence eastwards, and no doubt these or other species occur in the mountains of Western China. Thus there appears to be a great gap in the distribution of Larix, extending from Styria to the Eastern Himalaya, for no Larch has been found in Greece, Turkey, the Caucasus, Asia Minor, Syria, Persia, or Affghanistan, but, curiously enough, this interval is to a great extent occupied by Cedrus, which, commencing in the Western Himalaya, is continued on thence to Affghanistan, and reappears in Syria, Asia Minor, and North Africa. When we become acquainted with the geological ages at which these genera first appeared on the globe this fact in their distribution will, no doubt, prove to be of great significance.

The Himalayan Larch (Larix Griffithii, Hooker fil. and Thompson) is a small tree, not exceeding 40 feet in height, with precisely the habit of L. europæa, var. pendula, which it so closely resembles as to have deceived myself and others. It differs from that plant in the very large cones with very long points to the exserted bracts. It is called Sah or Saar by the Lepchas of Sikkim, and Boarga sella by the Nepalese, who informed me that it was found as far west as the heads of the Cosi river in Eastern Nepal. It occurs only towards the heads of the valleys near the snows, many miles from the plains of India, at elevations of 10,000 to 12,000 feet, and where I first saw it it clothed old moraines ; and though subsequently met with on grassy or bushy slopes, it was only when there was much rock and free drainage. The wood is regarded as the most durable of all the Sikkim Conifers, and is easily split into planks, but all of those that I met with were small, soft, white ; I never saw any hard, close-grained red wood, like that of the Larch in Switzerland, which may be accounted for by the extreme wetness of the Sikkim climate.

The cultivation of the Himalayan Larch in Europe has hitherto proved a total failure, at least as far as I have ascertained. I sent quantities of the seed to Kew in 1848, which germinated freely, and hundreds of plants were raised and widely distributed but in every case these succumbed, in a few years, to virulent attacks of Coccus Laricis. Repeated importations of the seed into Kew and elsewhere have met no better fate. I have often been shown L. europæa for L. Griffithii, sometimes with the most positive assurance that the tree was received as such from Kew, but in no instance have these borne the unmistakeable cone of the Himalayan Larch. *J. D. Hooker.*

* Cupressus funebris, though found only in the Eastern Himalaya, is undoubtedly planted there, nor did I see it anywhere but close to temples or monasteries.

MESSRS. JAMES VEITCH & SONS, ROYAL EXOTIC NURSERY.

IT is impossible to visit the great establishment a Chelsea with its world-renowned collection of plants at any season of the year without finding it gay with flowers and interesting with new plants and rare botanical treasures imported from all parts of the world ; but besides these claims on public notice Messrs. Veitch's nursery has another which is now of still higher interest to lovers of beautiful flowers in the extensive collection of hybrid Orchids, greenhouse Rhododendrons, Amaryllis, and other fine plants raised at the nursery, and sufficient in number and beautiful enough in character to form a separate establishment if it were possible to set one apart for them.

THE ORCHIDS,

of which a rich profusion is displayed in bloom throughout most of the numerous houses devoted to them, are marked by a more than usual quantity of new or very rare varieties in flower, among which we noted the lovely Phalænopsis Mariæ, with its ivory-like blossoms barred with violet and crimson ; P. speciosa, in many varieties, resembling P. tetraspis, but more or less tinged with rose, some of the forms being all rose, some white barred and washed with rose, and some rose with white tip to the petals ; the true large-flowered P. sumatrana, and many of the little beauty, P. Parishii, are also in bloom. Cypripedium Schrœderæ, like an immense rose ; and white C. caudatum, and the chaste C. Sedeni candidulum, both Veitchian hybrids, are very striking ; and Cyrtopodium cardiochilum, with its stiff branched spike of bright yellow flowers, a very distinct and interesting plant. Dendrobium mesochlorum has neat white flowers ; D. rhodostoma, white and claret-crimson blooms of almost perennial duration ; Dendrochilum latifolium has handsome dark green leaves, and long drooping sprays of greenish-white flowers, with brown labellum. Cypripedium insigne Sylhetense is the neatest and most lasting of the yellow insignes ; and Cœlogyne Dayana, which is in bud, is a more elegant plant than the Cœlogyne Massangeana. Among rare plants, too, not now often seen in flower should be mentioned a good specimen of the old Camarotis purpurea, bearing sprays of rose-coloured flowers with purple labellum ; the very curious Coryanthes speciosa, and a very interesting set of extremely pretty Epidendrums, most of them delightfully fragrant, but none more so than E. varicosum.

THE LARGE ODONTOGLOSSUM-HOUSE

and lean-to joining it is a glorious sight, with innumerable spikes of Odontoglossum Alexandræ and O. Pescatorei, mingled with the soft rose-coloured O. vexillarium, and heightened by the richly tinted Masdevallias and the massive golden flowers of Oncidium macranthum ; with these are arranged well-bloomed plants of Odontoglossum Roezlii, O. roseum, O. præcitens, O. ligulare, O. citrosmum (in great variety), O. nebulosum, O. cordatum, O. Cervantesi, O. Hallii, O. hystrix, O. cirrosum, O. tripudians, O. gloriosum, Oncidium curtum, O. Marshallii, O. serratum, O. metallicum, O. orientale, O. Jonesianum (a superb variety), O. cucullatum, O. maculatum, some grand forms of the large-flowered, O. crispum, and a very bright display of O. concolor, some of them with six or seven spikes each, suspended all over the roof. Also in bloom with these are Masdevallia Chelsoni, M. Estradæ, M. xanthina, Epidendrum tovarense, E. macrochilum roseum, E. odoratissimum, E. paniculatum, E. vitellinum majus (true), each with six or eight spikes ; Oncidium longipes, the curious twining O. volvox, Calanthe Dominiana, with seven spikes ; Calanthe masuca, C. Textorei, C. veratrifolia, Sobralia macrantha, Lycaste Skinneri, L. Deppei, with over twenty flowers ; a profuse flowering white Lycaste, Miltonia Warscewiczii, Warscewiczella dis-

color, Mesospinidium sanguineum, and many other good things.

The New Cattleya-house

is now perhaps at its freshest and best, clad with the ust expanded blooms of Cattleyas and Lælias, something like a thousand of which are fully open on specimens of fine health and vigour. The large masses of Lælia purpurata, some of which bear a score blooms, are arranged in the middle of the centre stage, and the lovely specimens of Cattleya Mossiæ, C. labiata Warneri, and C. Mendelii are disposed in front of them. Messrs. Veitchs' own importations of C. Mendelii, C. Mossiæ, and C. Trianæ have acquired great renown for excellence, and the quality of those now in bloom will not disgrace them, for all are good, and some are finer than any we have seen. Also in flower among the grand display of Cattleyas are C. superba splendens, C. Skinneri, C. intermedia, C. Forbesii, C. citrina, C. gigas, C. nobilior, Lælia elegans, L. Boothiana, and a fine mass of our old friend Oncidium flexuosum, with numerous slender sprays of its bright yellow flowers, a very pretty and worthy plant still. Cymbidium Lowianum, too, is represented by a fine specimen bearing five spikes of about eighty-five flowers in all, and the whole display is bright and interesting beyond description.

In the numerous other Orchid-houses we note in bloom Dendrobium Schrœderi, a rare white-petalled form of the D. densiflorum section; D. thyrsiflorum, D. Dearei, D. Bensoæ, D. Cambridgeanum, D. Parishii, D. Falconeri, D. chrysotoxum superbum, D. albo-sanguineum, D. crystallinum, D. Jamesianum (true and fine), D. nobile, a handsome specimen or two; Epidendrum evectum, E. Parkinsonianum, Broughtonia sanguinea, Burlingtonia fragrans, Cypripedium superciliare, C. niveum, C. caudatum, C. barbatum Warneri, C. Godefroyæ, C. concolor, C. Argus, C. ciliolare, C. lævigatum, C. seligerum, C. Hookeræ, C. Stonei, C. Dayanum; Cœlogyne Massangeana, Oncidium Krameri, with many flowers on a fine specimen; O. ampliatum majus; Phalænopsis Luddemannianum, P. rosea, P. amabilis, P. violacea, Aërides virens, A. Fieldingii, A. crispum, and numerous other Aërides in bud; Vanda tricolor and V. suavis in quantity; V. cristata, V. Denisoniana, V. teres, Trichopilia crispa, Anguloa Clowesii, Pleurothallis ornata, &c., while every week sees a fresh set produced in flower by the great number of things in this great collection. But, showy and attractive at they are, the Orchids do not merit exclusive attention, for in each department a great display of flowers is to be found.



Fig. 157.—The Himalayan Larch: Larix Griffithii. (see p. 718.)

From a drawing made in Sikkim by Sir Joseph Hooker.

The house in which are the plants of Anthurium Scherzerianum is the most extraordinary sight of the kind ever witnessed, being literally a mass of bright scarlet spathes, thrown up from hundreds of fine plants of selected varieties. Of these the two best are Cypher's variety, which sends its spathes, which often measure 6 inches by 4½ well up above the foliage; and Ward's variety, which is dwarfer in habit but not less showy. A. s. var. Palmeri bears very long, narrrow spathes; A. s. var. album, pure white; and A. Rothschildianum, white, spotted with scarlet. All the varieties here grown are good, and are propagated by division, so that those who know the plant only by the weedy seedlings often seen have no idea of their excellence.

The Gloxinia-house

also has its show, the whole of one side being arranged with some beautiful varieties, among which the pure white, scarlet, and spotted varieties are very conspicuous; the beauty of the flowers being well displayed by a setting of Asparagus tenuissimus, and an edging of Maidenhair Ferns arranged with them. The other side of the house has a good show of varieties of Imantophyllum miniatum in bloom.

Greenhouse Plants.

The show of conservatory plants is made of fragrant batches of Lilium Harrisii, Azalea mollis, Hydrangea paniculata, Blandfordia nobilis, Roses, Ericas, Marguerites, Kalmias, &c., among which the slender sprigs of Aotus gracillima have a very pretty effect.

Pitcher Plants, &c.

The Nepenthes, Sarracenias, and Droseras are interesting as usual, the showiest and best of the Nepenthes at present being N. Mastersiix, and the most rare and curious among the insectivorous plants, Heliamphora nutans, the violet-flowered Pinguicula hirtifolia, and some fine pans of Cephalotus follicularis.

The Fern-houses,

with the planted out rockery at the entrance, are just now looking fresh with the new foliage. A general collection of good things is maintained, such as Gleichenias, Filmy Ferns, Adiantums, and all others useful for general purposes, or desirable on account of beauty and rarity. Among the most striking at present are the new and elegant Gymnogramma schizophylla var. gloriosa, which is also quite a cool-house plant; Adiantum monochlamys, an elegant new cool conservatory Maidenhair, Davallia retusa and Cyathea divergens, two noble plants which are grand either as show, basket, or decorative plants; Lastrea prolifica, a nearly hardy Japanese Fern, with bright blood-red sori on the under-sides of the fronds. A new Todea, intermediate between T. Fraseri and T. hymenophylloides; a grand strain of crested Pteris serrulata, the rare Thyrsopteris elegans, Onychium auratum and the pretty pink fronded Lomaria, L'Herminieri.

In the greenhouses we find in flower some examples of the last stride made by Messrs. Veitch in greenhouse Rhododendrons—the fine double-flowered kinds, the white R. balsamæflorum album, the yellow R. b. aureum, and a new salmon-coloured variety, all with flowers as double as Gardenias. R. Lord Wolseley, with bright orange segments and yellow tube, represents perhaps the finest and freest of the class. Other fine greenhouse plants, in bloom, not generally known are Boronia megastigma, with Violet-scented bronzy flowers; B. elatior, rose; and, finer than all, B. heterophylla, beautiful and fragrant.

In the houses devoted to recent introductions, we note many which appear to be of the kind asked after by two classes of inquirers, viz., those who wish for something fresh to grow on for exhibition, and those who want more variety in table plants.

With regard to the exhibition plants, we must say that fresh subjects might be brought in with advantage, and such plants as Messrs. Veitch's Jasminum

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gracillimum, with its lasting and fragrant white flowers; their Amasonia punicea, with sulphur-coloured flowers and crimson calyces and bracts, only want growing well to make charming large plants; Reinwardtia tetragyna, with large yellow salver-shaped flowers, would also, no doubt, adapt itself; Dieffenbachia Jenmanii, with its ivory-white and green leaves, forming many heads; and Philodendron grandidens, with its noble bronzy leaves, with white veins, would also certainly come in well, and many others might be selected.

With respect to the searchers for table and decoration plants they should secure Panax bipinnatum, Aralia Kerchoveana, A. filicifolia, Anthericum albo medio-pictum, Dracæna norwoodiense, the pretty miniature Caraguata angustifolia, Filicium decipiens. Asparagus plumosus nanus, and A. tenuissimus, as being pretty and suitable plants; and the handsome mauve Impatiens episcopi is very desirable to grow with the scarlet I. Sultani.

The house of Tree Carnations, and the many houses devoted to general stock, are, like all the rest of Messrs. Veitch's establishment, filled with good clean plants, well grown and well arranged.

FORESTRY.

CONSIDERATIONS PRELIMINARY TO PLANTING.

DRAINING should be well attended to, and every foot of wet surface rendered sufficiently dry for the growth of trees. This does not, as is erroneously believed, necessitate the drains being deep—18—20 inches in depth, and 2—2½ feet in width at the top, being usually sufficient for clay, and 24 inches to 3 feet often required for moss. Deep drains are very objectionable in plantations, and where choice can be made, rather keep closer together, and make more of them for the same outlay.

The ground should be very closely examined, surveyed, and laid off, so as to enable the planting to be done in groups—such as soft moss for Norway Spruce, clay for Oak or Beech, gravel for Scotch Fir, loam for Larch, Poplars and hard woods.

All rank herbage should be thoroughly subdued according to its kind. Whins, Broom, Brambles, and such-like may be kept down by close cutting, while Heather and rank grasses are most properly subdued by burning; and where Heath is the principal growth it is to the advantage of the young trees that the Heath be burnt at least three years previous to planting. Next to destruction by rabbits I believe more injury is done to young trees by planting them amongst rank Heather and other herbage than any, if not all others put together. I have repeatedly witnessed plantations linger for years between life and death amongst rank Heather, and could only satisfy myself as to the cause of such unaccountably retarded growth by taking up some of the trees and examining their roots, when I found them so badly rooted that a tree 3—4 feet high would almost have gone into a 4-inch flower-pot without confining the roots, for the simple reason that there were scarcely any to confine. It is sometimes the wisest and best thing to do with a young plantation in that condition to set fire to it and burn off every vestige and to plant it anew with small plants suited to the soil and exposure, &c.

Some years ago a landed proprietor in Aberdeenshire sought advice about a young Larch plantation which he observed was not thriving. The trees were all growing amongst luxuriant herbage, and not a few amongst Ferns, or rather Brackens. We suspected at once what was the matter, and dug up a tree here and there to show what was the cause of the slow growth and stunted condition of the trees. It is from the lower branches that a young tree derives its principal nourishment, and if these are deprived of their vitality from any cause it follows as a natural and certain result that the whole economy of the tree's growth is interrupted, and in many cases the plant is thrown into a state of ill-health or chronic disease. If trees were only grown in accordance with the laws of Nature there would be little or no room for complaints about insects destroying them. Trees, like everything else, have their natural enemies, but a great many insects found on trees, especially of the beetle tribe, are there, not as enemies at all, but from beneficent motives, or at least to do benevolent rather than malevolent work, by putting out of existence trees already diseased, dying, or dead. Paring of the turf is also a plan often adopted and highly commendable, and when burning the surface is impracticable this is the best alternative system to adopt.

Boring the ground by means of the forester's footpick may or may not be considered a preparatory work, but rather an actual part of the planting itself. Be this as it may, it is generally done before the plants are put into the ground, although it can be done afterwards, as it sometimes is, and with very satisfactory results.

Another, and by no means unimportant consideration, preliminary to planting has reference to ornamental effect in the flat, tame landscape. Mountainous and hilly ground so very naturally indicates how and what to plant, that less consideration is there required than when the surface is uniform and level. The plain, however, usually consists of more fertile and valuable land than the mountain, and therefore the area that can be afforded for planting is correspondingly less. There is, however, in the plain a compensation for this of no small magnitude, namely, every single tree so situated imparts to the landscape an effect equal, and often much superior to, a large area on the hill. From this it is not to be inferred that the plantation on high ground is not a prominent and commanding object, and usually seen from a greater distance than a tree on the plain; but what is here meant is, that a row of trees stretching across a plain district of country, or even a small group or a single tree, adds much more to the clothed appearance of the landscape viewed from nearly the same level, than an infinitely greater extent of plantation would do in an undulating district; it should therefore be kept in mind in preparing for planting what the real and true effect will be on level ground when the trees are grown up, in comparison with what is produced in a mountainous district, and that an acre, or even a single tree on the plain, is equal to many on the mountain side. *C. Y. Michie, Cullen House.*

Orchid Notes and Gleanings.

AGANISIA CŒRULEA, *Rchb. f.*

THIS, the Acacallis cœrulea of Dr. Lindley, is, no doubt, the best Orchid gathered by Dr. Spruce. It was found on the Rio Negro in 1851 by this excellent traveller, and is his No. 1790. The plant has strong creeping stems and large pyriform monophyllous bulbs. The leaf is rather similar to that of a Stanhopea. On the side of it comes from the axil of one of the lower sheaths a strong slender peduncle with usually two, rarely three flowers. And those flowers are quite peculiar and very large. Sepals cuneate, oblong acute, concave, with an indigitation of a keel on the back. Tepals cuneate, elliptic, apiculate. All are yellowish and light blue inside, and light blue outside. The lip is placed under the abrupt free end of a stalk descending from the column. Its bidentate side laciniæ are erect, and have a pouch between them, whose entrance is nearly closed in front by a plaited cartilaginous callus much in the way of the calli of Pescatoreas. In front of this callus stands a lamella running out into three teeth. The blade of the lip is quite transverse, reniform, undulate at margins, brown, or bordered with light ochre. The callus is of a not very bright but rather ochraceous orange colour. Column strong, trigonous, with two large, nearly square wings at the sides of the stigma, yellowish-white with some blue tints on the wings inside, outside, and at the back. Anther transverse with a little gibbosity on its top. Pollinaria two pairs on ligulate caudicula with a large glandula of dark colour.

I have an excellent description made *in loco* by Spruce, who says the stems, which creep over trees, especially decayed ones, are half a finger in thickness. The racemes were observed to bear as many as nine flowers. Dr. Spruce adds to his excellent note:—"Description drawn up from fresh specimens, September, 1851, but neither so full nor so clear as might be desired." I wish there were more Spruces! What a difference between the results obtained by a *savant* like Dr. Spruce, or a Hildebrandt, and those of a fine youth, who, after having squandered some hundreds, comes back with empty hands, or of one who finds an immense cargo of Epidendrum cochleatum and Brassia caudata!

The sketches made by Dr. Lindley are admirable, as I am able to state, being able to control the work made from pressed flowers, by having fresh flowers before me. The pollinarium seen by our excellent monographer appears, however, to have been ill-formed, as it does not answer what I saw in various instances having better materials.

The plant has been much desired a very long time. Aganisia Oliveriana and some minor species gave evidence of the possibility of their being grown. At length it flowered, not in England, but in the United States. It was sent me by Mr. W. Grey, gardener to Mr. E. Corning, Kenwood, Albany Co., New York, as early as 1882. Mr. Grey bitterly complained of the bad condition of all the plants obtained by Mr. E. Corning from Mr. Morris, his especial Orchid collector. Mr. Morris told Mr. Grey the root-stock was often 20 feet in length, its ramification giving the impression of latticework. A glorious sketch in colours was added, signed E. K. Bailey, quite an accomplished work of art. The peduncle is represented deeply reddish-brown. The colours are very bright, no doubt owing to the fine intense light of New York.

And in August, 1885, it came from Old England. Mr. Bull sent me a fine raceme, grown by Mr. Walter Holland, Linwood, Mossley Hill, Liverpool. This gentleman was so kind as to send me a second fresh inflorescence, that arrived, to my great regret, during my absence in August. Mr. Walter Holland intended to let me have an opportunity of seeing that the newly-opened flowers are of far deeper blue. I waited for a fresh supply, several of those beauties having been sent by a much promising intelligent collector, Herr Emil Bungeroth. I believe the plant will flower soon in the old establishment of Director Linden at Ghent, since M. Lucien Linden lately wrote to me about it. *H. G. Rchb. f.* [M. Bungeroth, the collector mentioned by Professor Reichenbach, was in the employ of the Liverpool Horticultural Company (Cowan), and was sent as a private venture, by the chairman of that company, to the Rio Negro district with Mr. W. Holland, and one or two others. Subsequently he travelled for the company, and afterwards for the Compagnie Continentale. He may be expected to enrich our collections with other new and choice Orchids. ED.]

DISA GRANDIFLORA.

This handsome South African Orchid is rather eccentric in its habits, refusing to grow under the most careful management, and growing as freely as the commonest plants in the garden when the treatment has been the same. I shall not soon forget the gorgeous display of bloom and very vigorous plants in the gardens at Chatsworth; they were growing with Cape Heaths, the house being freely ventilated above and below. I fancy the low-lying position of the gardens there and the moist atmosphere just suits the plants. They also succeed remarkably well in several gardens near Dublin, especially at the Glasnevin Botanic Garden, in quite cool houses. In our dry district in Essex we have quite failed to grow the Disa grandiflora under similar conditions. Mr. John Ward, of Leyton, who seldom failed with anything he took in hand, could not grow the Disa. We both tried it in every conceivable way, but without success. I was greatly pleased to see a number of plants of it growing with remarkable vigour in the cool Orchid-house of Mr. Augustus Sillem, Laurie Park, Sydenham. The gardener had placed the plants where they received all the draughts from the opening and shutting doors. They are potted in the usual Orchid compost of peat, sphagnum, and potsherds, with a little charcoal added. It is encouraging to see this beautiful terrestrial Orchid growing so freely near London. *J. Douglas.*

ODONTOGLOSSUM RUCKERIANUM, *Rchb. f.*

Mons. D. Massange de Louvrex's form. I have lately received part of a fine inflorescence, with four very well developed flowers, the lips of which would be quite the usual ones were they not very wavy, which gives them a very fine and novel impression. It was kindly sent me by Mons. D. Massange de Louvrex, of Baillonville, who tells me that he has now 1200 to 1500 flowers of Cattleyas open! *Ça commence! H. G. Rchb. f.*

FAILURE IN ORCHID CULTUE.

Many persons get disheartened through failures in their attempts to grow Orchids, and give up their cultivation in despair. Some of the causes of disaster

are very simple, such as imperfect drains in a house, the noxious gases arising from which are most injurious to plants, causing the foliage to go bad, and the blossoms, if any, to become poor. We knew a gentleman who dismissed several gardeners, thinking they could not grow Orchids and other plants, but at last he found out that the sole cause of failure was that the stables were close to the Orchid-house, and that the effluvia from the horses penetrated through the walls into the houses. This went on for some time until the discovery was made, and then the walls were cemented, after which, to the proprietor's astonishment, the plants began to grow freely, and he now hopes to succeed, since the evil is remedied. We have also heard of failures through putting the boiler under the house.

All may go well for a time, but in a little while the smoke and sulphurous fumes will begin to penetrate through the brickwork, and destroy the plants. This may soon be remedied by taking out the boiler, and fixing it in a separate place outside the house. Some persons think that by having them under the houses room is saved and the heat economised, but it is a great risk to run, and, even if it does answer, very little room is gained. We advise all growers to guard against such calamities by ascertaining, before building their houses, if there are any drains running through the spot likely to give off effluvia injurious to the plants. We once knew of a case where many plants were spoiled through a drain being broken into, and it was not discovered until too late to stay the evil. The only practicable remedies were to alter the drains, or remove the house into another part of the garden; the former was done and the plants soon made rapid progress, and the proprietor was induced to go on purchasing more, until he made a fine collection. There is no doubt many an Orchid grower has given up in disgust through these and other failures, instead of, as we have often recommended, calling in some one of experience to try to ascertain the reason of the damage, for two heads are generally better than one. If the cause of the mischief cannot be found out at the first consultation, try another expert, and persevere until it is discovered. *B. S. W., in "Orchid Album."*

Maxillaria Sanderiana.

This truly handsome species is now in flower in the garden of Mr. Dorman, The Firs, Sydenham. Its flowers resemble in form those of M. grandiflora, but are as large again; the pure white sepals and petals are irregularly stained with crimson-maroon at the base; the lip, both internally and externally is blackish-maroon. It was first exhibited by Baron Schröder at the Orchid Conference, and gained the award of a First-class Certificate. It was introduced by Mr. Sander, but not in quantity. Probably it is scarce in its native habitat. It is grown in a house with a temperature between the cool-house and that adapted for Cattleyas.

Cattleya Mossiæ at Bridge Hall, Bury.

The first time I saw a flower show at which Orchids formed a leading feature was at the Royal Botanic Society's Gardens, Regent's Park, in the year 1851. I have a very lively recollection of that display at the present time. Since that period I have seen all the most important Orchid displays held in this country and on the Continent, and have had something to do in the management of a few of them. One has often heard people say, "I never expect to see such a sight again." I have myself said so. When the Psalmist said that "All men are liars," we are told that he said it "in haste," and so I found that I had been premature in saying, "We shall never see the like again." I have recently seen a more gorgeous sight, the time was Wednesday, May 26, the place the garden at Bridge Hall, Bury, the residence of O. O. Wrigley, Esq. In a lean-to house about 30 yards long and 12 wide, about 350 plants of Cattleya Mossiæ were grouped together bearing about 1500 flowers—and such flowers and such varieties!—I never saw their size surpassed. I never saw such varied and magnificent varieties. If this collection were in the hands of some of our enterprising vendors we should have at least fifty distinct names given to the various plants. Mr. Wrigley derives much pleasure in the cultivation of his plants, and is always glad for any person having the appreciative faculty to see them. *Bruce Findlay, Manchester.*

THE NARRAS PLANT.

In reply to your request in the *Gardeners' Chronicle* of April 3, p. 436, for further information on this plant (Acanthosicyos horrida), the very peculiar Cucurbitaceous plant of South Africa, I may say first of all that I have tried many times at Paris, and at Antibes, to cultivate the Narras and with no more success than has been obtained at Kew. The seeds germinate easily, but the plants invariably perish when they are 1 or 1½ foot in height. I have dried them for my herbarium as memorials of my want of success! It now seems evident to me that the Narras cannot be cultivated in Europe, no matter what may be done to make it succeed, after what I have been told by a French missionary, Père Duparquet, who has lived many years in Dammara Land, where he studied botany, and who, I believe is now in the Cape Colony.

This is what Mr. Duparquet wrote to me three or four years ago:—"The Narras plant is a most remarkable dicœcious Cucurbit, which grows on the sandy downs on the sea coast between Angra Pequeña and Fish Bay. Without any leaves and with double spines, which are studded all over its branches, it forms impenetrable bushes, which spread widely and attain the height of a man. These bushes are covered with very numerous fruits, which are very refreshing and wholesome. The Hottentots say that they grow fatter when they feed on them. These fruits are of the size of a small Cantaloupe Melon, and covered with bristles like the fruit of Datura Stramonium. Before ripening it is of an excessively bitter flavour, but when mature it becomes yellow, and when opened the pulp may be easily separated like that of an Orange; it is white, delicate, and reminds one of a Water Melon, only it is much better. It can be eaten fresh or dried for preservation. The seeds are equally good, and make a delicate dish. They may be eaten raw, but the Hottentots usually boil them."

Mr. Duparquet has counted 200 fruits on a single plant. He has been told that there are two crops a year, and the quantity of alimentary substance which it produces may be judged from that fact. Without this plant the existence of man would be impossible on this coast where it never rains. The plant is vigorous, and always grows at the foot of the downs, where the sand never covers it for a long time at once. When blown about by the wind it settles on these plants, which spring through the bank like Asparagus. The Narras also grows on the summit of the downs, which are sometimes 50 feet high, and literally covers them with its succulent fruits. The underground stem is of the thickness of a man's arm, and throws out immense roots to seek moisture in the depths of the sands. Mr. Duparquet measured one root which the wind had uncovered: it was over 325 feet in length! The whole plant—branches, spines, flowers, and unripe fruit—is of a pale green colour, finely striped with white. The roots are very bitter, and covered with bundles of hollow fibres, which recall those of Nuphar and of the Nymphæas. The wood of the stem, if I may give it that name, is very soft, something like that of Sechium edule.

The Narras plant lives well without any rain, but it must have underground moisture, which may even be brackish. As to sea-water, Mr. Duparquet does not know if that suits it. All the plants which he saw were a quarter of a league from the sea.

It seems very probable that the Narras may become an economic plant if cultivated in sunny places and in climates like that in which it is found wild—for example, in the sands of Egypt, on the borders of the Suez Canal, in the Sahara, Arabia, &c. In all these cases experiments should be conducted in the regions of Algeria which are near the Sahara, a district of sandy downs, which the winds of the desert insensibly displace, but none the less surely. This mobility of the sands is one of the drawbacks of the country. Entire oases have vanished under its encroachments. Pits have been filled up, and even towns and villages have been obliged to protect themselves from the accumulation of the sands by planting shrubs, such as Tamarix, Zizyphus, Pistacia, &c., which have no other use whatever. The Narras of Caffraria, if it could be naturalised in such places, would render the greatest services, first, by most effectually stopping the movement of the downs; and secondly, by producing fruits which in that torrid climate would be most welcome. *Ch. Naudin, Antibes.*

[We avail ourselves of the opportunity to lay before our readers two illustrations of this remarkable plant, destined, it would seem, to be of so much value in certain hot, arid countries. Fig. 158, p. 722, shows a seedling plant, with its two melon-like cotyledons, and spiney branches, a portion of the inflorescence, and a ripe fruit. These are taken from Dr. Welwitsch's original illustrations in the *Transactions of the Linnean Society*, 1869, vol. xxvii., p. 31. Fig. 159, p. 723, shows the characteristic growth of the plant, and is taken from a photograph, obligingly furnished us some years ago, by the Rev. Dr. Brown, whose efforts to promote the welfare of South Africa and its inhabitants were as unremitting, at one time, as his efforts to promote the cause of rational forestry have been later. Welwitsch speaks of the mounds formed by this plant as 5—7 feet high, and consisting of blown sand, penetrated in all directions by the spiney branches of this plant, which protrude from the surface of the mound, like so many spines from a hedgehog's back. A resinous juice exudes from the plant, which still further helps to consolidate the sand. The flowers are yellow, formed after the general pattern of those of the Cucumber or Melon. The fruit is orange-coloured, with a juicy pulp, invaluable in such countries, but, like other things, to be partaken of with due moderation. Ed.]

The Flower Garden.

The past two weeks have been too wet for planting out, except on very light soils. Nothing is gained by placing plants in uncongenial soil, and positive injury results from working with stiff soils when in a state of saturation. It is much better to delay all such operations until the ground gets into proper form.

Carpet Bedding.

This may be proceeded with, but Coleus, Iresines, and the more tender plants had better be kept back a little longer. Where the soil is cold and heavy, such things as Coleus, Iresines, and Alternantheras will be much benefited by having the soil removed a few inches in depth, and substituted by a compost of leaf-soil and spent Mushroom-bed manure, with an addition of old potting material sifted through a half-inch riddle. This will give an increase of temperature at the roots, which preserves the plants from shedding their foliage. Iresines, Verbenas, and Asters are very liable to attacks of greenfly. Shortly after being planted out, insects should be rigorously kept in check by the use of tobacco-water applied with a syringe, or they should be dusted with tobacco-powder. If the latter be used it must be syringed off, as if allowed to remain it disfigures the foliage.

Hardy Plants.

All the hardy plants which have been used for filling the beds during the winter should, as they are removed to make way for the summer occupants, be divided and planted in the reserve garden in readiness for the next season's work.

General Work.

Dahlias must have the stakes put in when planted, and should be securely fastened to them. Stake Carnations as the flower stalks run up. These must be tied very loosely; room enough for the finger to be pushed through the loop should be allowed, otherwise they are liable to have the flowers broken off. Pick off seed-pods from Violas, in order to prolong their season of flowering. The cones should be removed from young Coniferæ, and duplicate leaders should be cut out. Where the side shoots are straggly and out of proportion they may be slightly trimmed back.

Lawns.

Constant attention to mowing of lawns will be requisite in order to keep them smooth and velvety. This is a difficult matter at this busy season. As opportunity offers remove all coarse grasses, plantains, and other weeds, as they soon overrun the lawns if not kept in check. Some of the coarser growing grasses, in spite of the best management, will get beyond the power of the mowing-machine, and it will be necessary to cut them off with a scythe previous to mowing. Keep the edgings neat and trim, and frequently roll the walks to keep them smooth and firm. *W. M. Baillie, The Gardens, Luton Hoo.*

PLANTS AND THEIR CULTURE.

GREENHOUSE.

ALL the late Azaleas which have only just finished flowering should be potted on at once if required. The whole stock should have a growing temperature of 60° minimum; using the syringe freely morning and afternoon, and shuting up early with sun-heat. When the plants have once got properly rooted in the new soil under the above conditions they will make rapid progress. If it is not desirable to shift on the plants for various reasons, such as a desire to keep them in small pots for furnishing work or as specimen plants of an allotted size, they should be regularly supplied with artificial manures, but if some of the plants show any decrease of vigour under this treatment they should be turned out of their pots, the ball reduced by cutting a third off the bottom and also by cutting down its sides, and then repotting the plants in the same sized pots. The early started plants will now have made their growth, and should be placed so as to get more air, in order that their wood may be thoroughly ripened. I never place Azaleas outside, it is much better to keep them under cover the whole year round. Camellias which are in active growth must have an abundant supply of water at the roots, with an occasional dose of soot-water, which is a fine fertiliser. Pelargoniums must have the shoots tied in and the bloom spikes regulated and be kept near the glass; if put on low stages the shoot and blooms in a short time run up splendidly. Lapageria shoots will require regulating, otherwise they will get so entangled that it becomes a matter of impossibility to take them down at any time without breaking a great number of them.

CONSERVATORY.

This should now be gay in the flowering section with the best varieties of Fuchsias, Ixoras, Gloxinias, Tuberoses, Celosias, Begonias, Impatiens, &c. A quantity of Palms, Dracænas, Crotons, Aralias, &c., may be taken out of the intermediate-house or pits, and brought to this department and more room will thus be given for other growing plants. Sweet-scented plants are always sought after in this house, therefore there should be a good supply of such things as Mignonette, Sweet Verbenas, Musk, Heliotrope, &c.; these mingled with Smilax, Panicum variegatum, Ficus repens, Tradescantia, and scarlet Tropæolums, as draping plants, have a telling effect when arranged along the stage front. All creepers and trailers on the roof and pillars will require an abundant supply of water at the roots now, as they are in full growth; the shoots should be regulated as to space, tied in where required, but always bearing in mind not to tie too closely, as everything in a conservatory should have a nice graceful appearance, without interfering with other occupants; these remarks apply especially to Tacsonias, Cobœas, Bignonias, Trachelospermums, &c. There is usually in these structures a shady and cool corner where Ferns in variety and foliage Begonias can be used with good effect, and make a break in the general decorative work.

ORANGE TREES.

Where planted out and carrying heavy crops of fruit these will be much benefited by having a watering or two with liquid manure. *A. Evans, Lythe Hill, Surrey.*

FRUITS UNDER GLASS.

PEACHES.

HOUSES in which the fruit is ripe and ripening should, if not already done, have a piece of soft netting looped up here and there underneath the trees, to catch any fruit that may chance to fall, as well as to prevent them from knocking against one another in the netting. Grass cut from beneath the trees and dried in the sun prior to putting it underneath the trees in sufficient thickness to prevent the fruit from being injured in falling, answers admirably for this purpose, being soft and elastic. Give abundance of air day and night when the weather is at all favourable, and do not allow the trees to suffer for want of water at the roots, but give only clear water after the fruit begins to colour.

SUCCESSION-HOUSES.

Trees swelling their fruit should, if the drainage be good, have copious supplies of rather weak liquid manure given at the roots, and the trees should be thoroughly syringed morning and afternoon at closing time with tepid water, as much with a view to promoting a growing atmosphere in the house, as to keeping the leaves free from the attacks of red-spider. Attend to the pinching of over-strong-growing shoots, so as to promote a balance of growth in the trees, as well as that of all superfluous growths, and tie down to the trellis those shoots retained to form the tree as necessary. Giving and taking off air.—This must be regulated in accordance with the weather and other circumstances. However, during bright weather a little air should be admitted when the glass registers 80° in the morning, shutting it off at from half-past 3 to 4 o'clock in the afternoon during the next five or six weeks, running the temperature up to 90° or 95° if necessary, with plenty of atmospheric moisture at the same time.

STRAWBERRIES.

Keep Strawberry plants in every stage of growth well supplied with water at the roots, giving those swelling their fruit liberal supplies of liquid manure until the berries begin to colour, when clear water only should be given. Keep the fruit well thinned, leaving about nine berries of uniform size to each plant, and the plants well syringed overhead morning and afternoon, except those having ripe fruit on them, to keep down red-spider. *H. W. Ward, Longford Castle.*



FIG. 158.—THE NARRAS PLANT, ACANTHOSICYOS HORRIDA. (SEE P. 721.)

CHANGE OF ADDRESS.—Messrs. Ireland & Thomson, of 20, Waterloo Place, Edinburgh, are about to remove their seed warehouse to larger and more convenient premises in the centre of the town, at 81, Princes Street.

Hardy Fruit Garden.

DISBUDDING AND TRAINING.

Young trees growing strongly should be looked over occasionally. Any extra strong terminal shoots growing stronger than and robbing their weaker neighbours should have the point pinched off. Extra strong shoots in the centre of the trees, which are not required for laying in, should be cleanly cut away, and weaker ones should have the points pinched off. All leaders or terminal shoots should be secured to the wall before they are in danger of getting broken by wind or rain. When labour is limited the simplest and quickest way to fasten in the breastwood on wall trees is by using small twigs or Willow, cut into convenient lengths. Place each shoot on the walls in the same way as when nailing, then pass each end of the stick behind the stouter branches on each side, and when drawn straight the young shoot on the tree will be held in position until the winter nailing takes place. This is considerably quicker than nailing, and answers the same purpose for the time. As fast as litter becomes available take advantage, now the soil is thoroughly moist, to mulch as much of the bush fruit as possible, also the roots of wall trees. When the ground is in the proper condition and the time of year appropriate, labour cannot be spent in a better way. Not only does mulching diminish the labour of watering and weeding, but a vast improvement will be soon visible in any garden where the practice is regularly carried out. Keep the garden-engine going for the benefit of wall trees, &c., which show signs of becoming infested with fly. Clean soft-water, if used frequently, is by far the best insecticide. On the other hand, if the aphides get established, something stronger must at once be used to eradicate it. Soft-soap-water or tobacco-water is all that is required, and it should be used in succession for several nights in preference to applying a dangerous dose. When using either clean water or insecticide with the garden engine or ordinary syringe, let it be applied when the operator is standing as close to the wall as convenient, in order that the discharge from the garden-engine or syringe be delivered directly under the foliage.

THINNING THE FRUIT.

This should, in the case of Peaches and other choice fruits, be carried out at two operations, if necessary—once before the fruit commences stoning (in the case of stone fruit), and once afterwards. *G. H. Richards, Somerley, Ringwood.*

The Kitchen Garden.

CELERY PLANTING.

The planting out of a portion of the earliest Celery will now require attention, and supposing the trenches have been prepared as advised in a former Calendar planting may be proceeded with as opportunities occur for doing so. Although the trenches intended for Celery can be thrown out in readiness some time beforehand it is a bad practice to place the manure in them many days before planting. An essential point also is that the soil overlying the manure, and in which the young plants are to be placed, should at the time of planting be in a fine and workable condition, and if the natural soil is not satisfactory means should be used to make it so by frequent forkings, &c., or by the addition of some lighter and more suitable compost. In transferring the plants from the frames to the trenches care must be taken to avoid giving them too great a check, therefore a handfork should be used to lift them so that as many of the roots and as much of the soil should be retained as possible. Before planting remove all small and deformed leaves from the base of the plants, and also any side shoots or suckers that may be making their appearance; plant sufficiently firm and deep that the plant may be kept erect and firm in its new position, afterwards water enough should be given to thoroughly settle the plants into the soil. If dry weather prevails frequent waterings will be necessary, and should be given in the evening; when the young plants start into fresh growth, the soil around them should receive frequent stirrings with a handfork, and if a light sprinkling of "fish guano" or some other approved kind of artificial manure be applied previous to this operation, it will greatly assist the plants in forming the desired strong solid leaves essential for producing crisp blanched heads later on. Where procurable liquid manure may also be given with advantage. Plants intended for the main crop should by this time have been pricked out and should be advanced by liberal treatment into sturdy rapid growth, being careful at all times to prevent them in any way from becoming drawn and weakly. Dustings of fine quick-lime or soot, given occasionally to these, and also to the newly planted out ones, will keep them free from the ravages of slugs, &c.



Fig. 159.—The Narras plant, to show its manner of growth. (see p. 721.

General Work.

Late Potatos as they appear above-ground should be hoed between, and where the surface has become caked light forking should be resorted to, but not deeply enough to disturb or injure the young fibres; earthing up should follow a few days later on. Where it is intended to apply artificial manure, this should be sown on the rows, and before earthing-up takes place.

Herbs.

Towards the middle of the month make a good sowing of Parsley in rows 18 inches apart, on a south border, and where it can be easily covered or protected in winter; also small sowings of Chervil, Corn Salad, and summer herbs, where these may have failed; and divide and fill up any failures in the permanent ones. A portion of the Spearmint, Sorrel, Chives, and the like, that are in request in a young green state, should be cut over close to the ground, and encouraged to make a second and later growth. *John Austen, The Gardens, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	June 7	Sale of Imported and Established Orchids, at Protheroe & Morris' Rooms.
TUESDAY,	June 8	Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M.; and Show of Orchids, &c.
WEDNESDAY,	June 9	Show of the Royal Botanic Society of London. Sale of a Collection of Orchids in Flower and Bud, at Stevens' Rooms.
THURSDAY,	June 10	Sale of Plants, Picotees, Carnations, &c., at Protheroe & Morris' Rooms. Sale of Importations of Orchids, from Mr. F. Sander, at Stevens' Rooms.
FRIDAY,	June 11	National Horcultural Exhibition opens at Manchester, and continues till 18th inst. Sale of Imported Orchids, at Protheroe & Morris' Rooms.

AMONG the editorial duties and responsibilities that are incumbent upon us there are none that we undertake with greater pleasure or satisfaction than that of advocating the claims of the GARDENERS' ROYAL BENEVOLENT INSTITUTION. In some matters we are more or less oppressed with a sense of doubt and uncertainty. We may be perfectly well assured of the correctness of our own views, but we cannot be equally sure that they will present themselves to the mind of the reader in the same light as that in which we ourselves see them. We cannot, moreover, be sure that we place matters before the reader in a form secure against misapprehension on their parts. In most cases there is something to be said on the other side; in some instances we may be absolutely in the wrong—for even Editors are not infallible! and in the rush and hurry inseparable from a publication of this character mistakes and errors do and must creep in. Of this no one, we venture to say, has keener appreciation than ourselves. But in the present instance we are happily freed from all doubt and risk of mistake. The cause we plead is good in itself, and it appeals to the best feelings of our readers. No one can gainsay the soundness of the principle—"Help or be helped." It is our duty and our privilege to help as best we may when occasion occurs—it is our right to be helped in our turn when circumstances demand it. This is the feeling that should influence gardeners of all degrees in reference to the Gardeners' Royal Benevolent Institution. By its agency we may help others most effectually in in their need; by its means we may receive substantial aid should we ourselves require it. What more need we say? "Is it all true?" some one may say. Yes, it is true; and being so it is an imperative duty to uphold the truth in the best manner open to us each and individually. Now as to the truth of the matter. Here are some facts and figures which illustrate it. The facts and figures we believe to be indisputable, and we lay them before gardeners, and employers of gardeners, with the conviction that they and they alone will suffice to justify our appeal. One hundred and eighteen persons are at the present moment enjoying the receipt individually of £20 per annum in the case of men, and of £16 per annum in the case of women. To meet this expenditure there are the annual receipts from subscriptions and donations which amount on the average to about £1900, and there is a reserve fund of more than £21,100, in Consols, the interest of which is annually available for the purposes of the Institution.

Of the 118 actual recipients, fifty-one have been elected as a matter of course, they or their husbands having subscribed one guinea a year for fifteen years. Such recipients are placed on the list by right without the trouble or expense of canvas or election. These fifty-one persons have collectively contributed £911 to the Institution in their prosperous days, while they have received from it up to the present time £4865, with the certainty of receiving so long as they live and without any further payment, £20 or £16 per year according to sex. On the average each of these recipients has paid to the Society £18, and has already received from it £95, with, as we have said, the certainty of further annual receipts. One person, aged 98, who subscribed for nineteen years, at an outlay of as many guineas, has already received £420; another, a widow, aged 91, whose husband subscribed a guinea a year for fifteen years, has already received £328. Fifty-four persons are on the list who have either not subscribed at all or for less periods than fifteen years, and thirteen widows have inherited of right the pension enjoyed by their husbands.

The average age of the male pensioners is 74, that of the females 75; the oldest male recipient is 98, the oldest female 96. The youngest male is 58, the youngest female 49.

Now these facts are surely enough to justify our appeal for further help, and to show what an excellent investment is offered by the Institution. Where, indeed, could better or safer be obtained? How can it be made even better and safer? How can its benefits be extended?—and there is, and ever will be, increasing need for extension. Well, there are several ways. First by annual subscriptions on the part of those who have not yet learnt the principle of self-help and the duty of helping others—a guinea a year for fifteen years will secure to the donor, should he require them, all the benefits of the Institution for himself or his widow, and this guinea will be better so invested than even if placed in the Post-Office Savings' Bank. Donations from those who prefer that means of aiding the good work afford another means of extending the usefulness of the Institution, and here we may suggest to employers, that an excellent way of rewarding faithful service would be to present an immediate donation of ten guineas in the name of his gardener, and thus secure to him, after a lapse of fifteen years, if need arise, an annuity of £20.

Donations might also be forthcoming if employers would kindly throw open for one day in the year their pleasure grounds, or their picture galleries to the public, the small payments received for admission to be given to the Institution. Managers of flower shows and exhibitions should make a point of making collections on the occasion of their exhibitions, and the numerous gardeners' societies throughout the kingdom should make at least one annual collection.

Lastly, we may mention the annual dinner. Opinions may differ as to the policy of dinners as a means of furthering charitable purposes, but at any rate this one is profitable—it brings together annually a very large number of gardeners and their friends of all degrees, and it yields a substantial balance to the Society. Surely that is a sufficient reason for the existence of the festival, and so long as the ever-zealous and evergreen Secretary, ROGER CUTLER, is at the head of the administrative department the dinner will prove a success.

This year the dinner is invested with special significance. It has often been made a subject of reproach, and we, too, have echoed the reproof, that gardeners allowed outsiders to take that prominent position which they themselves should occupy. We are all grateful to Royal personages, Lord Mayors, and celebrities of all kinds for their kind help and assistance, but we are, or we ought to be, strong enough to help ourselves without trespassing on the good-nature and generosity of others who have endless other claims upon them. This year a foremost representative of the seed trade is to occupy the chair, and we earnestly hope that the support he will have from his associates and from the profession in general will be such as to ensure in the future a succession of chairmen directly concerned in the prosperity of gardening and directly interested in the welfare of the Society. Mr. SHERWOOD (HURST & SON), is a most appropriate person to plead for gardening and for gardeners, and may the latter not be deaf to his appeal, printed in another column, but show themselves eager to rally round him, and further as and how they can, the great principle—Help or be helped.

—— ADENOCARPUS DECORTICANS.—For the opportunity of figuring this fine hardy shrub (fig. 160) we are indebted to Mr. GUMBLETON. The general aspect is that of the common Gorse, Ulex europæus, but entirely destitute of spines, like a Rose without a thorn! Our illustration shows how fine a thing it is with its dense linear leaves and its glorious masses of yellow Laburnum-like flowers. The plant is a native of the mountains of Granada, where it was discovered by BOISSIER growing in company with Abies Pinsapo, and it is figured by that botanist at tab. 41 of his *Voyage Botanique dans le Midi de l'Espagne*. A coloured figure is also given in the *Revue Horticole*, 1883, p. 156, from the account accompanying which we learn that peat-earth is desirable for its cultivation, and that, as it does not bear transplanting well it should be grown in a pot, till planted out where it is intended to remain permanently. It is easily raised from seed, and as it bore the "grand" winter of 1879—1880 in the neighbourhood of Paris with impunity, it may be considered decidedly hardy. There are six species of the genus, all confined to the Mediterranean region.

—— A SEEDLING RHODODENDRON.—We have received from Messrs. DICKSONS & CO., nurserymen, Waterloo Place, Edinburgh, a pale yellow-flowered variety, with foliage of a rugose character, boldly marked with an irregular band of bright yellow in the middle of the leaf. The truss is of fair size, and the individual flower of primrose-yellow, with the lower segments stained of a deeper tinge, and spotted with minute crimson. It is a decided addition to these showy hardy shrubs, that are deficient at present in shades of yellow.

—— WHITE EAST LOTHIAN STOCK.—A conspicuous feature at the present time in Messrs. W. FROMOW & SONS' nurseries, Chiswick, is a fine line of the useful white East Lothian Stock, its massive Hyacinth-like spikes of flower emitting a most pleasing odour. For lines and similar kind of work it is well adapted.

—— FRITILLARIA CONTORTA (p. 681).—"I hope Mr. BAKER'S notice of this Fritillary will elicit something of its history." So says Canon ELLACOMBE, who adds that he had it nearly twenty years ago from Dr. MOORE, of Glasnevin, as F. alba, afterwards corrected to F. contorta, from the twist in the stem, leaves, and flowers, but he does not know the author of the name. It is a curious and distinct plant, and well worth growing; but it increases very slowly, and it does not produce any seed.

—— PROLIFIED RANUNCULUS.—We are indebted to Miss OWEN for the communication of a fine specimen of a double Ranunculus, the innermost petals of which have assumed somewhat the appearance and colour of leaves. The pistil is absent, and its place is filled by a shoot or flower-stalk, some 3 inches long, bearing at its extremity a second flower of similar character to, but smaller than the first. Such instances of prolification are not uncommon in this plant; they are the result of renewed activity of growth at a period when, under ordinary circumstances, arrest of growth should take place. Such formations early attracted the attention of florists, as we find illustrations of them figured in the old gardening books, and in some cases also in stained glass of Dutch origin, dating from the seventeenth century.

—— ROYAL GARDENS, KEW.—We have to chronicle the following appointments at this establishment:—Mr. GEORGE NICHOLSON, who formerly held the appointment of clerk to the Curator, has been appointed Curator, in place of Mr. J. SMITH, resigned; and Mr. WATSON has been promoted to the office of Assistant-Curator, with special charge of the glass-houses. No better appointments could have been made. Mr. NICHOLSON is specially fitted for his duties by long experience and by a knowledge of botany at once wide and in many departments special, while his unvarying courtesy and willingness to oblige render him eminently fitted for the post. Mr. WATSON will bring to bear on his

THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.

(INSTITUTED 1838).

THE FORTY-THIRD ANNUAL FESTIVAL

Will be held at the "ALBION" TAVERN, Aldersgate Street, on Friday, July 2.

N. N. SHERWOOD, Esq., in the Chair.

Mr. SHERWOOD (Hurst & Son) has issued the following address :—

152, *Houndsditch, London, June,* 1886.

DEAR SIR.

I have promised to preside on the occasion of the 43rd Anniversary Festival of "The Gardeners' Royal Benevolent Institution," to be held on Friday, the 2d of July next.

The Institution deserves the hearty support of the community at large, and I rely on those interested in its success to assist me in the endeavour to increase its resources and usefulness.

Its aim is to afford relief to a deserving class of men who contribute materially to our daily wants and enjoyments, but cannot in the very nature of things make suitable provision for old age and infirmities.

I appeal to you, therefore, to help this excellent Institution by adding your Name to my Subscription List as a Donor or Annual Subsciber, and hope you will accede to my request, so that I may have the satisfaction of knowing its interests have not suffered in my hands for want of a generous response to my appeal.—I have the honour to be

Your faithful servant,

(*Signed*) *NATHL. SHERWOOD.*

N.B.—A Donation of £10 10s. constitutes a Life Governor—the Annual Subscription is £1 1s.—either of which entitles to One Vote at each Election of Pensioners.

Form of Subscription, which should be cut out, filled up, and returned with Amount of Donation or Subscription, to Mr. SHERWOOD, not later than the 31st inst.

FROM

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. . . . . .

TO

N. N. SHERWOOD, Esq.,

152, HOUNDSDITCH,

LONDON, E.

. . . . . June, 1886.

Please add my name as Donor of £ „ „ , *or* an Annual Subscriber of £ „ „

to the Funds of the GARDENERS' ROYAL BENEVOLENT INSTITUTION.

Signed, ...

All Donations and Subscriptions sent to Mr. Sherwood will be acknowledged in the columns of the "Gardeners' Chronicle."

G C June 5, 1886.

THE

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

(ESTABLISHED 1838),

For the Relief of the Aged and Distressed Gardeners, Seedsmen, Nurserymen, their Widows, and others engaged in Horticultural Pursuits, by means of Pensions, which are granted for Life.

£20 per Annum to Men—£16 per Annum to Women.

THE FORTY-THIRD ANNIVERSARY FESTIVAL WILL BE HELD AT "THE ALBION" ALDERSGATE STREET,

On FRIDAY, JULY 2, on which occasion N. N. SHERWOOD, Esq. (Hurst & Son), will preside.

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DINNER AT SIX O'CLOCK PRECISELY.

The Annual Subscription is £1 1s.; that for Life £10 10s., either of which entitles to One Vote at each Election of Pensioners.

Persons of the age of 60 and upwards are eligible for the Pensions, or earlier in the event of being totally disabled.

Special attention is requested to the following Rule (No. 6), which enacts:—

"That none but those who have subscribed for fifteen years consecutively, or who have been on the books of the Institution as a Life Member for fifteen years shall be considered eligible while a sufficient number of such persons shall be upon the List, *the object being to give a preference to those persons who have been contributing to assist others:* so that if the funds should enable the Committee to call for an election of five persons, and there were two or three Candidates who had been subscribing fifteen years, such persons would be appointed Pensioners *without an election*, in preference to the other Candidates."

THE FOLLOWING INTERESTING FACTS *are especially recommended to the attention of Young Gardeners:—*

During the time the Society has been in existence it has relieved 553 persons, at a cost of upwards of £43,686.

There are 118 persons at the present time on the Pension List of this Society, at the annual expense of £2096.

Of these 118 persons fifty-one were admitted as Pensioners without "election," "canvass," or "favour," in strict conformity with Rule No. 6, they or their husbands having been Subscribers over fifteen years.

These fifty-one persons have contributed to the Institution £911, and have received from it £4865.

The average contribution of each has been £18, and they have received on an average £95.

These fifty-one persons have been recipients for terms varying from one year to twenty-eight years.

The following may be taken as examples, showing the advantages that arise to a Subscriber of fifteen years and upwards:—

One who had been a Subscriber for nineteen years, and paid £19 19s., was placed on the Pension List in 1860, and he has received £420

A widow, whose husband subscribed fifteen years, and paid £15 15s., was placed on the Pension List in 1858; she has received £328

*** These were placed on the List without any Election, and are still pensioners, one aged 98, the other 91.

The 118 Pensioners may be divided into three classes, viz.:—

Those who have been placed on the List *without election*, in accordance with Rule No. 6	51
Those who have been Subscribers for various periods, and Non-subscribers	54
Widows who succeeded to the Pension on death of Husband	13
Total	118

The average age of the Female Pensioners is 75.
The average age of the Male Pensioners is 74.

The oldest Male Pensioner is 98 years of age.
The oldest Female Pensioner is 96 years of age.

The youngest Male Pensioner is 58 years of age.
The youngest Female Pensioner is 49 years of age.

Both these Pensioners are quite incapacitated from earning anything towards their livelihood.

The Reserve Fund is £21,100, Three per Cent. Consols.

The Pension is £20 to Males, £16 to Females.

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A PICTURE GALLERY of ENGLISH MEN and WOMEN from "PUNCH."

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OF all the compensations and consolations granted to human nature out of the very store of its own constitution, a sense of Humour is the most valuable. When a man can laugh at anybody or anything, they have no more power to harm him.

There is a comic side to most things, and the man who sees it the most quickly and feels it the most acutely is the man best armed against the shafts of fate. There is no philosophy like the capacity to make merry over one's own misfortunes or one's own foibles. Without going so far as to say that humour is an exclusively English gift, which no one who has read "Don Quixote" would affirm, there can be no doubt that it is a faculty more common among Englishmen and Americans than any other race. Humour is a sort of family joke that hurts no one. No sensible person was ever wounded by a true humourist.

JOHN LEECH was a true Humourist, if ever one lived. Week after week he familiarised us with ourselves, making us see ourselves as others see us. At the same time, he reconciled us to our foibles, just as a man gets reconciled to a snub nose or a woman to a curious lisp. He did not satirise crimes; he only indicated little weaknesses more or less common to us all.

It would be no exaggeration to say that a collection of his best-known drawings would enable the historian to construct a narrative and account of the Social Life, Manners, Customs, Tastes, Pursuits, and Foibles of the English people during the generation in which they were executed. No one can look at these drawings now without perceiving at a glance how far the costumes of that period varied from the costumes with which we are familiar to-day. Yet he also discerns, with equal quickness, that the people portrayed are our own flesh and blood, cherishing the same ideals, running after practically the same amusements, and betraying at every turn the same national characteristics.

It is certain that, caricaturist as he professedly was, LEECH never travestied the human beings he depicted. There was, in his handling of them, just that shade of deviation from the literal truth to give the literal truth point and significance.

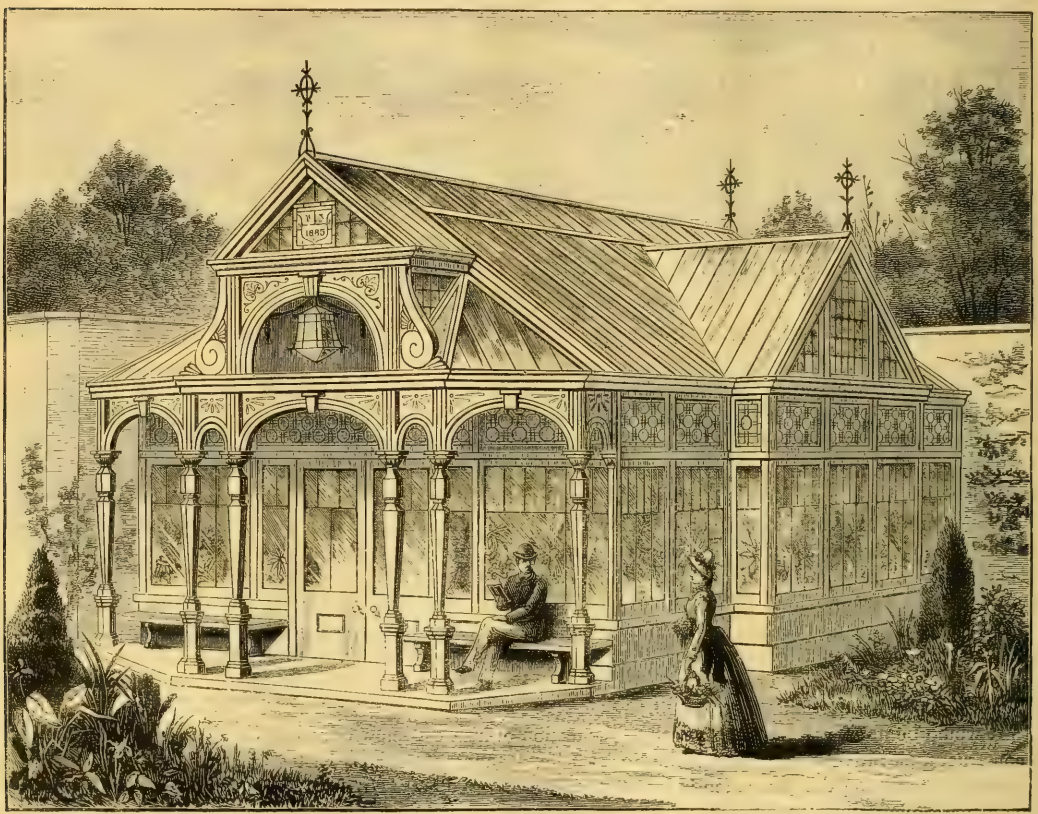
JOHN LEECH is always refined and delicate, and no English caricaturist of repute has since ventured to go back from the standard he set up and upheld. Touches of pathos, too, occasionally blend with his humour; and we feel, in surveying his works in their entirety, that we are in the presence of a Moralist who never cants, of a Preacher who never sermonises, of a Reformer who never bores or offends.

*** *This Edition of* JOHN LEECH'S PICTURES *will be made as inclusive as it can be. New Electrotypes of the Original Woodblocks will be used throughout, whilst the descriptive lines will be arranged in a new type in harmony with the improved size of the page. The collections will be Completed in about Twenty-five Numbers, and will consist of nearly* 4000 *Sketches.*

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department extensive knowledge, zeal, and great cultural skill, the evidences of which are obvious in the improved condition of cultural matters evident throughout the departments entrusted to his charge. With such a strong staff as Kew now possesses, and with indications of the relaxation of restrictions now no longer needed, there is every ground for the conviction that the reputation and the utility of the garden will be worthily maintained and in some particulars enhanced.

—— International Exhibition at Edinburgh.—Messrs. P. & R. Fleming & Co., fence contractors, &c., 29, Argyle Street, Glasgow, exhibit extensively in all kinds of iron fencing, gates of all descriptions, from handsome forms suitable for entrances to parks, to simple and elegant wickets in character with the various styles of fencing exhibited. The fencing is, however, the leading feature among the exhibits here, and we would specially note the "Corimony" strained fence as one of the lightest, most elegant, or rather least conspicuous fences, yet the strongest and cheapest we have seen. It is specially designed as a sheep fence, but it struck us as being particularly well adapted for the purpose of espaliers for fruit trees, for climbing Roses, and other ornamental screens where an economical and almost invisible framework for support may be required. A very handsome cottage, built of corrugated iron lined with felt, boarded inside and furnished with all conveniences to render it a comfortable lodge for a forester or gamekeeper, or an occasional lodge for gentlemen visiting distant parts of their estates for sport, forms the central feature of the exhibit, and all around it are grouped lawn mowers, garden rollers, tree guards, and other implements pertaining to the garden, the farm, and the forest, all combining the latest improvements, and evincing superior workmanship and design.

—— Odontoglossum citrosmum.—Mr. W. Bull kindly sends us a flower of this species with three lips. In such cases there is a doubt as to whether the two additional petals are subdivisions of the primary lip or developments in a lip-like guise of stamens usually undeveloped (A 2, A 3 of Darwinian nomenclature). In this case, as the lobes seem to spring all from the same level, the former supposition seems the most likely to be the correct one.

—— Messrs. Webb and Sons at the Liverpool Exhibiton.—In addition to their fine display inside the Exhibition buildings, Messrs. Webb & Sons have successfully laid down numerous extensive lawns in the grounds outside, with their prize grass seeds, and their fine appearance—even at this early stage of growth, and after the recent unfavourable weather—was referred to by the *Liverpool Daily Post* of May 26 in the following eulogistic terms:—"Liverpool International Exhibition. — The most important transactions in actuality outside are to be found on the plateau, for the damp weather is bringing the lawns to that point of verdure which they should assume in order to set off to the best advantage the flowers and shrubs which have been planted in various designs by emulative gardeners. The plots sown by Messrs. Webb, of Stourbridge, are doing their part nobly towards the object named, and fairly disproving the theory that lawns can be more quickly formed by using turf than seeds. In this instance, at all events, the very opposite is the case, Messrs. Webb's sowings looking beautifully fresh and green, while many portions of the ground which had a start of them by being carefully turfed among the first operations on the plateau are looking bare and brown, and only beginning to sprout."

—— Professor Morren's Bromeliads. — A large number of the living Bromeliaceæ that belonged to the unique collection formed at Liége by the late much-lamented Professor Edward Morren have been purchased for Kew, and have just arrived at their destination in safety. The plants are in excellent condition, and will form a valuable accession to the Kew set, which has greatly improved, both as regards the number of kinds and the health of the plants, since it was transferred from the Palm-house to the new range. Amongst the Vriesias is a splendid plant of a giant species, rivalling V. Glazioviana in size, which was discovered in Brazil by Wawra during the recent travels of the Coburg princes, and which is figured in his account of the botany of their expedition on plate 31. The Kew plant has already been stationed at the west end of the Victoria tank, opposite a plant of V. Glazioviana, and they form a well matched pair. There is a fine specimen of V. fenestralis just coming into flower. This is one of the large kinds, with imbricate and



Fig. 160.—Adenocarpus decorticans. (see p. 724

marbled leaves. In neither of the two plates that have already appeared are the flowers shown, so that a drawing of the plant just brought to Kew will be made, and will appear in an early number of the *Botanical Magazine*. Of the smaller Vriesias there are plants of V. Morreniana and V. viminalis, both of which have been figured lately in the *Belgique Horticole*. Of the other genera belonging to the section of the order with a superior or nearly superior ovary, the most interesting accessions are Puya gigas and lanata, Hechtia Desmouliniana, Dychia edulis, Guzmannia melinonis and G. Devansayana, none of which are in flower at present. Of the sub-order with an inferior ovary there are plants of Billbergia Reichardti, of WAWRA allied to B. iridifolia, another discovery made during the expedition of the Coburg princes; of B. Saundersii and Sanderiana, showy-flowered species allied to B. Moreliana, and of several of the new hybrids belonging to the same genus, raised lately by MAKOY and VAN GEERT, which have attracted great attention in Belgium, but of which we know next to nothing in England. Nidularium is represented by a plant labelled Chlorostichum, an unpublished name. Æchmea is represented by a fine plant of Æ. mexicana, BAKER, a discovery of BOURGEAU'S previously known to us here from dried specimens only by two plants of suaveolens (*Bot. Mag.*, t. 3304, of which purpureo-rosea is a synonym), and by plants labelled myriophylla, robusta, and dealbata, all three unpublished names. The death of MORREN and that of ANTOINE constitute a very great loss to science, as they were the only two men who had paid special attention to Bromeliaceæ of late years. There are a great many species in cultivation which Professor MORREN has named, but of which the descriptions have never been published. Of course in an order like Bromeliaceæ, unless the descriptions are drawn up from living plants, they are of necessity very incomplete and unsatisfactory.

—— NATIONAL CHRYSANTHEMUM SOCIETY.—In order to meet the necessary expenses attending the two additional shows for early and late Chrysanthemums in September and January respectively the committee of the above Society are very desirous of increasing their roll of members and subscribers. The Secretary, Mr. W. HOLMES, of the Frampton Park Nurseries, will be glad to give all possible information at any time.

—— MR. GEORGE MAW.—The *Wellington Journal* of the 22d ult. contains a detailed account of the presentation made to Mr. and Mrs. GEORGE MAW on the occasion of their leaving Broseley. Mr. MAW and his family during their long residence in Broseley, secured, by their excellent qualities as neighbours and employers of labour, the goodwill and deep respect of all who knew them, as was evidenced on the occasion of the presentation of the testimonial. In these columns it is unnecessary to say anything as to Mr. MAW's eminence in botany, horticulture, geology, and natural science generally, beyond expresing the hope that, in his well-earned leisure, he may be spared to enjoy and still further enrich those departments of knowledge in which he has achieved so fair a name. Mr. MAW has taken up his residence at Kenley, Surrey.

—— TRADE IN DRIED FRUITS AND VEGETABLES IN AUSTRIA.—The immense importance of the trade done in the above useful articles of food by the Americans especially, and in a less degree by the Germans, French, and Swedes, has at last appealed to the minds of the more apathetic Austrians. An experimental station for research into the best methods of producing first-class marketable commodities has been established by Graf H. ATTEM'S at St. Peter's, near Gratz, and the results obtained are so encouraging that it may soon be looked upon as a certainty that the home-manufactured articles will take the place of the imported ones, and that considerable impetus will be given in that country to the cultivation of the various vegetables and fruits that can be dried with the best results. The *K. K. Oesterreichischen Pomologen Verein* has sent out a pamphlet recently, in which the various important uses to which the dried goods can be put are succinctly pointed out, especial emphasis being laid, owing to their extreme portability, on their use by the army and navy, hotel keepers, and dwellers in towns, who, by being far removed from sources of supply, or by reason of their comparative dearness, are debarred from the enjoyment of these health-giving articles of consumption.

—— ESPARTO FROM ALMERIA.—In consequence of the increased use of wood-pulp in the manufacture of paper, the export of Esparto from Almeria to Great Britain has decreased, the amount shipped last year being 12,000 tons, and the average price £5 5*s.* per ton free on board. From Oran and other African ports large shipments of Esparto were, however, made.

—— NARCISSUS POETICUS VAR. PATELLARIS.—Mr. BURBIDGE sends us flowers of this variety, in which the anthers have almost entirely their normal character instead of being pelatoid as they usually are.

—— DENDROBIUM ADUNCUM.—Last year this species flowered at Kew, and agrees with the plant figured in the *Botanical Magazine*, t. 6784. It was collected in the Lo-fan-Shan Mountains on the main land opposite to Hong Kong, and was sent to Kew through the medium of the Hong Kong Botanic Garden. For some time past a very distinct form, as far as the pseudobulbs are concerned, has been flowering away intermittingly—a character evidently possessed by the species. This specimen also came from Hong Kong last year, and has remarkably thickened fusiform pseudobulbs, tapered at the base to a slender foot-stalk some inches in length. They may be erect, pendulous, or diffuse, according to the specimen under note, and of a bright straw-yellow colour. The first mentioned plant has long slender upright pseudobulbs, very little if at all thickened, and which are, especially when young, more or less stained towards the upper end, and at the nodes with deep dull purple. The young leaves have the midrib and margin of the same colour. The flowers in both cases are produced in lateral, 1—3 flowered clusters, and appear to be in all respects exactly similar. The species was originally introduced from Manilla in 1842, and would thus have a pretty wide range of distribution. The most important feature of the flower is the peculiar saccate labellum with a recurved or hooked tip. LINDLEY'S figure in the *Botanical Register*, 1846, t. 15, exhibits an indorescence consisting of short lateral racemes.

—— OLIVE OIL IN TUSCANY.—In a report on the trade and commerce of Leghorn it is stated that the Olive crop during the season 1885-86 throughout Tuscany was very short. The yield of Olive oil is consequently estimated at barely one-tenth of a full crop. The fruit while still on the trees was considerably damaged by severe frosts, hence much of the oil made was of very inferior quality. Nevertheless, in a few sheltered localities the Olives escaped injury, and yielded oil of perfect quality, but the production of such oil has been on a very limited scale. Under these circumstances the prices of the finest qualities of Tuscan oil, which are generally considered much superior to the best growth of other soil-producing districts of Italy and of France, might have been expected to rule very high, particularly as in Tuscany stocks of Olive oil of the previous season's crop were quite exhausted. But, owing partly to good Olive oil crops in the districts of Nice, the Italian Riviera and Bari, and partly to the general trade depression and fall in values of almost every commodity, new Tuscan Olive oils have fetched comparatively low prices. The Olive trees are generally in fine condition, and promise well for next season.

PUBLICATIONS RECEIVED.—*John Leech's Pictures of Life and Character, from the Collection of "Mr. Punch"* (London: BRADBURY, AGNEW & CO., Bouverie Street, E.C.).—*Report of the Metropolitan Board of Works*, 1885.—*Brook's Popular Botany*, Part I. (BROOK, RICHARDSON & CO., 282, Strand, W.C.).

—— GARDENING APPOINTMENTS.—Mr. J. GARRETT, Foreman of the Ornamental Department, Royal Gardens, Kew, has been appointed Head Gardener to A. B. MITFORD, Esq., C.B., Batsford Park, Moreton-in-the-Marsh, Gloucestershire.—Mr. HENRY HATCH, late Gardener and Bailiff to Colonel HOWARD VYSE, the Manor Cottage, Old Windsor, and latterly employed at the Royal Gardens, Hampton Court, has been engaged as Gardener and Bailiff to JOHN G. TALBOT, Esq., M.P., Falconhurst Court, Edenbridge, Kent.—JESSE JONES, late Foreman at Brynkinalt, Chirk, has been appointed Gardener to C. H. DAY, Esq., Terrace House, Southampton.

THE COLONIAL EXHIBITION.

No. II.

BRITISH GUIANA.—The collection from this colony is closely contiguous to that from the West Indies. The entrance to the court is flanked on either side by magnificent squared trunks of Greenheart (Nectandra Rodiæi) and Mora (Dimorphandra Mora, better known as Mora excelsa). The first of these is one of the tallest of the forest trees of the Guiana forests, growing in clay soil near the rivers and creeks. Logs, it is said, can be obtained from 18—24 inches square and 70 feet long. Greenheart is one of the most durable woods known, and it is one of the eight first-class woods at Lloyds. It is used for ship's keels, and other timbers for house framing, mill timbers, wharves, and, indeed, for almost every purpose where great strength and durability are necessary. The bark is well known in medicine under the name of Beeberu bark, and is the source of the alkaloid Beeberine, which is used as a tonic and febrifuge in place of quinine. The seeds are also used medicinally by the natives in cases of diarrhœa, and when ground mixed with other meal are used as food in times of scarcity. The Mora is an extremely strong and durable wood, and is not only used extensively for outdoor work and ship-building, but also makes good durable furniture, though somewhat too heavy for ordinary kinds. Several varieties of the trees are known in different localities, each having a distinct name. The tree grows to a height of 200 feet, and logs can be squared 24 inches. The bark is used medicinally in dysentery and also for tanning, and the large seeeds are ground to a meal, and mixed with Cassava as an article of food.

Besides the two woods here mentioned, which are the principal timbers of the British Guiana forests, there are many others of very great value, the botanical source of a large number of which is unfortunately still unknown. An excellent collection of some seventy-eight samples of the woods of the colony are exhibited by Messrs. Park & Cunningham, of Georgetown, whose aim is to bring them to the notice of English cabinet-makers with a view of introducing them to English commerce. By far the most beautiful wood for cabinet-work, however, is the Letter-wood (Brosimum Aubletii), which has a reddish-brown ground and black wavy markings representing letters, or rather the marking of a leopard skin. This wood is valuable for inlaying and for making choice walking-sticks; it is hard, and takes a splendid polish. The tree is not abundant, and in the largest trees the heartwood, which is the figured part, is but small—a tree of 20 inches diameter, having only 7 inches of heart. Two telegraph poles of Wallaba (Eperua falcata), as prepared for use in Georgetown, are exhibited. These posts, it is stated, do not require treatment with tar or other preservative, and last from fifteen to twenty years, even when placed in marshy situations where they are surrounded with water for weeks together. The trees are very plentiful, and grow to an average height of 80 feet.

Besides woods themselves, wood products are also largely shown, notably the Woodskin canoes which the Indians make from a single piece of bark stripped from the trunks of Hymenæa courbaril, or the Locust Tree, and from the Purple Heart (Copaifera pubiflora), and C. bracteata. These canoes are sometimes made large enough to accommodate fifteen or sixteen persons.

Amongst food products of the colony, those of the bitter Cassava plant (Manihot utilissima) deserve a notice. Cassava meal, Cassava bread, and Cassareep are all fully illustrated. They are described as "very important articles in the cookery of the Indians, the former being the 'staff of life,' and the latter its sauce. Cassareep is the principal ingredient in the famous 'pepper pots,' and may be used as a sauce in European cookery." Cassareep does indeed come to this country, usually in ordinary black wine bottles, and forms an excellent adjunct to stews and hashes.

Some remarkably fine samples of Balata are exhibited. This substance, it will be remembered, has been recently treated of in an elaborate and exhaustive report by Mr. Jenman, the Government Botanist of British Guiana. It is intermediate in character between gutta-percha and india-rubber. It has very great strength, and as it does not stretch under tension it is unequalled for machine-bands and similar

purposes. On the whole, the British Guiana collection is one of much interest.

Hong Kong.

This collection does not contain anything very striking from a botanical point of view. There is a good collection of eighty-six specimen of Chinese woods, which were collected and named by Mr. Charles Ford, of the Botanical Garden, Hong Kong. There is also a fine collection of the now well-known China matting, which Dr. Haast has shown is made of the culms of Cyperus tegetiformis, the varieties of designs and patterns of which are, for the most part, extremely good. The numerous applications of Rattans and Bamboos for a variety of articles of domestic use are also of considerable interest; besides which there is an extensive collection of Chinese drugs, a large number of which are of vegetable origin; they are, however, not in a very satisfactory condition, either with regard to the specimens themselves or their labels.

ORCHIDS AT THE BIRKS, MIDLOTHIAN.

One of the most interesting of the numerous pleasant and neatly kept gardens in the Edinburgh district is that belonging to George Douglas, Esq., The Birks, Dalkeith, and which is celebrated among horticulturists as having produced, about ten years ago, the biggest bunch of Grapes (Trebbiano) on record—at least, in modern days. Although still producing fine crops and large samples of Grapes, Mr. Curror, who has been gardener there since the place was made, about twenty years ago, has long been known as a keen orchidist, a clever grower, and a very successful exhibitor of these rich and popular plants. With the kindly and generous aid of his employer, who is also a great enthusiast among Orchids, Mr. Curror has got together as nice a collection of these plants as can be seen anywhere in the same limited space; and a visit may be paid at almost any season of the year with the certainty of finding something interesting in flower and worth looking at.

On the occasion of a visit in the beginning of this month there was a fine display in the warm-house of Cattleyas, Lælias, Dendrobiums, Aërides, Cypripediums, and the like; a grand plant of an extra good variety, Dendrobium fimbriatum oculatum being a special feature of attraction, as it is seldom that this very effective but rather ephemeral flower is seen in such a high state of perfection. The plant is a fine grown specimen, with about a hundred pseudobulbs, forty-five of which bore in all eighty-five large panicles of its beautiful golden-yellow flowers, so effectively set off by the rich dark eye. A fine plant of D. thyrsiflorum carried a number of splendid panicles of its white and primrose flowers; and the darker flowered D. densiflorum was also seen in good form. The Cattleyas, however, are the greatest feature in the collection, and comprise well-grown plants of all the best species, and most of the choicest varieties of these lovely-flowered plants, including Cattleya Dowiana, several plants in a healthy and floriferous state; C. Sanderiana, a strong plant and fine variety; C. Lawrenceana, very high coloured variety; C. gigas, a grand plant and a splendid variety; C. purpurata (Lælia), several fine plants, one of which has pure white petals and a richly-marked lip; C. Mendelii, several very rich varieties, one of them pure white; C. Mossiæ, in great variety, and vigorous plants; C. Trianæ, very fine; C. Warneri, a fine plant of a rich dark variety, showing two spikes, each bearing three flowers; C. crispa, a splendid plant of a fine variety; C. Gaskelliana, C. maxima, very fine; C. Percivaliana, C. exoniensis, C. labiata, C. superba, C. guttata, and an extra fine variety of C. Skinneri, which Mr. Curror considers superior to C. Lawrenceana, and no doubt it is a very choice variety. Of C. Trianæ Mr. Douglas bought a lot of newly imported plants this spring, all of which, under Mr. Curror's careful treatment, are starting freely into growth, with numerous strong, plump-looking "breaks," which give promise of a rich crop of flowers by-and-bye, and which may produce some varieties worthy of note.

A splendid dark-lipped variety of Lælia elegans was bearing four fine flowers on each spike, and of L. Dayana a large plant was showing a fine crop of flowers, the same plant having borne sixteen spikes last season. Lælia anceps is also in fine condition, a large and vigorous plant showing abundance of flower-spikes. Among Cypripediums are fine specimens of C. barbatum majus, C. caudatum, C. Dayanum, C. insigne Maulei, C. Lawrenceanum, C. niveum, C. Spicerianum, and C. villosum. A fine plant of Trichopilia tortilis in a large pan was literally smothered in flowers, and there were a few large and vigorous plants of Cœlogyne cristata, which showed by the remains of the stems how freely they had flowered earlier in the season. Aërides Fieldingi, A. odoratum, A. Houlletianum, Vanda tricolor, V. suavis, Oncidium Krameri, Odontoglossum vexillarium, Cœlogyne Massangeana, Cymbidium eburneum, C. Lowianum, Chysis bracteata, and Burlingtonia picta were some of the other Orchids in flower, or showing their flowers freely to carry on a succession of bloom through the summer. The house itself is a very modest span-roofed erection some 25 feet by 16 feet, and it requires no ordinary amount of skill and perseverance to grow such a variety of plants within it with the success which attends Mr. Curror's efforts. In a smaller lean-to house, with a north aspect, there is a nice collection of cool Orchids, equally well grown, and flowering in their season in great profusion. Odontoglossum Alexandræ in numerous varieties, a particularly fine one having large, smooth full petalled, spotless white flowers; O. Pescatorei in fine variety, Oncidium macranthum, O. cruentum, O. crispum, O. incurvum, Ada aurantiaca in fine flower, Masdevallia Veitchiana, M. Lindeni, M. Harryana, M. ignea superba, and M. Tovarensis were among a few of the notable plants, and all bore evidence to the careful and judicious treatment they had received.

ALPINE PLANTS.

Such a host of alpines have rushed into flower during the past fortnight that one feels more puzzled which to write about than how to do it. Our native

Gentiana verna,

however, perhaps deserves first notice, for certainly a more ornamental occupant of the rock-garden it would be difficult even to imagine. In the noonday sun to see a good broad healthy sheet, with plenty of the indigo-blue flowers just peeping above the sturdy bright green foliage, is a treat both rich and rare, and few indeed are those who are not induced to turn back for the parting look at such a plant. A pity it is that this lovely mountain gem is not oftener seen under cultivation—I mean in a thriving condition, for meagre, ill-favoured specimens, are unfortunately common enough—for its requirements are, beyond doubt, of the simplest description. On looking to-day at a patch which was sent me four years ago, in company with its near relative, G. alpina, from Davos-Platz, and on which might be counted nearly one hundred open flowers, the desire for more of such a good thing grows imperceptibly upon one. No coddling nor special care of any kind does this spring-flowering Gentian demand, but just common sense in planting, and the use of solid damp loam in which to grow it.

Ranunculus Magellensis.

This may well be added to the already large list of meritorious Crowfoots, for without doubt, when given a suitable situation in which to grow, it is both distinct and beautiful, and offers a desirable contrast to some of the commoner kinds. Side by side with our natives, R. montanus and R. alpestris, this pretty plant is blooming finely, the pure white flowers, and deep, shining green, distinctly crenated foliage, having at all times a wonderfully healthy and fresh look about them. Here it grows well in peaty loam, but probably other soils may suit its wants quite equally well, more particularly when abundance of moisture is present.

Trilliums.

Amongst these will be found several highly interesting and beautiful plants for cosy spots in the more shady parts of the rock-garden. A yard square bed filled to a foot in depth with decayed Pine pins, has yielded a fine return of blooms from half a hundred roots of two years' imported T. grandiflorum, which we may safely add is second to none for beauty of flowers. T. ovatum, with its large mottled leaves, which forcibly remind one of those of our native Arum or Cuckoo-pint, and conspicuous pinky-white sessile flowers, is a neat and desirable large-growing species. A peculiarity of this plant is that the flowers never fully expand, the three petals standing in a semi-erect position, or with just sufficient tilt backwards to show off the finely veined interior of the flowers. A light vegetable soil, plenty of moisture, and a rather shady situation, are the chief requirements of these interesting American plants. *Emergo.*

(To be continued.)

A PÆONY CATALOGUE.

This is an appropriate title to a list of twenty-eight pages issued by M. G. Montigny, of Orleans. Twenty-two pages are devoted to a descriptive list of Tree Pæonies (Pivoines en arbre), comprising 220 varieties. A speciality is thus made of this fine subject, and it would be interesting and instructive both to inspect this collection when in flower. The culture of the Tree Pæony in the open air is regarded as simple and easy, as the plants accommodate themselves to all soils; they of all plants offer to amateurs the most satisfaction and the least disappointment; and it is an error to believe that they do better in peat than in any other kind of soil. In order to obtain good vegetation or foliage, with an abundant and beautiful blossom, it is useful to trench the soil to a good depth. The plants have long-reaching roots requiring a deep soil to spread in. To obtain a good bloom the ground should be trenched and well manured in October, after the fall of the leaves. At the time of planting, ashes from a heap of burned garden rubbish are found beneficial placed about the roots, and a mulching may be put on the surface, but the fresh dung from a stable should be avoided as it has been found injurious, because it nearly always encourages the growth of a fungus which invades the collar of the roots, *i.e.*, that part exposed above the surface of the soil.

In planting, a shaded spot is preferable, because, even in places so shaded that scarcely anything else will flourish, they do well, the colour of the flower becoming more intense, and the plants remaining for a longer time in bloom. If they can be planted in masses between trees they show off to great advantage, or in front of large shrubberies. They are sometimes planted singly on lawns, but they should be near to trees affording friendly shelter.

The most favourable time for transplanting Pæonies, either tree or herbaceous, is September, whatever their age or size. Planted at this season, the plants' roots soon lay hold upon the soil, and the plants become established, and so firmly, that they may be said to gain a season as compared with their state when planted in mid-winter; one can then hope to have a reasonable show of blossom the following spring, but not equal to that seen on those that have been established several years.

In addition to a luxuriant vegetation and abundant blossoms, there is a great variety in the colouring of the flowers, such as few other plants present. The bloom commences in April, or later, according to the season, and lasts until June, in the case of the late flowering varieties; for some are early to bloom, and some late.

One disadvantage attending the early blooming of the Tree Pæonies is the liability to be injured by frost. We knew an old gardener who used every morning, before the sun came upon the Pæony flowers when frost abounded, to syringe the blossoms. Some covering is almost necessary if it can be extemporised; the evil is done when the sun falls upon the frost-tinted petals, destroying their freshness and colouring. Surely a little extra trouble is well incurred when it results in prolonging the beauty of the noble flowers.

The Tree Pæonies are grown in pots in this country for conservatory decoration, and very fine decorative objects they are, while no danger from exposure can come to the flowers. M. Montigny recommends that, in order to make strong plants, and so obtain fine blooms, it is necessary to allow the roots to develope and lengthen quickly, potting them when young, and repotting yearly into larger pots. August is a good time to repot, and when done the pots should be plunged in the ground, or in some suitable material. When they grow into large size, and the annual repotting is difficult, a top-dressing of rich soil will be found of great advantage, and water must be copiously administered when required. In this way plants can be grown in pots until they are eight or

ten years of age, and with good care they will blossom as finely as those cultivated in the open ground.

The propagation of Tree Pæonies can only be practised to advantage by means of grafting in slits on roots of herbaceous types. The two most used for the purpose are what are known in France as the Chinese or edulis. They should not be grafted on the roots of P. officinalis, as this gives but bad results. It is useless to think to do much with a splinter of the old roots, or still less by means of suckers. The most favourable time for grafting is during the month of August. Some little preparation is necessary in the case of the roots to be grafted; the number required should be obtained, and a few of them should be allowed to wither a little in the shade, rather than use them damp, or too hard or stale—the union is thereby better effected. "The roots once grafted, place them in the north under bell-glasses, or in a cart-tilt, covered with frames or sheets of glass (I use the last way), well protected, and deprived of air; bury the grafts in a seed-plot, very near together, in such a manner as not to let them go beyond where the bud terminates at the surface of the ground, which should be light and sandy, and damp enough not to have to water them before they perfectly come up or strike; leave them there till October or November." Then they will be well enough rooted to put them in small pots, and keep them under glass to pass the winter. The graft should be covered again with earth, which is indispensable to cause them to make growth and obtain good leaves.

The matter of the ligature has always been one of prime importance, in order to ensure a good result from the grafts. Certain inconveniences attend the use of different subjects, such as pack-thread, which quickly perishes in the ground. What is wanted is something that will not decay, while it will yield with the swelling of the root, and M. Montigny now uses india-rubber twine, and this material is found to give the best results, while it is the most economical as well as the most convenient and lasting, having the advantage of resisting rottenness, and stretching to the needs of the enlargement of the roots; and it supports all the grafts that may not take at once, but require longer time. Another advantage is that the damp does not penetrate through the india-rubber thread as it does through other materials. *R. D.*

FRUIT NOTES.

FRUIT PROSPECTS IN SOUTH WILTS.

OWING to the semi-tropical weather which we experienced last summer, fruit trees of every description made, as might be expected under the circumstances, a slow short-jointed growth, which the scarcely less tropical sunshine of autumn consolidated and ripened to perfection. Consequent upon these favourable conditions, the trees of Pears, Cherries, and Plums were rich in profusion of strong, well-developed blossoms this spring, and which, owing to the dry and buoyant, though almost sunless, weather which prevailed during the whole time the trees were in flower, set well, and although the 8°, 7°, and 6° of frost which were registered on the mornings of May 1, 4, and 5 respectively, killed a large percentage of expanded Pear-blossoms, the fruit prospect in this district for the year 1886 is, as far as I can at present judge, a most promising one. But had the days immediately preceding the frosts been wet instead of dry, the certainty of securing good crops of all kinds of outdoor fruits this season would have been reduced to a non-certainty. The "show" of Apple blossom in the various orchards was as promising as it was beautiful; the trees being literally covered with blossoms. Although a couple of Apricot trees, which showed no signs at or prior to the fall of the leaf that the sap was descending to the store vessels for the last time, have absolutely refused to respond to the call of spring, most of the other trees (Moor Park) are heavily cropped. Whether the condition of the trees indicated is to be attributed to a "centralisation" of the frost or other mysterious cause I am unable to say, but I am inclined to believe it is the result of the former. Some of our Peach and Nectarine trees are so heavily cropped as to necessitate the immediate removal of 10 per cent. of the fruit, so that those left (at 6 inches apart on the trees) to form the crop may appropriate the flow of sap, and thereby attain to larger dimensions than they would do were the process of thinning not attended to for a couple of weeks longer. Sea Eagle Peach is the best all-round late Peach that I am acquainted with. It is constitutionally a strong and healthy variety, and with me it never fails to yield a heavy crop of large, handsome, and luscious fruit. Trees of Violette Hâtive, Alexandra, Noblesse, Bellegarde, Chancellor, and Walburton Admirable are also heavily cropped; as are also Elruge and Pine-apple Nectarines. Of the latter I find the varieties Balgowan and Stanwick to be shy bearers though strong growers, but I shall take means to rectify this fault next autumn by reducing the vigour of the trees, and at the same time promoting fertility by having recourse to root-pruning. The leaves of a few trees have been affected by blister (Elruge Nectarine very much so), caused no doubt by the check which vegetation experienced the second week in May. All the affected leaves have been picked carefully off the trees, so that now they look little worse than their neighbours.

The Plum crop is better than I have known it to be for a long time, there being heavy crops of Coe's Golden Drop, Orleans, Kirk's, Pond's Seedling, Victoria, Reine Claude de Bavay, red Magnum Bonum, Nectarine, Mirabelle Iaune, a small round golden Plum of German origin, and studded with fruit; and an average crop of Green Gage. Cherries—especially the Morellos—have set heavy crops, and the trees are up to the present time free from the attacks of black-fly, on the first appearance of which the trees should be syringed with tobacco-water, consisting of one quart of strong tobacco juice to 4 gal. of clear water. Although the blossoms of Pears were, as stated above, thinned considerably by frosts, they will, nevertheless, be a fairly good crop. Fig trees of Brown Turkey are heavily cropped, while those of such shy bearing varieties as Brunswick, Castle Kennedy, and White Marseilles are fairly so. The crops of Currants, Gooseberries, Raspberries, and Strawberries are also very promising. *H. W. Ward, Longford Castle, May 20.*

PICEA MENZIESII.

THIS is one of Douglas' introductions which has proved well suited to this country, provided, according to Mr. Fowler, it be not planted in light or dry soils, when it is apt to become unsightly, but in deep, loamy, moist soils it does well; and from its elegant habit and stiff, sharp-pointed leaves, silvery on the under-surface, it is very ornamental. Its timber is stated to be of excellent quality. This tree is remarkable for occasionally producing from its lateral branches small erect shoots, on which the leaves spread in all directions, instead of in one plane only. It is sometimes called Picea sitchensis, and is nearly allied to the still more beautiful Picea ajanensis from Japan. The male catkins (fig. 161), are solitary, at or near the ends of the shoots, and of a rich orange-red colour. By an unfortunate inadvertence the cut fig. 161, representing the male flowers of this species, was made use of in our last issue under the wholly erroneous name of Abies Webbiana. For the opportunity of figuring the catkins and the cones (fig. 162) we are indebted to Mr. Webster, of the gardens at Penrhyn Castle.

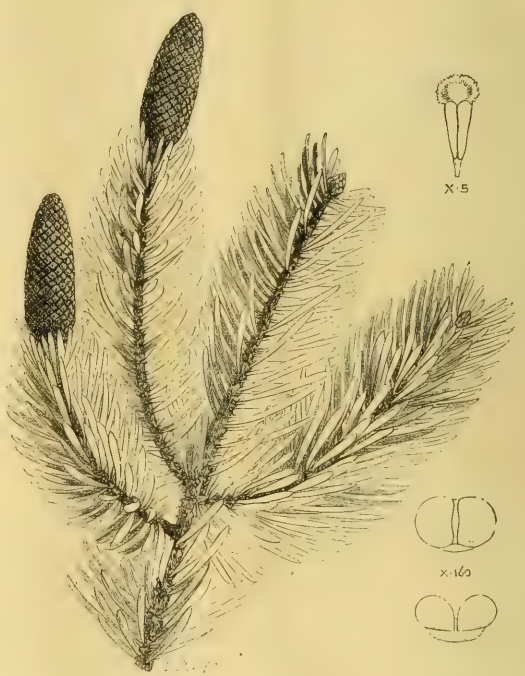


FIG. 161.—PICEA MENZIESII: MALE FLOWERS, COLOUR RICH ORANGE.

In this country specimens may be met with of a height of 60 feet, but in its native country (Northern California) it attains a height of 100 feet, and is met with in company with the Douglas Fir and Thuia gigantea.

TREES AND SHRUBS.

NOTEWORTHY SPECIMENS OF TREES AT MESSRS. LUCOMBE & PINCE'S.

THE following examples are flourishing in these nurseries at Exeter:—Quercus Lucombeana (the Lucombe Oak), height, 65 feet; girth of trunk near base, 12 feet 4 inches. Fagus purpurea (the Purple Beech), height, 65 feet; girth of trunk near base, 10 feet 3 inches. Quercus Lucombeana suberosa (the Lucombe Cork Oak), height, 65 feet; girth of trunk near base, 10 feet 9 inches. Three noble giants familiar to all persons acquainted with the Exeter

Nursery. In the summer the dark purple foliage of the Beech makes a very effective contrast. This Lucombe Oak is the original tree, and was raised from seed by the founder of this old establishment about the year 1760.

Choisya ternata and Viburnum plicatum.

We forward a cut specimen of Choisya ternata growing in the open border here, which has withstood the last winter uninjured without any protection whatever; it is making a fine bush. I think it has proved a valuable free-flowering evergreen shrub for border or wall. Viburnum plicatum tomentosum is also a fine bush, 4 feet high and 3½ feet through, covered with flowers—a very pretty shrub for the border or wall. *Thos. Cripps & Son, Tonbridge Wells.*

MUSCAT GRAPE GROWING AT FELTHAM.

Amongst the comparatively few garden productions left in which the market growers of this country have not yet had foreign competition to contend against may be named Muscat Grapes. How long the home cultivators will have the field to themselves in this particular department remains to be seen, as there is not much doubt that if the requisite skill were present there are many parts of Europe where, with the aid of unheated, inexpensive erections, Muscat Grapes could be as well grown as they are in this country, where the short summers and fitful sunshine render the use of more expensive artificially heated vineries necessary. Another reason why the growers of these matchless Grapes (one might say Grape, as amongst white Muscats the old Muscat of Alexandria has all but the run to itself so far as the market is concerned) have less competition than there is with black kinds is that the number of those who embark in the business, and who succeed in growing Muscats up to the mark, is much fewer than in the case of black varieties. Although it is not unusual to hear the remark that Black Hamburghs—A 1 in colour and berry, bloom and bunch—are the highest test of skilful Grape growing, yet there is no disputing the fact that for one example of Muscats that is perfect in all points, one sees a dozen of Hamburghs that are equally perfect. No doubt to some extent this is owing to so many more of the latter than of the former Grape being grown. There is one thing connected with the Grapes named which those acquainted with their cultivation can scarcely fail to have noticed, which is, that those who grow the best finished Hamburghs are seldom equally successful in bringing Muscats up to the right point in colour. The exceptional colour which some growers manage to get into their Muscats is by some attributed to the nature of the soil or the particular condition of the Vines; but I have seen growers who could get the right colour from Vines that were grown in soils that differed much in their nature, and from Vines that differed equally as much.

Amongst those who have shown their skill in growing this Grape may be named Mr. Cole, who at one time was gardener at Ealing Park, from whence he used to bring out Muscats that were usually successful at the metropolitan exhibitions. High finish, especially in the matter of colour, was their leading feature. About eleven years since Mr. Cole purchased the land at Feltham, now known as the Grove Vineyard, which he has covered with glass, much of which is devoted to Muscat of Alexandria Grapes. In fact no other kind is grown except in one or two houses that are occupied by pot Vines, and which include most of the leading varieties. The extent is about an acre. The arrangement consists of a lean-to range on the boundary wall running round the whole. Of these the houses facing south-east and west are filled with Muscats, as also one to the south of Mr. Cole's dwelling-house and two spans running across the central space enclosed by the outer range. The Vines are in fine order, and remarkable for their uniformity of strength and the even crop they annually produce. They are all planted inside in borders about 13 feet wide, and in most cases there are outside borders of similar extent; to these no covering of any description is used. Plenty of water to the roots, with liberal feeding, is the course of treatment followed, by which means the inside borders are kept full of active roots, which, as Mr. Cole says, will go to and remain where they can get that which they require. Little, if any, of the fruit is cut before November and December, during which and the two first months of the year the crop is disposed of.

The Vines are started about the middle of March, and they are driven on briskly all through the season so as to get the fruit ripe whilst there is plenty of daylight. In common with other successful growers, Mr. Coleis a firm believer in the method of giving Muscats and late Grapes generally plenty of fire-heat. From the time of starting until the ripening is complete the fires are never suffered to go out except with the object of giving the furnaces an extra cleaning. The result of this is to be seen in the immense show of fruit that appears, many of the shoots having half-a-dozen bunches each, and this notwithstanding that the pruning is much closer than is generally practised, as evidenced by the spurs, which in the eleven years that have elapsed since the Vines were planted have not reached more than half the length usual in the time. As a contrary doctrine has been preached, it is nothing more than right that the owners of Muscat Vines and other sorts that require plenty of fire-heat should know that those who make their living by growing the Grapes in question for market, and that in the neighbourhood of London, where fuel is dear, find it to their interest to keep their fires going, more or less according to the weather, except during the short exceptionally hot spells. But this is digressing; and to return to Mr. Cole's practice, I may say that his Vines, treated as described, bear heavy crops annually. The bunches are reduced to medium size, and the berries thinned so as to give them sufficient room to attain their full size.

A large quantity of Strawberries is grown; they are timed to come in during the three or four weeks that elapse between the bulk of the forced fruit getting over and the outdoor crop being ready. President and Sir C. Napier are the sorts grown. The back wall of the house on the eastern side of the ground ends about 2½ feet below the top of the rafters; this space is filled with glass, by which means the sun reaches the Vines early in the morning.

The lean-to range on the southern side, which necessarily faces north, is planted with Roses and Camellias, amongst which a mixed assortment of plants for the production of flowers and Ferns for cutting are grown. The remainder of the houses occupying the enclosed space are similarly occupied; Richardias, Deutzia gracilis, Azaleas, and Adiantums are amongst the leading kinds. *T. B.*

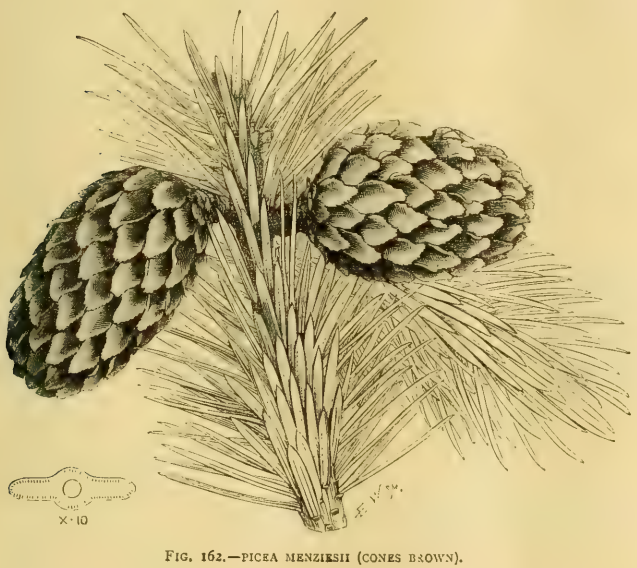


Fig. 162.—Picea menziesii (cones brown).

Home Correspondence.

Mildew on Roses Under Glass.—In consequence of accounts given in several numbers of the *Gardeners' Chronicle* last year of the satisfactory way in which Tea and Noisette Roses may be grown under glass without heat, I planted, last autumn, a conservatory about 30 feet wide and high with well-grown and healthy Roses, having first carefully removed the old soil and supplied fresh. The house is well supplied with fresh air, and has been carefully watched, cleaned, and generally attended to, but mildew has appeared, and is doing much damage. I shall be greatly obliged if your readers who have grown Roses under similar circumstances will, through your columns, state what remedy they would advise, and how they would avoid a recurrence of the nuisance. *Fredk. Townsend.* [Roses started early in the year in heated or unheated houses usually get infested by mildew if air be admitted by the lower sashes; it should be given only at the top of the house. The roof-glass should be removed in July, and the plants fully exposed. Ed.]

Mount Stuart.—The late Marquis of Bute inscribed over the doorway of Mount Stuart House this quotation from the *Tempest*:—

> "Henceforth this isle to the afflicted be
> A place of refuge, as it was to me;
> The promises of blooming spring live here,
> And all the blessings of the ripening year."

This wish from the benevolent Earl has not been fruitless, for Rothesay is now a very prosperous town, and one much affected by divers sick folk. The climate of Bute is equable, and many half-hardy and greenhouse shrubs are said to survive the winter there with impunity. As these shrubs at Mount Stuart are growing within a fenced and locked enclosure, safe from all vagabonds, I cannot say anything about them; but two tall Dracænas near the new mansion were sufficient evidence that current report was in no whit exaggerated. This same new mansion is much talked of in the West of Scotland; however, it has too much the appearance of a large town hall or the new Law Courts to come up to most people's idea of a rich peer's abode. Two things struck me as worthy of noting in the grounds; they were the goodly proportions of the Laurels and Rhododendrons, and the grass walks and drives. The Laurels, I should say, are hardly to be surpassed anywhere in England or Scotland. Numbers are nothing more or less than trees. Some have a clear reach of trunk, others spread over the ground and cover very large spaces. The latter often exhibit curious and picturesque growth. The Rhododendrons, if not so

thick as at Brodick Castle, are growing everywhere in random luxuriance. The collection of varieties and the grouping of colours in the neighbourhood of the walks are both good; of this latter fact I could well judge even in the closing days of April. The series of grass walks under avenues, or less formal shade, is very extensive; no less than eight diverge from a tall, statue-surmounted column. In all, Daffodils, Primsoses, and Blue Bells have been naturalised, and for some distance into the bounding woodland on either side the ground is similarly diapered. The effect was lovely. Who would not choose the woodland, and hate to be fettered with a monster mansion?

"Fondnesse it were for any, being free,
To covet fetters, though they golden be."

Il Vagabondo.

Pears.—It will be indeed an unusual circumstance should we have, as there is every indication that we shall, another good Pear season following immediately upon one of such abundance as was that of last year. It has been of late such an unwonted circumstance to obtain even a really good single fruit year that we may begin to wonder whether halcyon days are not coming for fruit growers, and that crops are to be the rule and not the exception. It is yet early to take perfect stock of the season's prospects, but I have no doubt when the usual returns are collated, it will be found that we have to record as fine a general fruit crop as has been noted for many years. This promise, which has now with all fruits passed beyond the blooming stage, is, no doubt, materially due to the lateness of the spring, and at critical periods comparative absence of frost. Still further, it is certainly due also to the unwonted maturation or ripening which all fruit-bearing trees received last autumn, evidencing the great need there is for comparatively dry, warm autumns, if fruit spurs and buds are to be not only ereated but perfected. How well Pears are fruiting I have evidence here in a direction not previously indicated. Some fresh trees of Marie Louise double worked, but of course primarily on Quince stocks, and which have always made growth as strong as if on free stocks, have also for several years past bloomed freely. Last year, for instance, they were smothered in bloom, but very few fruits set. Again this year they bloomed profusely, but now the trees are literally thick with round, swelling fruits, and if Marie Louise is the same generally, then we shall have a noteworthy Marie Louise year. It is very probable also that not a few Pears, usually thin or rare croppers, will produce good crops this season; and although a supplementary Pear Congress is not desirable, yet renewed opportunities will doubtless be afforded for revising nomenclature and comparison of kinds, and in these directions much good accomplished. The recent rains, in promoting abundant leafage, will also materially promote root action, and, as a result, the fruits should be fine, and, with ample sunshine, richly coloured in due course. *A. D.*

Educational Flower Shows.—"B.'s" remarks on this subject (p. 629) are very appropriate and ought to engage the more serious attention not only of those who promote flower shows, but those who contribute to their success, whether competitors or merely exhibitors. Occasionally, we find instances of a well staged, well labelled group of plants, but this is exceptional compared with those that are indifferently or badly labelled, or altogether without labels. "B." seems to lay stress on English plant names, as if the idea contained within itself a complete solution of the difficulty. It would undoubtedly satisfy some, but those who have only a little practical acquaintance with botany, know how utterly misleading many English names are, as they frequently do not even give a clue to the natural order to which the plant belongs. If both the English and the botanical names were given, nobody could object; and any additional information as to the native country of any particular plant, and its hardihood, would undoubtedly be a boon to the general public. Readable labels, at all events, if not made imperative at flower shows, should be encouraged by every endeavour and at every opportunity. To thousands who visit flower shows, a bank of Roses or a group of Calceolarias may be perfectly satisfying, but there are others who come with the avowed intention of inspecting the plants, it may be with a practised and professional eye, or merely an amateur, but notwithstanding a real *connoisseur* in some particular group or class of plants. The visitor may be merely a student desirous of augmenting his knowledge of floral structure, or a young gardener anxious to renew his acquaintance with old favourites under different circumstances, or to compare them with others. To all these people the question of labelling is a serious, not to say a paramount difficulty. It may be urged that botanists do not as a rule attend such places for the purposes of study and comparison; but there is no reason they should not make or compare notes with living specimens of different species for details of structure, which would often be impossible to determine from the same species in a dried state. It has been argued that a plant sufficiently meritorious of cutivation ought to be known or recognised without being labelled, but, alas! for the argument, there is no royal road to a knowledge of plant life more than anything else. Well and correctly labelled collections would materially assist the rising generation of gardeners, and educate and improve the public taste at large. The attendants at flower shows may or ought to be furnished with the requisite amount of information concerning their exhibits, but it is impossible in practice to meet all the exigencies of the case, and young gardeners, as well as other eager enquirers, give up in disgust at the loss of time and difficulty experienced in deciphering illegible labels or finding the name for plants that are merely under number. Enquiry may merely elicit an unintelligible reply from the attendant, who, labouring under the *ennui* incumbent upon a long summer day's duty, is not altogether to blame for such a state of matters, nor could be expected to do justice to the general public with an improperly labelled group of plants. *J. F.*

A Great Plague of Caterpillars.—In writing of fruit prospects last week I said that the bush fruits were a fine crop, and free from insect pests. Two days afterwards I observed here and there a caterpillar on an espalier Gooseberry of mine. They were attacked at once by hand picking—on the whole, if adopted in time, the best of all remedies. But up till now the more we have picked the faster they increase. Singularly enough, however, they do not seem as yet to have spread to other Gooseberry bushes near, nor to have attacked the Currants; and I trust that the picking may confine them to their first feeding grounds, and speedily chase them off that. They seem to have made a simultaneous raid on most of the gardens round. Where have they been for the last six years? and what has there been in this winter or spring to bring them up in such force and strength just now? For many years we have enjoyed an almost complete immunity from Gooseberry caterpillars, yet here they are again, without a sign of warning, in countless bands, consuming the leaves as ravenously as if they had never left us. This coming and going of insect pests is one of the greatest mysteries as well as heaviest trials of horticulture. *D. T. F.*

Sweet Brier Hedges.—In March, 1871, I planted in fairly friable soil, in two "sahshes," plants of Sweet Brier, about 7 or 8 inches long. It grew wildly and too well, being carefully clipped, and necessarily twice cut down to the ground; but now although the hedge is still continuous, it is "heavy a-top," the stems are thin, and several are sere; in fact, I consider the hedge to be dying. Every now and then it has had a top-dressing of light soil, leafmould and river sand. The Nestors of the village have been no help to me in my disappointment, but have gravely shaken their heads—as at a bad job. No horticultural book on my shelves has been of any assistance. My last appeal, therefore, is to the *Gardeners' Chronicle*, hoping that some of its clever readers will kindly spare time to answer my three questions, and contribute their experience and their judgment—for the sake of the more extensive cultivation of a most desirable plant. *William H. Sewell, Yaxley Vicarage, Suffolk.* [See *Enquiries*, p. 733. ED.]

Lilies of the Valley.—Your interesting note respecting Lilies of the Valley at p. 690, with the suggestion that the flowers then before you were evidence that we could grow these things at home if we would, should attract attention to the culture of these Convallarias, less for the production of bloom, for which our market growers care, than for the production of roots or crowns for forcing purposes. Messrs. Hawkins & Bennett, of Twickenham, succeed even under some comparative difficulties, in getting grand growth upon Lily of the Valley, having in remaking their beds every few years to introduce fresh soil largely, their limited space preventing change of ground; and yet by dint of trenching the old soil, adding some fresh, and plenty of manure, they succeed in maintaining a big stock of splendid crowns, as the leaf growth and fine spikes of bloom testify. Each bed is about 8 feet in width, and of great length. They all have wood fronts, backs, and ends, about 12 inches in height, but no crossbars, simply supports for the wires, which are strained tightly from end to end, and upon which the thin canvas coverings rest at night. One or two of the earliest beds have the help of a 2-inch pipe back and front, and these are also protected with lights stripped perhaps from off a Tomato-house, for a few weeks. The beds endure from seven to eight years, and then, becoming too dense, have to be lifted and replanted thinly. In doing this the crowns are sorted, the best going to form beds, the rest being grown anywhere for a year or two, till strong enough for the making of beds. In two years newly-made beds bloom vigorously. It is obvious that a somewhat similar course of trealment in rich alluvial soils, and where there was ample space to give change of crops, and Lilies of the Valley might be grown as fine and valuable as the best obtained from Germany or Holland. What one can do others can, and it seems as if only the effort were needed to be put forth to create an ample supply of home-grown crowns for forcing, and of the finest quality. *A. D.*

The Bog Garden.—Mr. Paul, in his interesting account of his bog garden, asks for the experience of others in this direction. I give a short note of mine. I first had the Wilson raft, (figured in the *Gardeners' Chronicle* p. 101, vol. vi., 1876), which made a capital bog garden as long as it kept the different levels, but as the wood got waterlogged it sank so much that only quite wet plants became at home. A metal raft, made for me by an engineer, had not the floating power I desired, so this served me the same trick, but it is now a pretty floating island ornamenting an ugly tank. In 1878, I got possession of Oakwood, Wisley; in the wood there there is deep bog and all degrees of moisture in the black soil; some plants are in their original positions, doing well. I then made an artificial bog with a small bog pond, this answered well, but I found it advantageous to make ponds, the soil dug out being worth for mounds as much as the cost of digging, the sides of them are at a gentle slope down to the water's edge; this gives great facilities for growing all bog and moisture-loving plants. In our oldest pond the water is covered with Aponogeton distachyon, Water Lilies, &c.; then come very wet plants, such as Sarracenias; then, moving up the slope, we have Gentians, Primula farinosa, &c.; then, higher, Trientalis europæa; then, at the top, Gentiana acaulis, &c. My experience agrees with that of Mr. Paul that most bog plants like full sun, though there are some decided exceptions; my artificial bog has plenty of sun. *George F. Wilson, Heatherbank, Weybridge.*

Gloxinias.—At Belmont, Devonport (Alan Bone, Esq.) is the richest collection, save one, of erect flowering Gloxinias, I have ever witnessed. A packet of seeds costing 2*s.* 6*d.* was obtained last July and then sown. The seedlings were pricked off into thumb-pots, and kept growing throughout the winter. Just after Christmas about a hundred plants were chosen and carefully shifted into 6-inch and 7-inch pots, in which they are now blooming. The result is at least twenty very fine flowers per specimen of the choicest and most dazzling colours. The foliage, too, is unusually magnificent, many of the leaves being almost a foot in length, and proportionally wide. The clever gardener is certainly an adept at Gloxinia growing, and I have pleasure in saying, Well done, Mr. Lethbridge. *W. Napper, Alphington Cross.*

The Shamrock.—There is reason to believe that the plant known to the English in Ireland in the sixteenth century may have been nothing more nor less than the humble Watercress. That excellent and painful traveller, Fynes Moryson, who was much in Ireland in Elizabeth's days, tells us that "The Irish willingly eate the heart Shamrock, being of a sharpe taste, which as they runne and are chased too and fro they snatch like beasts out of the ditches." It is true that this may apply to the Oxalis, but the expression "out of the ditches" rather points to Watercress, and one can hardly imagine a hunted "wood kern" staying his flight for a mouthful of Wood Sorrel. I have not Spencer's excellent *State of Ireland* by me for the moment, but I have a strong impression that he has also a reference to the eating of the Shamrock very like that of Fynes Moryson, whose Shamrock at any rate was not that carried by Irishmen on St. Patrick's day in our time. *G. H. K.*

Hail Showers and Aphis.—I examined my Roses and Chrysanthemums in the open air after a persistent hail shower to-day, and, as I anticipated from previous experience, it has wholly cleared the tender tops, which they most infest, of all aphides. I noticed also the well-known white "cuckoo froth," in which an insect larva is hatched, unusually early this year; that also has been washed away, and the larvæ probably killed, so that, as we say in Ireland, "'Tis a bad wind that blows no good." *W. J. Murphy, Clonmel.*

Aristolochia elegans.—This plant, certificated by the Royal Horticultural Society, and described and figured in your journal for September 5, 1885, has been growing in my garden for the past two or three years. The seed were brought to Mrs. Richardson from Rio de Janeiro, and labelled "The most beautiful flower of Brazil." It produces seed in great abundance, and flowers the first year from the same. We have not saved seed for the past two seasons, as we found that with very little protection the roots survived the winter. Owing to the intense cold of last January, when the mercury descended to 13° Fahr.,

and to imperfect covering, all but one of our plants were lost. This one is growing most vigorously. *T. G. Richardson, M.D.* [We have reason to believe that the plant is a native of Paraguay but introduced into Brazil. ED.]

Melons at Oakley Court, Windsor.—They are worth going a long way to see, so remarkably well are they done. That veteran Melon grower, Henry Bailey of Shardeloes, saw the Melon-house at Oakley Court a few days ago. and remarked that, with but one exception, it was the best he remembered to have ever seen. That was high praise indeed. Two houses are planted with Melons, both half-span, 16 feet by 12—the Melons in front, trained up the inside of the roof, and Tomatos in pots behind. One house is in advance of the other; in the forwardest the fruits are colouring, in the latter—a succession-house—the fruits are about one-third grown. The plants in the earliest house are from seeds sown on January 7; the plants put out on February 9. It has by no means been a quick season, and yet they have done remarkably well. There are four sorts, viz., Sutton's Invincible, scarlet-flesh, not particularly taking to the eye in its present stage; Sutton's Imperial, a finely-netted green-flesh, new and handsome in appearance; Hero of Lockinge—this variety appears to vary somewhat, one plant is earlier than the other, the fruit more netted, but undoubtedly the same variety; and a very promising seedling green-flesh, of full size, very handsomely netted, and very free, provisionally named Oakley Court Seedling. If it has a fault at all, it is a little slow in ripening, but the quality of the fruit may be all the better in consequence. If the flavour of this variety comes up to its appearance it should take a high position among green-fleshed varieties. Mr. T. Lockie, the gardener at Oakley Court, hopes shortly to submit it to the approval of the Fruit Committee of the Royal Horticultural Society. Mr. Lockie grows his Melons in decayed Couch, stacked and allowed to decompose for two years. He mixes with this a little bone-dust, that is all. In this it may be truly said the plants delight; they are happy in it, as witness their fine free development. Clay's Fertiliser is applied occasionally as a top-dressing, apparently with the best results. Some marvellous plants of Tomatos are grown at the back in large pots about two-thirds filled with soil. The sorts are Chiswick Red and Sutton's Perfection, the last a very fine form of the Excelsior type. Plenty of liquid manure is given, and occasional surface dressings of Clay's Fertiliser. *R. D.*

Ficus elastica Fruiting.—Is there anything unusual in the above plant ripening its fruit? I have noticed several plants producing fruit about the size and shape of a horse-bean during the last two seasons, and wondered what became of them. A few days since, to my surprise, I saw the fruits had changed colour, and cracked as in the ordinary Fig, falling off with the slightest touch, which would account for others disappearing. In taste I find they are slightly acid. *E. Crump, Ranelagh Gardens, Leamington.* [A figure of the fruit is given at p. 359, vol. ii., 1874. We have seen several specimens of late years. ED.]

A Sweet-scented Solomon's Seal.—To me this has hitherto been as much a myth as fragrant Camellias; but we now have what seems to be trustworthy testimony of the existence of the latter, and a gentleman assures me, on evidence which seems sufficiently trustworthy, that he has a Solomon's Seal almost as fragrant as Lilies of the Valley. Unfortunately it is now too late to have a sample forwarded, but I am promised one next year. Meanwhile, I am anxious to hear the Editor's opinion, and that of the readers of the *Gardeners' Chronicle* on the subject. I have known several species of Solomon's Seal from a child, and have found them virtually odourless; but if there is, as now seems probable, a sweet variety, of course the fragrance must add very much to its value, especially for pot culture, and for forcing; for even without this quality there are few more strikingly beautiful objects in a modern garden or conservatory in March than a well furnished 6 or 8-inch pot of Solomon's Seal, with its fine foliage and five, six, or a dozen graceful spikes of bloom. *D. T. F.* [We have never met with such a plant. ED.]

Reddish-coloured Wild Primroses.—I have a fancy for the Primulas, both British and exotic—cultivated and uncultivated—and have plants in my garden of Primula vulgaris (acaulis) from several localities widely apart, including the extreme Shetland Islands. Last year I picked up what at the time I supposed was an unbloomed seedling of P. vulgaris, as that Primrose is found growing abundantly in an adjoining wood. On its flowering this season I was surprised to find the blossom of a rosy hue and my first conjecture was that it was an outcast or the produce of seed from a nursery at no great distance from where I found it. I however recal to mind having seen it stated that the common Primrose is frequently found "sporting" and assuming colours other than its normal colour (or that of "the yellow Primrose by the river brink") when growing in the Channel Islands and in the warm portions of the South of England. Differing as regards the colour of the corolla the plant appears to partake of all the other foliation and floration characteristics of the common Primrose. I send a specimen of both for comparison, and for your opinion. *J. G.* [In the South it is not uncommon for Primroses to vary in colour even to a more remarkable degree than in the specimen sent. ED.]

Plagiarism.—Herewith we send you per book post a copy of our *Catalogue* and also a copy of one issued by Messrs. Knight & Co., of Liverpool. A very slight comparison of the two will be sufficient to convince you that Messrs. Knight have appropriated, almost *verbatim*, the original and descriptive articles in our *Catalogue*. The plagiarism is so evident and so extensive that we do think it calls for some little notice at the hands of the horticultural Press, and we shall therefore be glad if you will notice it. *Dobbie & Co.* [No date beyond that of the year, is affixed to either *Catalogue*, but it is certain that several portions are identical in the two, to cite one instance out of many, the article "How Vegetables and Seeds become Degenerated." ED.]

National Rose Society.—Now that the rosarians are anticipating the periodical onset of the fever that overtakes them at this season, it may be of interest to



FIG. 163.—NATIONAL ROSE SOCIETY'S GOLD MEDAL.

hold before their eyes the representation of the medals that are to cure some and afford wholesome stimulus to all (figs. 163, 164). For the opportunity of engraving these honourable badges we are indebted to the authorities of the National Rose Society.

Andrews v. Great Eastern Railway.—I notice in your report of the above case in your last issue you have styled me G. Taylor—it should be



FIG. 164.—NATIONAL ROSE SOCIETY'S MEDAL.

Leo Taylor; kindly correct and oblige. There is a more important correction, however, that I hope you will make. I spoke of sulphurous and "sulphuric" acids, not sulphurous and "sulphuretic," as given. Mr. Young, in his evidence, also mentioned "sulphuretted" hydrogen, not "sulphuretic." *Leo Taylor, F.C.S., &c.*

Wireworm Powder.—The powder sent me for trial is doubtless both carbolic and diabolic, for its perfume is horrible. Fearing that even if tested as advised over an area of open ground, in which might be both grubs and wireworm, that it would be exceedingly difficult to ascertain how far it may prove destructive to these insects or otherwise, I obtained several wireworms and a couple of black-headed grubs, placed them in a utensil with some of the soil in which found, and gave it a fair sprinkling of the powder, slightly stirring to mix it with the soil. After twenty-four hours I examined the soil, and found the insects alive. I then gave a further sprinkling, and examined again, both twenty-four and forty-eight hours later, and found the insects still alive. As the dressing was relatively far beyond what could be applied over a wide area of open ground, I feel assured that as far as these destructive worms are concerned, it has no injurious effect. The worms remained in the utensil five days, and were still alive then. On the other hand, I found the powder to be very destructive to slugs when dressed over the soil in the evening. As the weather has proved so moist I have no experience of its effects upon plants appreciably, but so far it seems harmless. Slugs seem to wither up under its effects as quickly as if salted. *A. Dean, Bedfont, May 24.*

The Late Mr. R. K. Penson, of Durham House, Ludlow (whose death is announced in another column) was a keen, well-informed florist, and had a rare power to detect that which added to or withheld artistic effect. Walking with him through one of the earlier exhibitions of the National Carnation and Picotee Society, we came upon two of my stands which, by the oversight of my assistants, had been left on the table instead of being raised to the angle bringing the flowers directly under the line of sight, the effect being not only to dwarf their proportions, but in an increasing degree in the back rows to present them as out of the true circle in form. Noticing the fault, and applying the remedy by elevating the stand at the back, Mr. Penson turned to me, and in a tone of severity called upon me to note and answer for the fault. My plea was one *ad misericordiam*. I could not be in two places at once. I was necessarily elsewhere directing the show, and thus my productions suffered; but the incident and its results were pregnant illustrations of the importance of little things, and how quickly they are realised by a well-instructed eye. *R. D.*

ESPARTO AND DATE PALM IN TUNIS.

CONSUL-GENERAL PLAYFAIR has recently furnished to the Foreign Office a very interesting report of a consular tour along the coast of Tunis in October and November last, from which we abstract the following notes. Writing of Susa, Mr. Playfair says the principal articles of export are olive oil and Alfa or Esparto-grass. The trade in this latter, it is said, ought to be the most important on the coast, but it is being rapidly annihilated, owing to the unwise restrictions placed upon it by the Tunisian government. This valuable fibre is found in Algeria, Tunis, and Tripoli. It was first brought into use by Mr. Lloyd, owner of the *Daily Chronicle*, who had an establishment at Oran, and up to the present time the trade has remained almost entirely in the hands of the English. In Algeria it is encouraged in every way. Two lines of railway have been constructed to convey it to the coast. Nearly 100,000 tons a year are exported, and there is no duty whatever on it. In Tripoli also, which exports 60,000 tons per annum, it is free. In Tunis, on the other hand, the duty is most onerous, and, strange to say, not uniform at all the ports. The most highly taxed is that shipped at Susa, as the fibre there is erroneously assumed to be of better quality than that of Sfax.

Referring to the Lotus of the ancients, Consul Playfair says:—"Much controversy has arisen regarding the plants which so enchanted strangers as to tempt them to desert their companions and their fatherland. The passage in the *Odyssey* (ix. 90) is as follows:—'On the tenth day we set foot on the land of the Lotus eaters. . . . Now when we had tasted meat and drink, I sent forth certain of my company to go and make search what manner of men they were who live here upon the earth by bread, and I chose out two of my fellows and sent a third with them as herald. Then straightway they went and mingled with the men of the Lotus eaters, and so it was that the Lotus eaters devised not death for our fellows, but gave them of the Lotus to taste. Now whosoever of them did eat the honey-sweet fruit of the Lotus had no more wish to bring tidings nor to come back, but there he chose to abide with the Lotus-eating men, ever feeding on the Lotus and forgetful of his homeward way'

"Most writers have been content to follow Shaw, generally the most accurate of observers, who identifies the Lotus with the *seedra* of the Arabs, the *jujube* or fruit of the Zizyphus. The wild variety is the common scrub of the country near Algiers, where Shaw resided; it becomes less common as we approach the south, and I neither saw not could I bear of the existence of a single plant in Djerba, which island Shaw never visited. No human being who has ever tasted its fruit once would care to do so again; it is not, in fact, possible for either man or

animals to exist upon it. There is a cultivated variety somewhat more palatable, but still it is by no means a luscious fruit, or worthy of immortality. It seems to me unnecessay to go out of the way to search for the Homeric food; the island is covered with it at the present time; no greater blessing than it was ever bestowed by Providence on man, and no other fruit is so all-sufficient for human sustenance as the 'honey-sweet Lotus' of the ancients—the Date of the modern Arab.

"The Date of Djerba is excellent, though inferior to that of the Djerid, which is certainly the finest in the world. This latter, however, is always found abundantly in the Djerba market. As this is the first place where the Date forms the daily food of the inhabitants, at which coasting vessels from the east would touch, the fruit would naturally produce a deep impression on travellers. The wine made from the sap of the tree is as familiar as the fruit itself, and may have contributed to render the sailors oblivious of 'their homeward way.'"

Reports of Societies.

READING SPRING SHOW: June 2.

THIS took place as usual in the Abbey Ruins, the arrangement being after the model of the Regent's Park, with turf banks and gravel walks. Many bright patches of colour were furnished by Azaleas, Roses, Rhododendrons, Calceolarias, Pelargoniums, &c., relieving the sombre hues of the large Palms, Ferns, and other foliage plants. Owing to some who had entered not bringing their plants, a few gaps were visible, but on the whole it was an attractive show with some features of peculiar interest. One of these was the

ORCHIDS.

Prizes were offered for for three specimens, and they showed a marked advance on anything we have seen before. The best came from Mr. Barham, gr. to G. May, Esq., Reading, who had a fine variety of Vanda suavis, with two spikes, a finely flowered piece of the orange coloured Dendrobium suavissimum, and Aërides Fieldingi with four spikes. 2d, Mr. H. James, Castle Nursery, Norwood, with Anguloa Clowesii, Cattleya Mendelii, and Odontoglossum Pescatorei; Mr. Baskett, gr. to W. J. Palmer, Esq., Reading, was a good 3d, with Cymbidium Lowianum, Cattleya Mossiæ, and Cypripedium barbatum.

The best specimen Orchid was an excellent piece of Vanda teres, with over thirty fine flowers, from Mr. Parham, gr. to H. J. Simonds, Esq., Reading.

STOVE AND GREENHOUSE PLANTS.

The only exhibitor of nine specimens was Mr. H. James, Lower Norwood; he had good plants of Darwinia Hookeri, D. tulipifera, Erica ventricosa coccinea minor, E. affinis, Dracophyllum gracile, Stephanotis floribunda, and Bougainvillea glabra. A 1st prize was awarded.

Mr. J. F. Mould, nurseryman, Pewsey, had the best six, staging Clerodendron Balfourianum, Statice profusa, Erica tricolor Wilsoni, Aphelexia macrantha rosea, and two others; Mr. Parham was a good 2d, with similar subjects.

Mr. Armitage, gr. to N. Clark, Esq., Reading, had the best four, being the only exhibitor.

The best specimen, [stove or greenhouse, brought an excellent piece of Dendrobium Devonianum, trained on a globular wire frame, and carrying a great many fine blossoms; and from Mr. Baskett one of the finest specimens of Clerodendron Balfourianum we are likely to see this season; it was grandly grown and flowered. Equal 1st prizes were awarded to these, and a 2d prize went to Mr. H. James, for an excellent piece of Aphelexis macrantha purpurea.

AZALEAS.

The best nine specimens came from Mr. T. Lockie, The Gardens, Oakley Court, Windsor, who had some small but well-grown and flowered bush specimens, the leading varieties being Roi Leopold, Roi d'Hollande, Eclatante, Duc de Nassau, Duchesse A. de Nassau, and Mad. Marie Van Houtte. He was the only exhibitor, and he had the best six also, Mr. Armitage taking the 2d prize.

RHODODENDRONS.

These were shown in large groups, occupying a space of 120 feet. The best came from Mr. Turton, gr. to J. Hargreaves, Esq., Maiden Erleigh, who had capital plants laden with bloom in good variety, and forming a striking mass of colour; Mr. Ashby, gr. to W. Fanning, Esq., Whitchurch, was 2d, also with a very good lot.

FUCHSIAS.

These were indifferently well shown. The best four plants were those staged by Mr. Lockie, who was awarded the 1st prize, but there is ample room for improvement.

GLOXINIAS.

Never before do we remember to have seen such a half-dozen Gloxinias as those staged by Mr. Baskett—from tip to tip of the leaves they were fully 3 feet through; the heads of bloom, averaging twenty-five to thirty flowers, were quite 18 inches in diameter, and such flowers! They were marvels of successful culture. A 1st prize was awarded. Equal 2d prizes were awarded to Mr. Farey, gr. to C. Stephens, Esq., Woodley Hill; and Mr. Parham, whose plants were likewise of a very high order of merit indeed.

CALCEOLARIAS.

Mr. Baskett took the 1st prize for some capital Calceolarias, also well grown and flowered, and of very fine quality; Mr. Dockerill, gr. to G. H. Palmer, Esq., was 2d.

ROSES IN POTS.

Mr. Lockie had the 1st prize for six specimens, well grown, and carrying good blooms; Mr. J. Mould being 2d. Mr. Baskett had the best four; Mr. Tranter, Upper Assenden, being 2d.

FINE-FOLIAGED PLANTS.

Mr. H. James had the best six, staging a fine Cycas revoluta, Thrinax argentea, T. elegans, Alocasia Lowi, Cocos Weddelliana, and Dasyliron acotrichum; 2d, Mr. J. F. Mould, whose leading plants were—Cycas revoluta, Gleichenia rupestris, Cocos Weddelliana, and Croton Queen Victoria. The best three Palms came from Mr. Parham, who had Seaforthia elegans, Phœnix dactylifera and Latania borbonica; 2d, W. H. James, who had a fine piece of Areca lutescens, and a good specimen of Thrinax elegans.

FERNS.

Mr. Parham had the best six Ferns, staging an excellent lot, consisting of a very fine Cibotium Schiedei, Alsophila australis, Davallia Mooreana, Gymnogramma chrysophylla, Davallia bullata, and Thamnopteris nidus. Another prize was awarded to Mr. J. Omer Cooper. Mr. Armitage had the best four plants; Mr. Dockerell being 2d. Mr. Dockerell was 1st with a very nice fresh lot of fifteen exotic Ferns or mosses; Mr. Parham being 2d.

GROUPS OF PLANTS FOR EFFECT.

Out of four, Mr. Parham had decidedly the best: 2d, Mr. Sumner, gr. to J. H. Millard, Esq., Bath Road, Reading; Mr. H. James being 3d. There was a class for smaller groups also.

PELARGONIUMS.

Mr. Ashby had the best nine plants, setting up capital specimens of Triomphe de St. Mande, Duchesse of Edinburgh, Prince Leopold, Bridal Bouquet, Rob Roy, Spotted Gem, and others. 2d, Mr. Surman, with a nicely grown lot.

TABLE PLANTS AND CUT FLOWERS.

Mr. Parham had the best set of these, very good indeed; Mr. C. Ross, gr. to C. Eyre, Esq., Welford Park, being 2d. The best twelve cut blooms of Roses were shown by Mr. Goodman, gr. to C. Hammersley, Bourne End; Mr. Tranter being 2d.

Show and fancy Pansies were finely shown by Mr. J. W. Lawrence, gr. to Mrs. Owen Knox, Caversham; Mr. T. E. Shrimpton, of Engfield, being 2d.

Mr. James had the best twelve bunches of cut flowers, Mr. Goodman being 2d, both very good, the former strong in Orchids and Anthuriums.

Mr. Sumner had the best twelve bunches of hardy flowers, showing a very good lot; Mr. Phippen being 2d.

TABLE DECORATIONS AND BOUQUETS.

The best three vases for table decoration came from Miss Adnams, of Reading; Miss L. Phillips being 2d, and Miss L. Cole 3d.

Miss Phillips had the best two vases of wild flowers; Miss Simonds being 2d.

Mr. Phippen had the best bridal bouquet; and Mr. Elliott, gr. to J. Hibbert, Esq., Braywick, Maidenhead, the best three buttonholes.

FRUIT.

Mr. Turton had the best two bunches of black Grapes, staging good Hamburghs; Mr. Maher, gr. to A. Waterhouse, Esq., Yattenden, being 2d, with the same.

Mr. Ashby had the best two bunches of white Grapes, showing very good Foster's Seedling; Mr. Baskett being 2d, with the same.

The best dish of Peaches was Early Ascot, from Mr. Ashby; Mr. Trinder, gr. to Sir H. Mildmay, Bart., Dogmersfield Park, being 2d, with Early Beatrice.

Mr. Mortimer, nurseryman, Farnham, had the best dish of Strawberries, staging very fine Sir J. Paxton; 2d, Mr. Goodman, with the same.

VEGETABLES.

Mr. T. Lockie had the best dish of kidney Potatos, staging Cosmopolitan; Mr. Ashby being 2d, with a pretty dish of the Ashleaf type, called Goldfinder.

Mr. Lockie also had the best dish of round Potatos, staging an excellent dish of Snowball, one of Mr. Dean's new early varieties; Mr. Ashby was 2d, with Sutton's Eclipse.

Lettuces, Asparagus, Rhubarb, and French Beans were all well shown. Of the latter the best was Ne Plus Ultra, Canadian Wonder coming next.

Mr. Lockie was placed 1st with a collection of vegetables; Mr. Booker, gr. to C. Littledale, Esq., Twyford, being 2d; and Mr. Goodman 3d.

Some good Mushrooms were also shown.

MESSRS. SUTTON & SONS' SPECIAL PRIZES.

These were offered for the best two dishes of Potatos of Early Eclipse and Sutton's Ringleader. Mr. T. Lockie was 1st, and Mr. Ashby 2d. Also for the three best dishes of Peas, Mr. Goodman being 1st, with Ringleader, American Wonder, and Little Gem; 2d, Mr. Balchin, gr. to B. Simonds, Esq., with William I., American Wonder, and Earliest Blue. Also for the best brace of Cucumbers, Mr. Lockie being 1st, with a faultless pair of Purley Park Hero; Mr. Hermon, gr. to F. Skurray, Esq., Reading, being 2d with the same; Mr. Waite was 3d, with Tender and True.

BATH AND WEST OF ENGLAND AGRICULTURAL.

THE Bristol meeting of this Society, which opened on Wednesday last, and which continues over Monday next, was not favoured with the best of weather on the opening day, though fortunately for the Society it kept fine until half-past 3 o'clock in the afternoon, by which time most people intending to visit the show on that day had put in an appearance, and then the rain came down in torrents, thus rendering the mud, which was bad enough before, ankle-deep in many of the most frequented parts of the show-ground.

As regards the horticultural department of the show, with which we are concerned, it was fairly good—indeed, many of the plants which go to make up the two central groups in the large tent devoted to garden produce were really of high quality. These included Palms, Ferns, Clematis (by Messrs. Smith, Worcester), Crotons, and Orchids, and well-flowered plants of tuberous Begonias, contributed by Mr. Edward Miller, gr. to F. Taggard, Esq., Old Sneed Park, Bristol; Mr. E. Coles, gr. to H. Pathick, Esq., Bristol; Mr. W. Rye, gr. to J. Derham, Esq., Sneed Park, Bristol; Mr. Young, gr. to B. George, Esq., Clifton; and Mr. W. H. Bannister, gr. to St. Vincent Ames, Esq., who showed four well-grown plants of Marguerite (Chrysanthemum frutescens), 6 feet through.

Mr. W. Perry, gr. to Cruger Miles, Esq., Bristol, staged the best lot of Orchids, his best plants being Odontoglossum Mendeli (good variety), Lælia purpurata having twenty-five well developed flowers; and Cypripedium cordatum.

Messrs. John Laing & Co., Forest Hill, London, staged some excellent varieties and well-flowered plants of tuberous Begonias for the time of year; as did also Mr. Pearson, of Chilwell, some good stands of Pelargoniums.

FRUIT.

The liberal prizes offered for Strawberries only brought out one dish, and that only of moderate quality. Mr. Bannister put up a nice dish of Hathaway's Excelsior Tomato; and Mr. Nicholls, gr. to Mrs. Miller, Brentry House, Westbury-on-Trym, staged four pot Vines, two of Black Hamburgh, having nine medium-sized bunches on both rods, which, like the two plants of Foster's Seedling, having twelve bunches, were tied together so as to form an arch about 6 feet high.

Messrs. Cheal & Son, of the Lowfield Nurseries, Crawley, Sussex, staged fifty varieties of Apples, most of which were in very good condition.

Messrs. Sutton & Sons, Messrs. Webb & Sons, and Messrs. Wheeler & Sons (Gloucester) had stands of seeds and roots, and boxes of grasses, which attracted great attention; but our notice of these, as of the horticultural builders' stands, must stand over till our next issue.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON

FOR THE WEEK ENDING WEDNESDAY, JUNE 2, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
May	In.	In.	°	°	°	°	°	°	°		In.
27	29.31	−0.45	55.4	49.0	6.4	51.8	−3.6	43.6	74	W.S.W.	0.27
28	29.57	−0.20	58.5	43.7	14.8	50.8	−4.8	41.0	69	WSW. to S.S.W.	0.09
29	29.85	+0.08	51.3	43.1	18.2	52.5	−3.3	40.8	66	S.W. to W.S.W.	0.02
30	29.85	+0.06	65.7	42.5	23.2	54.0	−2.0	44.3	79	E. to N.E.	0.00
31	29.84	+0.05	64.5	44.7	19.8	54.4	−1.9	48.1	79	E.N.E.	0.00
June 1	29.66	−0.14	70.5	53.8	16.7	62.7	+4.2	57.8	84	S. to S.S.E.	0.09
2	29.75	−0.05	75.5	49.5	26.0	60.7	+4.0	51.9	72	WSW. to S.S.E.	0.05
Mean	29.69	−0.09	64.5	46.6	17.9	55.0	−1.1	46.8	74	W.S.W.	0.50

May 27.—Dull morning, fine bright afternoon.
— 28.—Fine bright day.
— 29.—Fine bright day.
— 30.—Very fine in early morning, alternately clear and cloudy.
— 31.—Very fine and bright.
June 1.—Dull morning, thunderstorm between 9.15 and 9.45 A.M.; fine bright afternoon.
— 2.—Very fine and bright in morning, thunderstorm about 3.40 P.M. Fine night.

LONDON: *Atmospheric Pressure.*—During the week ending May 29, the reading of the barometer at the level of the sea decreased from 30.14 inches at the beginning of the week to 29.64 inches by 5 P.M. on the 25th, increased to 29.66 inches by 1 P.M. on the 26th, decreased to 29.34 inches by 9 A.M. on the 27th, increased to 30 inches by 9 A.M. on the 29th, and was 29.91 inches by the end of the week.

The mean reading of the barometer for the week was 29.81 inches, being 0.16 inch lower than last week, and 0.22 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 62°, on May 23; on the 24th the highest was 54°.8. The mean of the seven high day temperatures was 58°.6.

The lowest temperature was 43°.1, on the 29th; on the 24th the lowest temperature was 52°. The mean of the seven low night temperatures was 47°.

The greatest range of temperature in one day was 18°.2, on the 29th; the smallest was 2°.8 on the 24th. The mean of the seven daily ranges was 11°.6.

The mean temperatures were, on the 23d, 53°.4; on the 24th, 53°; on the 25th, 51°; on the 26th, 53°.5; on the 27th, 51°.8; on the 28th, 50°.8; on the 29th, 52°.5; and these were all below their averages by 0°.9, 1°.6, 4°, 1°.7, 3°.6, 4°.8, and 3°.3 respectively.

The mean temperature of the week was 52°.3, being 1°.9 lower than last week, and 2°.8 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 116°, on the 29th. The mean of the seven readings was 101°.3.

The lowest reading of a minimum thermometer placed on grass was 39°.1, on the 28th. The mean of the seven readings was 41°.8.

Rain.—Rain fell on five days in the week to the amount of 2.09 inches, of which 1.36 inch fell on the 24th.

ENGLAND: *Temperature.*—During the week ending May 29, the highest temperatures were 67° at Truro, 65° at Brighton and Cambridge; the highest at Liverpool 58°.9, at Nottingham 59°.5, at Preston 60°.. The general mean was 62°.2.

The lowest temperatures were 36°, at Truro and Wolverhampton, 39° at Sheffield; the lowest at Brighton was 46°.8, at Plymouth 44°.4, at Blackheath 43°.1. The general mean was 40°.9.

The greatest ranges were 31° at Truro, 26° at Wolverhampton, 25°.9 at Cambridge; the least ranges were 17°.5 at Preston, 17°.8 at Liverpool, 18°.2 at Brighton. The general mean was 21°.3.

The mean of the seven high day temperatures was highest at Cambridge, 62°.6, at Brighton 61°.5, at Truro 60°.9; and was lowest at Liverpool, 55°.0, at Bradford 55° 5, at Preston 55°.9. The general mean was 58°.

The mean of the seven low night temperatures was highest at Brighton, 49°.4, at Plymouth 48°.0, at Blackheath 47°; and was lowest at Wolverhampton, 41°, at Sheffield 43°.5, at Hull 43°.7. The general mean was 45°.1.

The mean daily range was greatest at Wolverhampton, 17°, at Truro 16°.5, at Cambridge 16°.2; and was lowest at Liverpool, 9°.5, at Preston 9°.6, at Bradford 10°.8, The general mean was 12°.9.

The mean temperature was highest at Brighton, 53°.8, at Cambridge 52°.8, at Plymouth 52°.4; and was lowest at Wolverhampton, 47°.8, at Nottingham and Bradford 48°.4. The general mean was 49°.9.

Rain.—The largest falls were 2.09 inches at Blackheath, 1.88 inch at Brighton, 1.19 inch at Wolverhampton; the smallest falls were 0.27 inch at Plymouth, 0.47 inch at Truro, 0.63 inch at Bristol. The general mean fall was 0.98 inch.

SCOTLAND: *Temperature.*—During the week ending May 29, the highest temperature was 65°.8, at Edinburgh; at Leith the highest was 58°.9. The general mean was 62°.1.

The lowest temperature in the week was 33°, at Perth; at Glasgow the lowest temperature was 39°. The general mean was 36°.

The mean temperature was highest at Perth, 49°.7, and lowest at Leith, 48°.1. The general mean was 48°.9.

Rain.—The largest fall was 1.81 inch at Edinburgh, and the smallest fall was 0.55 inch at Paisley. The general mean was 1.22 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

"*He that questioneth much shall learn much.*"—BACON.

SWEET BRIER HEDGE.—As I do not consider that I have been successful, notwithstanding the great pains I have taken, to grow the above, I shall be most thankful for exact information how best to grow as a hedge one of the most charming of, I suppose, our native British plants (Rosa rubiginosa). 1. Can Sweet Brier be grown permanently as a hedge? 2. What is the age of the oldest Sweet Brier hedge known, and where is it? 3. Is any peculiar treatment necessary? In this village, of chiefly heavy loamy soil, Sweet Brier was (as I have heard) plentifully set with White Thorn, from forty to fifty years ago, in a bank 118 yards long. The hedge was "buck-headed" this last winter, and I have to-day counted only six plants of Sweet Brier surviving in the 118 yards. *W. H. S.*

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that our Registered Telegraphic Address is* "GARDCHRON, LONDON." *Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

AUSTRALIAN FRUIT: *W. H.* Inquire of the Commissioner of the South Australian Court, Colonial Exhibition, South Kensington. They are kept in the ice-house on board ship.

BEETLE: *X.* A species of Blatta. It is not injurious to bees.

CATTLEYA: *Westfield.* C. Mendelii delicata var.

CHOISYA TERNATA: *W. Burrell.* The plant is hardy in the South, at least against a wall.

LIMES: *W. F.* The leaves are eaten by some caterpillar. Look out for a specimen and send it to us for a name.

NAMES OF PLANTS: *H. T. Ross.* Gladiolus vittatus, Horneman; figured in *Bot. Mag.*, t. 538, as a variety of undulatus.—*J. L. H.* Prunus Padus.—*G. K. G.* Parietaria officinalis.—*H. W.* Lycopodium clavatum. *O. P.* 1, Dendrobium Cambridgeanum; 2, Mackaya bella; 3, Lotus jacobæus; 4, Alonsoa linearis; 5, Sonchus lacinatus (as nearly as we can tell without flowers).—*William.* Vanda cristata.—*J. H. C.* 1, Brassia verrucosa; 2, Maxillaria aromatica.—*H. B.* Staphylea pinnata (Ash-leaved); Lonicera Oyloseum.—*A. H. R.* Staphylea pinnata (the common Bladder-nut).—*C. W. Dod.* 1, specimen lost by accident: please send another; 2, Lychnis pyrenaica; 3, Phyteuma spicatum; 4, Scrophularia canina; 5, Antirrhinum oreganifolium; 6, Salix pyrenaica.—*D. M.* Claytonia perfoliata.—*H. J. Ross.* Cattleya (Lælia) elegans.—*Liverpool Horticultural Company.* Crinum erubescens, Aiton, *Bot. Mag.*, t. 1232.—*G. D.* Saxifraga sphonhemica; Ornithogalum umbellatum.

DOUBLE NARCISSUS GOING BLIND: *C. D.* It has never been settled why double Narcissus poeticus go blind, but it is generally believed to be dryness in the soil. N. poeticus is not injured thereby, but the double evidently does best on a damp, cool bottom. This going blind is confined mostly to the South, Scotland and Ireland being fairly exempt, and for an obvious reason the market growers plant on the flat and damp parts of their orchards at Fulham and elsewhere.

PEACH DISEASED: *O. O.* A case of gumming and mildew. See our Answers to Correspondents in last week's number, p. 698. Mildew can be exterminated by applications of sulphur to the hot-water pipes.

PEACH LEAVES: *D. D. B.* The appearance is due to the exposure to scorching sun of the leaves when covered with drops of water from drip or syringing; each drop becomes in such cases a burning-glass. The glass of your house may also be defective.

PEACHES FALLING: *Foreman.*—These will drop from various causes—such as excessive dryness of the soil, want of wood-buds in advance of the fruits, gumming, and mildew; we cannot indicate the cause in your case.

PEAR LEAVES: *D. B.* The leaves are attacked by an extremely minute mite. We know of no remedy. Sweep up all affected leaves you can, and burn them.

ROYAL HORTICULTURAL SOCIETY: *C. C.* By applying to Captain Bax, the Assistant Secretary, Royal Horticultural Society's offices, South Kensington, you will obtain the information you require.

SLATERS (WOODLICE): *Donald McG.* Pour boiling water into their haunts by night. Keep toads in the house or pit, and put about small pots filled loosely with hay, which shake out into hot water daily.

SOWERBY'S "BOTANY:" *Emergo.* The original edition commenced in 1790 comprises thirty-six volumes, with 2592 plates. A second-hand bookseller would answer the latter question.

VINES FAILING TO CROP: *J. W. H.* The Vines having failed the next year after remaking the border, points to something being wrong with the roots, unless you cropped excessively the year after remaking. Examine the border for damage to the roots through fungus or drought. A well-drained border can readily become too dry if protected from rain and snow.

*** All communications intended for publication should be addressed to the "*Editor.*" Such communications should be *written on one side only of the paper* and sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

CATALOGUES RECEIVED.

THAMES BANK IRON COMPANY, Upper Ground Street, S.E.—Trade Price List.

MAX DEEGEN, JUN., Köstritz, Reuss, Germany—Rose List.

DOBBIE & Co., Rothesay, N.B.—Seeds and Flowers.

KNIGHT & Co., 104, Cazneau Street, Liverpool—General Catalogue.

JOHN LAING & Co., Forest Hill, London, S.E.—Begonias.

R. GILBERT, High Park Gardens, Stamford—Strawberries, &c.

KENT & BRYDON, Darlington—Florists' Flowers and Herbaceous Plants.

H. ELLIOTT, Springfield Nursery, St. Helier's, Jersey—Bedding Plants, Florists' Flowers, &c.

COMMUNICATIONS RECEIVED:—G. N.—J. G. H.—D. T. F.—R. W.—J. R. J.—W. S.—F. S. & Co.—Emergo.—W. J. W.—J. W., Harpenden.—F. Sander & Co.—F. B.—Kinmont & Kidd.—R. W. Adlam, Natal.—Canon Ellacombe.—C. Lee.—W. Ham.—T. Leighton (next week).—Malcom Dunn, many thanks.—W. G. S.—W. S.—T. W. S.—W. S.—J. H. H.—B. G.—De B. C.—T. E.—T. W.—E. Bonavia.—J. J. W.—J. S.—Editor, *Fanciers' Gazette.*

Obituary.

R. KYRKE PENSON.—We regret to record the death, on May 22, of R. Kyrke Penson, Esq., of Dinham House, Ludlow, in his seventieth year. He was best known in London as a liberal supporter of the National Auricula and Carnation and Picotee Societies, and also as a cultivator and occasional exhibitor; and in 1885 he showed Auriculas at South Kensington. He was a generous patron of horticulture, and loved to attend the annual exhibition of the National Auricula Society.

Markets.

COVENT GARDEN, June 3.

[THE subjoined reports are furnished to us regularly every Thursday, by the kindness of several of the principal salesmen, who revise the list weekly, and are responsible for the quotations. It must be remembered that these quotations are averages for the week preceding the date of our report. The prices fluctuate, not only from day to day, but often several times in one day, and therefore the prices quoted as averages for the past week must not be taken as indicating the price at any particular date, still less can they be taken as guides to the price in the coming week. ED.]

MARKET without alteration. Supplies abundant. Business steady. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, per ½-sieve	2 0–	4 0	Melons, each	2 0–	3 6
— Canadian, barrl.	8 0–	21 0	Peaches, per dozen	8 0–	21 0
Figs, per dozen	3 0–	6 0	Pine-apples, Eng., lb.	2 0–	3 0
Grapes, per lb.	2 6–	5 0	— St. Michael, each	2 6–	10 0
Kent Cobs, 100 lb.	40 0–	..	Strawberries, per lb.	2 0–	5 0
Lemons, per case	8 0–	10 0			

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4 0–	..	Mint, green, bunch	3 0–	..
Asparagus, Eng., 100	2 0–	5 0	Mushrooms, punnet	1 0–	1 6
— French natural, per bundle	1 6–	6 0	Mustard and Cress, do.	4–	..
Beans, Kidney, lb.	2 0–	..	Onions, per bushel	3 0–	..
Beet, red, per dozen	1 0–	2 0	Parsley, dozen bunch	2 0–	3 0
Broccoli Sprts., bush.	5 0–	..	Parsnips, per dozen	1 0–	..
Carrots, per bunch	0 6–	..	Potatos, per cwt.	4 0–	5 0
Cauliflowers, per doz.	3 0–	4 0	,, kidney, per cwt	4 0–	5 0
Celery, per bundle	1 6–	2 0	Scalkale, punnet	1 6–	..
Coleworts, doz. bunch	8 0–	..	Shallots, per pound	0 3–	0 0
Cucumbers, each	0 4–	0 6	Spinach, per bushel	3 0–	6 0
Endive, per dozen	1 0–	2 0	Sprue Asparagus, per bundle	1 0–	..
Herbs, per bunch	0 4–	..	Tomatos, per lb.	1 6–	2 6
Leeks, per bunch	0 6–	..	Turnips, bunch	0 6–	..
Lettuce, per dozen	1 0–	1 6			

POTATOS:—Old: About the same as last week. New: Jersey Kidneys, 2½*d.* to 3*d.* lb.; Rounds, 10*s.* to 12*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9 0–	18 0	Foliage Plants, various, each	..	2 0–10 0
Bedding Plants, various, per dozen	1 0–	2 0	Fuchsias, dozen	..	6 0–12 0
Begonias, per dozen	6 0–	12 0	Hydrangeas, doz.	..	9 0–18 0
Bouvardias, doz	..	12 0–18 0	Lilies, per dozen	..	12 0–24 0
Calceolarias, per doz.	5 0–	8 0	Lobelias, per dozen	4 0–	6 0
Cyperus, per dozen	4 0–	12 0	Marguerite Daisy, per dozen	..	8 0–12 0
Dracæna terminalis, per dozen	..	30 0–60 0	Mignonette, per doz.	4 0–	8 0
— viridis, per doz.	12 0–	24 0	Myrtles, per dozen	6 0–	12 0
Ericas, various, per dozen	..	12 0–24 0	Nasturtiums, dozen	3 0–	6 0
Euonymus, in var., per dozen	..	6 0–18 0	Palms in var., each	2 6–	21 0
Evergreens, in var., per dozen	..	6 0–24 0	Pelargoniums, per dozen — scarlet, per doz.	..	6 0–18 0
Ficus elastica, each	1 6–	7 0	Petunias, dozen	3 0–	8 0
Ferns, in var., dozen	4 0–	18 0	Spiræa, per dozen	6 0–	12 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Arum Lilies, 12 blms.	4 0	6 0
Azaleas, 12 sprays..	0 6	1 0
Bluebells, 12 bunches	0 9	1 0
Bouvardias, per bun.	0 6	1 0
Camellias, 12 blms..	1 0	4 0
Carnations, 12 blms.	1 0	3 0
Eucharis, per dozen	4 0	6 0
Forget-me-Not, or Myosotis, 12 bun.	2 0	4 0
Gardenias, 12 blooms	1 0	4 0
Iris, various, 12 bl.	1 0	3 0
Lapageria, red, 12 blooms	1 0	2 0
Lilac, French, bunch	5 0	7 0
— English, 12 bun.	4 0	8 0
Lilium longiflorum, 12 blooms	5 0	9 0
Lily-of-the-Valley, 12 sprays	0 6	1 0
Marguerites, 12 bun.	3 0	6 0
Mignonette, 12 bun.	3 0	9 0
Narcissus, various, 12 bunches ..15	0	20 0
Pansies, 12 bunches	1 0	3 0
Pæonies, 12 bunches	6 0	18 0
Pelargoniums, per 12 trusses	0 9	1 0
— scarlet, 12 trusses	0 4	0 6
Primulas, double, per bunch	0 6	1 0
Pyrethrums, 12 bun.	2 0	6 0
Ranunculus, 12 blms.	2 0	4 0
Rhododen., 12 bun.	3 0	6 0
Roses, Tea, per doz.	0 9	2 0
— red, per dozen ..	2 0	4 0
Spiræas, 12 bunches	6 0	9 0
Stephanotis, 12 spys.	1 6	3 0
Tropæolums, 12 bun.	1 0	2 0
Tuberoses, 12 blms..	0 6	1 6

SEEDS.

LONDON: *June* 2.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, London, E.C., write that the usual summer quietude has now settled down upon the seed trade. As regards Clovers, there is consequently no change of importance to be noted. The stocks remaining on hand are held with confidence at the low rates now prevailing. Spring Tares continue very scarce, and are still enquired for. Sowing Mustard and Rape keep steady. Choice parcels of blue Peas are now almost unobtainable. There is no change in Hemp and Canary seed. Feeding Linseed still firm.

CORN.

MARK LANE: *May* 31 —Only a limited business was practicable in Wheat at a reduction of 3*d*. to 1*s*. per qr. East Coast flour was 6*d*. per sack lower, with a very dull sale. American was the most depressed. Barley was dull, and for prompt shipment easier. Egyptian Beans advanced 6*d*., other kinds remaining without alteration. Blue Peas met more demand, but white declined 6*d*. Lentils were quiet. Oats were rather lower.

June 2.—The business done was very moderate. English Wheat moved off slowly, at barely Monday's prices. Foreign Wheat ruled in buyers' favour. Flour was inactive and drooping. Barley was about the same in value, the demand being quiet. Oats sold slowly at late currencies. Beans and Peas were quiet at late rates.

Average prices of corn for the week ending May 29: —Wheat, 32*s*. 5*d*.; Barley, 23*s*. 6*d*.; Oats, 20*s*. 4*d*. For the corresponding period last year: — Wheat, 34*s*. 11*d*.; Barley, 28*s*. 8*d*.; Oats, 22*s*. 9*d*.

FRUITS AND VEGETABLES.

STRATFORD: *June* 2.—There was a fair supply of vegetables on offer, and with an average attendance of buyers a quiet trade was transacted at the following quotations:—Onions, 100*s*. to 120*s*.; Carrots, household, 25*s*. to 35*s*.; do. cattle feeding, 20*s*. to 26*s*.; and Mangels, 16*s*. to 20*s*. per ton; spring Onions, 3*s*. 6*d*. to 5*s*. 6*d*.; bunch Carrots, 5*s*. to 6*s*. 6*d*.; Rhubarb, 1*s*. to 1*s*. 6*d*.; Parsley, 1*s*.; Mint, 1*s*. 3*d*. to 1*s*. 6*d*.; Leeks, 2*s*. 6*d*. to 3*s*. 6*d*.; and Greens, 4*s*. 6*d*. to 5*s*. per dozen bunches; Cucumbers, frame, 4*s*. 6*d*. to 6*s*. 6*d*.; do., common, 2*s*. 6*d*. to 3*s*.; Cauliflowers, 2*s*. to 2*s*. 6*d*.; and Beetroots, 1*s*. to 1*s*. 6*d*. per dozen; spring Cabbages, 5*s*. to 8*s*.; and Radishes, 2*s*. to 3*s*. per tally; Spinach, 1*s*. 6*d*. to 2*s*. 6*d*. per sieve; Asparagus, 1*s*. 4*d*. to 2*s*. per bundle; green Peas, 3*s*. 6*d*. to 4*s*. per flat; Lettuces, 10*d*. to 1*s*. per score; Mustard and Cress, 1*s*. 3*d*. to 1*s*. 9*d*. per dozen punnets; Horse Radish, 1*s*. per bundle; Gooseberries, 2*s*. 6*d*. to 3*s*. per basket; Cherries, 6*s*. to 7*s*. per flat.

COLUMBIA: *June* 2.—More plentiful supply of vegetables; good demand; prices lower. Quotations:—Lettuces, 9*d*. to 1*s*. 6*d*. per score; Turnip Radishes, 1*s*. 9*d*. to 3*s*. per tally; Cauliflowers, 5*s*. to 12*s*. 6*d*. do.; Cabbages, 2*s*. 6*d*. to 4*s*. 6*d*. do.; Spinach, 2*s*. to 2*s*. 6*d*. per sieve; spring Onions, 3*s*. 6*d*. to 5*s*. per dozen bundles; Greens, 3*s*. to 4*s*. 6*d*. do.; Onions, 4*s*. 6*d*. to 5*s*. 6*d*. per cwt.; Carrots, 20*s*. to 60*s*. per ton; and Mangel, 17*s*. 6*d*. to 22*s*. 6*d*. do.

POTATOS.

BOROUGH AND SPITALFIELDS: *June* 1.—The supplies of new are increasing but not largely, and prices were without much alteration. Quotations:—Regents, 70*s*. to 110*s*.; Magnum Bonums, 50*s*. to 90*s*.; Champions, 50*s*. to 65*s*. per ton. Jersey new round, 10*s*. to 12*s*.; kidneys, 17*s*. to 22*s*. per cwt.

STRATFORD: *June* 2.—Quotations:—New Maltese kidneys, 16*s*. 6*d*. to 17*s*. 6*d*.; do. rounds, 10*s*. to 12*s*.; and do. Lisbon, 9*s*. to 11*s*. per cwt. Old: English Magnum Bonums, 75*s*. to 85*s*.; do. seconds, 60*s*. to 70*s*.; Champions, 50*s*. to 60*s*.; and Victorias, 65*s*. to 75*s*. per ton.

COLUMBIA: *June* 2.—The market has been steady, at the following quotations:—Champions, 55*s*. to 65*s*.; Victorias, 60*s*. to 75*s*.; Regents, 60*s*. to 70*s*.; and Magnums, 60*s*. to 80*s*. per ton.

Imports.—The imports into London last week consisted of 3200 bags 6 cases Hamburg, 112 boxes 836 packages 190 cases Malta, 3 sacks Libau, 16,090 bags Stettin, 2400 bags Amsterdam, 8546 packages 200 boxes 1905 half boxes from Lisbon.

IMPORTANT TO GARDENERS.

FRANCIS & CO.

SUPPLY:—

1.—Garden Syringes of all kinds.
2.—Indiarubber Delivery and Suction Hose.
3.—Galvanised Wire Netting.
4—Indiarubber Door and Carriage Mats.
5—Gutta-percha Goods.
6—Superior Waterproof Garments.
7—Barometers, Thermometers, and Rain Gauges
8.—Prepared Chloride of Ammonia for destroying Insects.
9—Telegraph Instruments.
10—Insulated and Galvanised Iron Wires.
11.—Medical and other Batteries.
12.—Lightning Conductors.
13.—Electric House Bells.
14—Fire and Burglar Alarms.
15.—Speaking Tubes.
16—Adjustable Electric Thermometers.
17.—Disinfecting Fluids, Special.
18.—Francis & Co.'s Insect Destroyer.
19.—Garden Tools of every description.
20.—Quotations for every requisite.

THE TRADE SUPPLIED.

ADJUSTABLE ELECTRIC THERMOMETERS

For GREENHOUSES, VINERIES, CONSERVATORIES, FORCING PITS, INCUBATORS, and for FIRE.

TESTIMONIALS.

"*Your Thermometers are now in all the Sheds, and to you are we indebted for uniformly strong and healthy Plants.*"

"*Last night your Electric Tell-tale saved what is probably the finest house of Vines in the Kingdom.*"

"*Your Electric Thermometer is a mighty good thing, and no Wine Grower should be without them. Timely notice of approaching frost means the saving of perhaps a whole crop.*"

THE ADJUSTABLE ELECTRIC THERMOMETER

Is so applied, that when the temperature either rises above or falls below the degree at which it may be set, a bell is sounded or other signal given at however great a distance. Any number of Thermometers may be employed with the same Bell, so that every point can be under thorough protection at COMPARATIVELY TRIFLING EXPENSE. The

GARDENER'S RIGHT HAND.

FRANCIS AND CO.'S Thermometers are largely employed by Wine Growers in the open as well as under Glass, and are most valuable for Conservatories, Greenhouses, Forcing Pits, Hospital Wards, and in the process of Incubation.

Used throughout the Ostrich Farms of South Africa.

ADJUSTABLE ELECTRIC THERMOMETERS

Also form the most perfect PROTECTION AGAINST FIRE, the ever ready Alarm signalling the very first outbreak instantly.

Readily applied. Fitted with ease and certainty.

PRICES.

Large Bell, Battery, and Thermometer, complete .. .. } £3

Insulated Wire, Galvanised Wire and Insulators as desired. Bells, Batteries, Thermometers, &c., separate if required.

ALSO

ELECTRIC FIRE ALARMS, and ELECTRIC HOUSE BELLS,

As supplied to the Government Offices and Railway Companies.

ALL GOODS GUARANTEED.

The £3 set delivered, carriage paid, at nearest Railway Station.

FRANCIS & CO.,

Telegraph Engineers and Government Contractors,

EAGLE TELEGRAPH WORKS,

HATTON GARDEN, LONDON, E.C.

SEND for CATALOGUE.

STANDEN'S MANURE.

REDUCTION OF PRICE, IN BULK.

Established over Twenty Years.

For promoting a rapid, healthy robust growth, an early maturity, improving the quality of vegetables, flavour of fruits, and heightening the colour and increasing the size of flowers. It is especially invaluable to exhibitors and others whose aim is to excel. It is always of the same strength, certain and safe in all operations, and is applied with but little time or labour.

In Tins, 1*s*., 2*s*. 6*d*., 5*s*. 6*d*., 10*s*. 6*d*. and 21*s* each; and in Bags, 28 lb., 12*s*. 6*d*.; 56 lb. 23*s*.; 112 lb., 42*s*. each.

NICOTINE SOAP.

An effectual and speedy Eradicator of Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without injury to foliage.

The Safest and Most Reliable Insecticide Before the Public.

Sold in Jars, 8 oz., 1*s*. 6*d*.; 20 oz., 3*s*.; and in Tins, 14 lb., 15*s*. 6*d*.; and Drums, 28 lb., 25*s*.; 56 lb., 50*s*.; 112 lb., 95*s*.

FOWLER'S LAWN SAND.

For destroying Daisies, Dandelions, Plantains, Ribbed Grass, Thistles, and other Weeds, on Lawns, Croquet Grounds, Bowling Greens, Parks, &c.; at the same time acting as a fertiliser, and improving the growth and colour of the grass.

Price, in Tins, 1*s*., 2*s*. 6*d*. and 5*s*.; Kegs 28 lb., 10*s*.; 56 lb., 19*s*.; 112 lb., 36*s*.

ELLIOTT'S IMPROVED "SUMMER CLOUD" SHADING.

For Glass Structures that Require Shading.

It combines efficacy with appearance, convenience with economy, and its effects are lasting.

Sold in Packets, 1*s*. each, with full directions for use.

This being the only genuine "Summer Cloud" Shading, purchasers should be on their guard against imitations.

EWING'S MILDEW COMPOSITION.

For the prevention or destruction of mildew on all plants.

In Bottles, 1*s*. 6*d*., and 3*s*. each.

FOWLER'S FLOWER CEMENT.

For fixing the petals of flowers for bouquets, head-dresses, vases, church, table, or ball decorations. It dries quickly, and preserves the flowers without staining or injuring them.

In Bottles, 1*s*. 6*d*.; quarts, 8*s*. each.

SOLE MANUFACTURERS AND PROPRIETORS:

CORRY, SOPER, FOWLER & CO.

(LIMITED),

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FERRIS' PERSIAN FOOD

(SALAP MISREE PERSIANA).

(REGISTERED.)

"PERSIAN FOOD." Perfectly Pure.
"PERSIAN FOOD." Most Nutritious and Strenthening.
"PERSIAN FOOD." Easy of Digestion.
"PERSIAN FOOD." Flesh-forming.
"PERSIAN FOOD." Fat-forming.
"PERSIAN FOOD." Bone-forming.
"PERSIAN FOOD." For all Persons, Young or Old.
"PERSIAN FOOD." Equal to Meat for Delicate Stomachs.
"PERSIAN FOOD." Children take it with Avidity.
"PERSIAN FOOD." Everybody likes it.

"PERSIAN FOOD"

IS RECOMMENDED by the MOST EMINENT MEMBERS of the MEDICAL PROFESSION

REPORT OF J. MACPHERSON, Esq., M.A., M.D.

"35, *Curzon Street, London, W., Jan.* 17, 1880.

"Dear Sir,—I have not employed any test of the purity of the 'PERSIAN FOOD,' of which you have sent me a specimen; but I have made a trial of it, *and am much pleased with it, as supplying a light, bland, and pleasant form of nutriment.*"—Yours faithfully, J. MACPHERSON."

OPINION OF W. B. O'SHAUGNESSY, M.D., F.R.S., &c.

"Two drachms afford a sufficient meal for an invalid. Good 'PERSIAN FOOD,' carefully prepared, *is in truth one of the best articles of diet a convalescent can use.*"

INDIGESTION ABOLISHED.

Those who suffer from the tortures of indigestion should not fail to try "PERSIAN FOOD." It is pleasant to the taste, thoroughly satisfying, and easy of digestion. IT IS, IN FACT, THE MOST REMARKABLE FOOD EVER INTRODUCED.

FOR CONVALESCENTS.

Aged Invalids who have tried this remarkable Food have found it most health-restoring and re-invigorating. It is pleasant to the taste, and has a rich aroma. A very small quantity of "PERSIAN FOOD" rapidly produces a most marvellous effect on even the most aged and infirm systems. "PERSIAN FOOD" is of the purest quality, and the greatest boon ever offered to healthy as well as suffering humanity.

Sold in Bottles, 2s., 3s. 6d., and 10s. 6d. Directions on each Bottle.

To be had of all Chemists, Medicine Vendors, &c., or sent by Parcel Post on receipt of Remittance.

Sole Proprietors:—

FERRIS & CO., 49, FLEET STREET, LONDON, E.C.

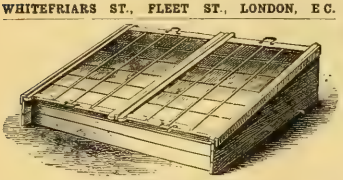
OWENS'S
PATENT SPRAY ENGINE
AND BLIGHT DESTROYER.



For applying liquid insecticides in the form of Mist to Vines, Plants, Rose and Peach Trees, Currant bushes, &c., &c., and for Washing Hops, effecting a saving of 90 PER CENT of INSECTICIDE used by an ordinary Garden Engine or Syringe; also for applying Moisture in the form of Mist in Orchid Houses, Ferneries, &c.

Prices and full particulars may be obtained from Patentees and Sole Manufacturers,

S. OWENS & CO.,
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Cucumber Frames.

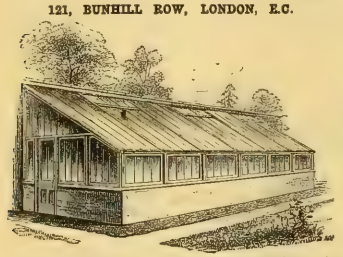
R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

		£ s. d.
2-light frame, 8 feet by 6 feet	Packing	3 10 0
3-light frame, 12 feet by 6 feet	Cases free	5 5 0
6-light frame, 24 feet by 6 feet		10 0 0

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Holhouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.

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Illustrated Lists of Wooden Buildings, Greenhouses, and Conservatories, and Concrete Slabs for Walls, Paths, and Stages, sent post-free on application.

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GREENHOUSES, GARDEN FRAMES.



SPECIAL PRICES on application.

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Plans and Estimates on application for every description of Horticultural Buildings in Wood or Iron.

Garden Frames and Sashes in Stock.

SERVICE À CHAMPAGNE, A BIÈRE, ET À LIMONADE.

FOR THE TENNIS LAWN AND GARDEN PARTIES.

In Amber Glass, in Blue Glass, and in Amber Glass with Blue Handles.

Price 5s. 9d.



Price 5s. 9d.

Consisting of Jug and Six Glasses. The Jug holds three pints, and the Glasses half pint each.

Sent to any address, packed in case (1*s.* 6*d.* extra), on receipt of remittance. Value of case remitted upon return of same.

Delivered free to any railway station in London.

HALLING, PEARCE and STONE,
WATERLOO HOUSE,
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Imperishable and Cheap—The New
WINDOW FLOWER BOX



MADE ENTIRELY OF IRON AND TILES.
Prices from 7s. 6d. each.
Write for full particulars to
W. M. PRYOR, IRONMONGER,
DALSTON JUNCTION, LONDON, E.
A Liberal Discount to the Trade.

GLASSHOUSES & HEATING.
B. W. WARHURST
PRICES FREE.
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HORTICULTURAL GLASS SHEET GLASS

14×12	20×15
16×12	20×16
18×12	22×16
20×12	24×16
16×14	20×18
18×14	22×18
20×14	24×18

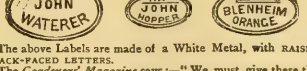
21-oz. Foreign of the above sizes, in 100 and 200 feet boxes, 3ds and 4ths qualities, always kept in stock.

A large stock of similar current sizes of **15-oz.** glass in 200 feet boxes.

Propagating and Cucumber Glasses, and all Miscellaneous Glass Articles, can be obtained from

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GLASS, LEAD, OIL and COLOUR MERCHANTS.
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Stock List and Prices on application. Quote *Chronicle.*

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE
STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

TO THE TRADE.—Send for Shaw's LIST of TIFFANY NETTING and other SHADING and PROTECTING MATERIALS. No. 1 TIFFANY, 10 pieces 2*s.* 2*d.* each, 20 pieces, 2*s.* 1*d.* each, 50 pieces, 2*s.* each, 28 yards long by 38 inches wide; No. 2 TIFFANY, 10 pieces, 2*s.* 6*d.* each, 20 pieces, 2*s.* 4*d.* each, 50 pieces, 2*s.* 3*d.* each, 28 yards long by 38 inches wide. Other sorts as cheap in proportion.

JOHN SHAW AND CO., 30 and 31, Oxford Street, Manchester.

Oil Paint no Longer Necessary.
HILL AND SMITH'S BLACK VARNISH,
for Preserving Ironwork, Wood, or Stone.

(*Registered Trade Mark.*)



(*Registered Trade Mark.*)

This VARNISH is an excellent substitute for oil paint or any outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of forty years ago by the Advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requiring no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of most of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in Casks of about 30 gallons each, at 1*s.* 6*d.* per gallon, at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

From ALFRED LOWE, Esq., *The Ryleys, Alderley Lodge.*

"Some twenty years ago I used your Black Varnish, and shall be glad if you will forward me a cask, as I consider it the best thing known for the preservation of all outdoor work, either wood or iron, that requires to be painted."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

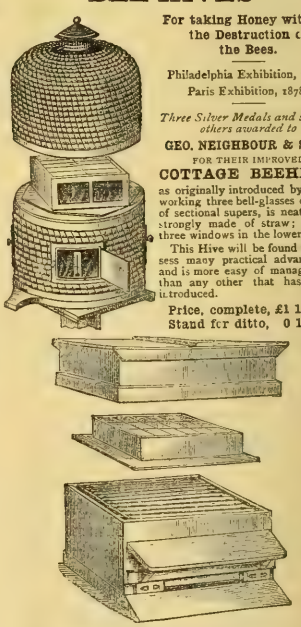
Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE on Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

HILL & SMITH,
Brierly Hill Ironworks, near Dudley;
118, Queen Victoria Street, London, E.C.; and
136, Stephen's Green, Dublin.

"Gather Honey from Your Flowers."

NEIGHBOUR'S CELEBRATED
BEE-HIVES



For taking Honey without the Destruction of the Bees.

Philadelphia Exhibition, 1876.
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Three Silver Medals and several others awarded to

GEO. NEIGHBOUR & SONS
FOR THEIR IMPROVED
COTTAGE BEEHIVE,

as originally introduced by them, working three bell-glasses or tray of sectional supers, is neatly and strongly made of straw; it has three windows in the lower Hive.

This Hive will be found to possess many practical advantages, and is more easy of management than any other that has been introduced.

Price, complete, £1 15 0
Stand for ditto, 0 10 6

THE GUINEA FRAME HIVE,

With metal ends to Standard Frames, and extra space at the sides to admit of chaff or other packing; also a double quilt for the cover and a case of 1 lb. Sections with cover are included. **Price,** *unpainted,* **21s.**

"THE APIARY," by ALFRED NEIGHBOUR, 5*s.*

CATALOGUE of Improved Hives and Appliances, with Drawings and Prices.

GEO. NEIGHBOUR & SONS,
127, HIGH HOLBORN, LONDON, W.C., and 149, REGENT STREET, LONDON, W.
Established 1815.

SEND FOR A PRICE LIST OF

JOHN BLAKE'S

PATENT

SELF-ACTING HYDRAULIC RAMS,

For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms, &c.

No Cost for Motive Power, which is obtained from the stream of water passing through the Rams.

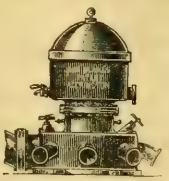
NO OILING OR PACKING REQUIRED.

Made in Sizes to raise from 300 to 500,000 Gallons per day. Will Force to a Height of 1500 feet.

Special Rams for High Falls to send up Two Gallons out of every Five Gallons passing through them.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.



This Ram will force up 200,000 gallons per day to medium heights.



This Ram, for deep working falls, is capable of sending up two gallons out of every five gallons passing through it.

EXTRACTS FROM TESTIMONIALS.

From THOMAS ROBERTS, Esq., Estate Surveyor to his Grace the Duke of Sutherland, K.G., Surveyor's Office, Trentham Hall Staffordshire, April 13, 1886.

"My dear Sir,—I am pleased to say that the Hydraulic Ram you supplied and fixed at Tittensor (the residence of the Marquess of Stafford, M.P.) does its work very satisfactorily, with a fall of 9 feet 6 inches, raising 9000 gallons daily to a height of 159 feet. The Duke of Sutherland, K.G., inspected the working of the Ram, and expressed his entire satisfaction with it.

"I am yours faithfully, THOMAS ROBERTS.

From HENRY MORTON, Esq., Agent to the Most Honourable the Marquess of Ripon, K.G., Ripon, April 12, 1886.

"Dear Sir,—The Patent Ram, with 1½ miles of service pipe, a large galvanised tank and other fittings, which you fixed for the Marquess of Ripon, for the conveyance of water from Hutton Moors Springs to Blows Hall and Copt Hewick Hall, are highly satisfactory to all concerned, both as an engineering success and the intrinsic merits of the materials supplied. About 6000 gallons of water per day are forced into the tank at Blows Hall, nearly a mile distant, and 127 feet above the Ram, the overflow falling into a 20,000 gallon underground tank, from which it gravitates through the 4-inch main 800 yards long, with a fall of 70 feet, to the service cocks and fire-plugs at Copt Hewick Hall, where, in case of fire, two or three powerful jets of water can be thrown on to the roof of the Hall.

"I consider your method of carrying out the work is everything that could be desired, and, whilst the waste-power water from the Ram is less than you specified, the quantity elevated is just what you guaranteed.

"I am, dear Sir, yours very truly, HENRY MORTON.'

From WM DICKINSON, Esq., Agent to the Most Honourable the Marquess of Abergavenny, K.G., Eridge Estate Office, Hargate Lodge, Tunbridge Wells, July 3, 1885

"Sir,—I am instructed by the Marquess of Abergavenny to say that the Patent Hydraulic Ram, with over 2 miles of pipes, forcing water to a height of 230 feet, which you erected at Eridge Castle about nine months ago, has given his lordship entire satisfaction, and he has every confidence in its continuing to do so.

"I am, Sir, yours faithfully, WILLIAM DICKINSON."

From Colonel Young, Agent to the Right Honourable Lord Londesborough, Londesborough Estate Office, Market Weighton, April 6, 1886.

"Dear Sir,—I have pleasure in stating that the Ram you put down in the park here to supply Lord Londesborough's house and the village of Londesborough with water, in August last, has done its work remarkably well up to the present time, and we have had no alteration to make in it since it was completed and started by your workmen, and I consider it a great improvement upon the one previously in use for the same purpose.

"I am, yours very truly, THOMAS YOUNG."

From Sir FREDERICK A. MILBANK, Bart., M.P., 2, Moreton Gardens, South Kensington, London, March 30, 1886.

"Dear Sir,—I have much pleasure in saying that the Hydraulic Ram you put down for me at Thorn Perrow gives great satisfaction; the materials supplied were of the best qeality. I have had the Ram at work from the time it was put down and have never heard a complaint. It worked well all through the long winter, which I consider was a great and severe trial, as we had the thermometer, for weeks together, registering from 22 degrees to 10 degrees of frost.

"Yours truly, FREDERICK A. MILBANK."

From the Right Honourable the Earl of Gainsborough, Exton Park, Oakham, July 30, 1885.

"Sir,—I have much pleasure in stating that the Hydraulic Ram you fixed for me at Exton during last year has worked very satisfactorily.

"I am, Sir, yours faithfully, GAINSBOROUGH."

(The Delivery and Distributing Pipes from this Ram are a mile and three-quarters in length, for the supply of Exton Hall and Exton Village.)

From Mr. J. A. RUTHERFORD, Agent to C. F. H. Bolckow, Esq., Estate Office, Marton Hall, Middlesborough, September 26, 1883.

"Dear Sir,—I am glad to say that the Rams you put down on the Hambleton Estate for Mr. C. F. H. Bolckow, are working very well. You undertook, with 16 gallons per minute, to send up 1500 gallons a day, and with enough water to work the Rams at full power, 2000 gallons a day. With a supply of 11⅜ gallons per minute they are lifting 2200 gallons, and when working full power, 3105 gallons per day are sent up to a height of nearly 400 feet. They made a clear start and have gone well since."

(The Delivery Pipe in the above case is 9000 feet in length.)

From Mr. HENRY ROBINSON, Engineer to the Stockport District Waterworks Co., September 8, 1883.

"Dear Sir,—I can now report well of the two Hydraulic Rams we have fixed to your instructions for the supply of Disley Village. 40,000 gallons per day was the quantity you promised they would force to a height of 68 feet, but on testing them I am convinced that 50,000 gallons is not the limit of their power, whilst the quantity of waste water used in driving them is not equal to half the capacity of the 6-inch pipe by which they are fed, and I am inclined to the belief that a more simple and efficient pump cannot be found."

From HORATIO R. B. PEILE, Esq., Commissioner to Sir Michael Shaw Stewart, Bart., Mansion House, Gresnock, August 13, 1883.

"I am glad to say the Ram fixed at Castle Farm in November last for Sir Michae Robert Shaw Stewart, Bart., continues a great success. The smallness of the driving water—2½ gallons per minute—is not more wonderful than the large proportion of water it sends up, viz., 720 gallons per day, through about 400 yards of delivery pipe, to an elevation of 75 feet."

From T. H. Sidebottom, Esq., Etherow House, Hadfield, February 22, 1882.

"Induced by the good report of my cousin, Mr. J. A. Sidebottom, as to the working of the Hydraulic Ram he had from you, I ordered the one you fixed here a year ago, which I am pleased to say has since worked well night and day. Yet the two Rams you fixed at Snow's Hill Manor, Gloucestershire, for my brothers and myself, are I think a still more remarkable example of your success. We had a Ram fixed by a well-known firm, which proved a miserable, and which your Rams displaced. They are forcing the water through three-quarters of a mile of delivery pipe, a little in excess of the quantity you guaranteed, to an elevation of 340 feet, and without the slightest hitch to the time of the last report from our tenant."

From V. F. BENETT STANFORD, Esq., M.P., Pyt House, Tisbury, Wilts, August 20, 1880.

"I have no hesitation in saying your self-acting Hydraulic Ram and Apparatus for extinguishing fire, which you laid down here, including about one mile of pipes, are very satisfactory. The Ram forces upwards of 5000 gallons per day to a service reservoir holding 25,000 gallons, at an elevation of 205 feet, being 70 feet above the roof of the house, from which reservoir the water is distributed to the house, stables, home-known firm, and srveral cottages, and in case of fire four jets can be thrown on to the house from different sides at a great force and large volume. I consider the work has been done well and efficiently, and does you credit."

From J. SPENDER CLAY, Esq., Ford Manor, Lingfield, Surrey, August 9, 1880.

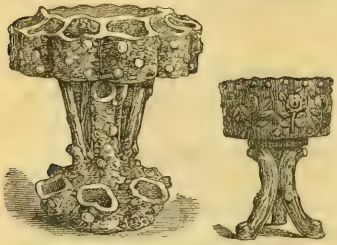
"In reply to your letter of enquiry, I am glad to be able to say that the two Hydraulic Rams which you fixed here are working satisfactorily, and that out of 13 gallons 3 quarts per minute, the maximum yield of the spring, they deliver to the top of my house, distant a full mile from the spring, 4 gallons 1 quart per minute, or 6120 gallons per 24 hours, being 120 gallons above the quantity you guaranteed."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

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THE ROYAL POTTERY,

WESTON-SUPER-MARE.



Calls the attention of Nurserymen, Gentlemen's Gardeners, Amateurs, &c., to the superior quality of the GARDEN POTS and GARDEN POTTERY manufactured by him. GARDEN POTS, from 1 to 30 inches in diameter; SEED, STRIKING, FERN, and ORCHID PANS; RHUBARB and SKAKALE POTS, TERRA COTTA VASES, ITALIAN BASKETS, ARBORETTES, BORDER TILES, RUSTIC WINDOW BOXES, &c. Ten Silver Prize Medals awarded to J. M. for excellence of Garden Pottery.

Book of Designs, 1s. 6d.

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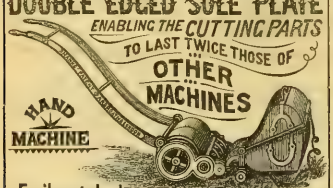
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Lawn Mowers

THE ONLY LAWN MOWER FITTED WITH

DOUBLE EDGED SOLE PLATE

ENABLING THE CUTTING PARTS TO LAST TWICE THOSE OF OTHER MACHINES



Easily worked

Making the Lawn like Velvet

Does not get out of order

PRICES.

To cut 10 inches wide,	£3 10 0	To cut 19 inches wide,	£6 0 0
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GARDEN ROLLERS

OF ALL SIZES

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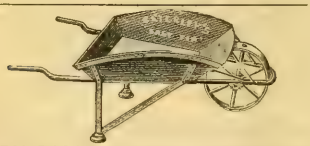
A large Stock of Machines of all sizes always kept

— AT 27 LEADENHALL STREET —

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SMALL LAWN MOWERS.

6 INCH 25/- 7 INCH 35/- 9 INCH 45/-



IRON GARDEN WHEELBARROWS

With TUBULAR FRAME and HANDLES.

Every Gardener should use the "Easy Tip."

No. 14, Japanned, 18s.; with Galvanised Body, 21s.

Galvanised all over, 26s.

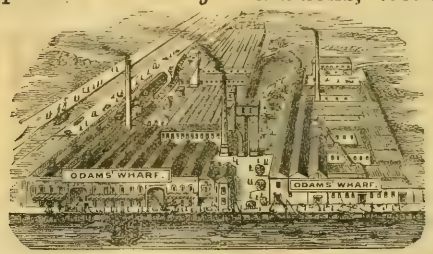
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Supplied to the Royal Gardens, Windsor,



For General Floricultural and Horticultural Purposes, calculated to Stimulate Growth and Develope Blossom;

ALSO FOR GARDEN CROPS, INDUCING VIGOROUS AND RAPID GROWTH, AND THE PRODUCTION OF AN ABUNDANT YIELD OF CULINARY AND SALAD PLANTS, SUCCULENT AND GRATEFUL TO THE TASTE.

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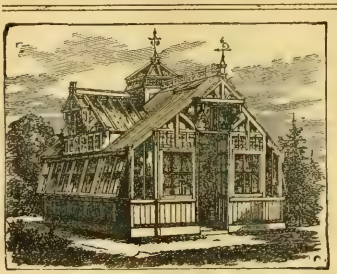
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Advantageous Terms to Seedsmen, Florists, &c. **Liberal Discount for Cash.**



Cheap substantial Houses and Frames; made also in Span and ¾-Span.



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Being practically acquainted with all details in the Construction of GREENHOUSES, CONSERVATORIES, HEATING APPARATUS, &c. (acquired by long experience), are prepared to arrange and carry out any work with which they may be entrusted with the utmost economy and dispatch.

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Apply, BECKETT BROS., CHELMSFORD.

The "INVINCIBLE" LAWN MOWER.

GARDEN ROLLERS.

WHEEL BARROWS.

Horse-Power Lawn Mowers. Side Delivery.

SAMUEL EDWARDS' PATENT.

GOLD MEDAL.

The Only Lawn Mower in which the wood regulating Rollers can be used either in front or at back of the Mower.



AWARDED the First Prize at each of the 3 Great Contests BIRMINGHAM, MANCHESTER, and LONDON.

Is the BEST in the Market

VIDE RESULTS OF CONTESTS.

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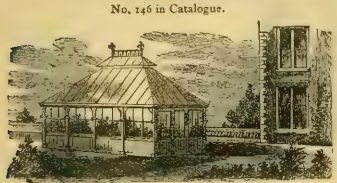
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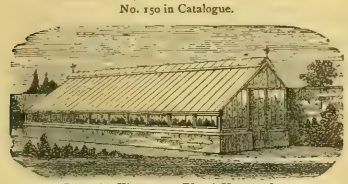
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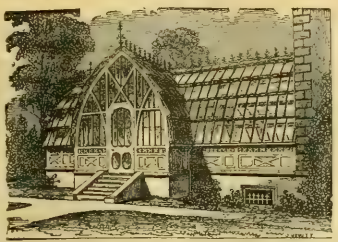
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For the convenience of those desiring an inexpensive but durable Carpet, TRELOAR & SONS have reduced the price of ALL OLD PATTERNS and odd lengths, so that Carpets may be obtained at 25 per cent. under the usual prices.

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Are kept in stock in 40 different sizes.

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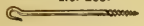


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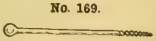
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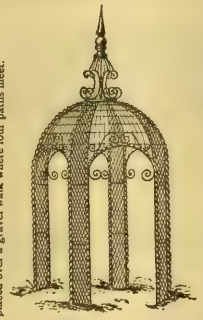
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4	6	8	10	12	15 in. long.
1/-	1/3	1/6	1/9	2/-	2/6 per doz.

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A very Ornamental Structure, suitable for a Lawn or to be placed over a gravel walk where four paths meet.



Height.	Diam.	Openings.	Width of Trellis.
9 ft.	6 ft.	3 in.	4 ft. 0 in.
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11 ft.	9 ft.	9 in.	6 ft. 3 in.

PRICES.—GALVANISED OR PAINTED.

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9 ft.	4	4	0
10 ft.	5	10	0
11 ft.	7	0	0

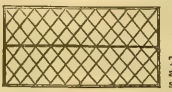
Openings filled in with Trellis to form an Open as illustrated Summer House.

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9 ft.	6	6	0
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FOR TRAINING PFAS, &c.

In panels of the following dimensions :—



6-ft. × 3-ft. .. 2/- each.
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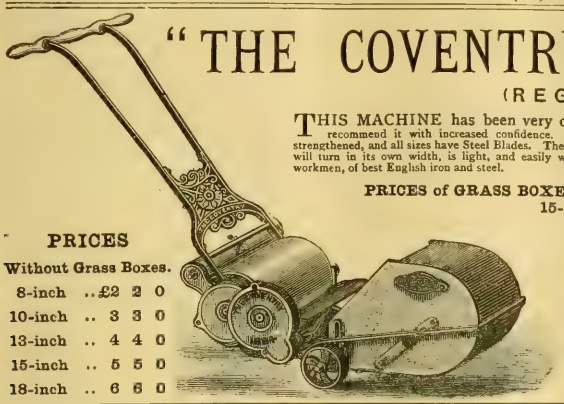
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9-in.	12-in.	15-in. wide
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(REGISTERED).



THIS MACHINE has been very considerably improved since last season, and the Manufacturers can recommend it with increased confidence. The Roller is now made the full width of the Machine. The Knives have been strengthened, and all sizes have Steel Blades. The Gearing has been improved, and the arrangement for regulating has been simplified. It will turn in its own width, is light, and easily worked, will cut wet or dry grass of any length. It is made in Coventry by skilled English workmen, of best English iron and steel.

PRICES of GRASS BOXES (each) :—8-inch, 8s.; 10-inch, 8s. 6d.; 13-inch, 9s.; 15-inch, 9s. 6d.; 18-inch, 10s. 6d.

PRICES

Without Grass Boxes.

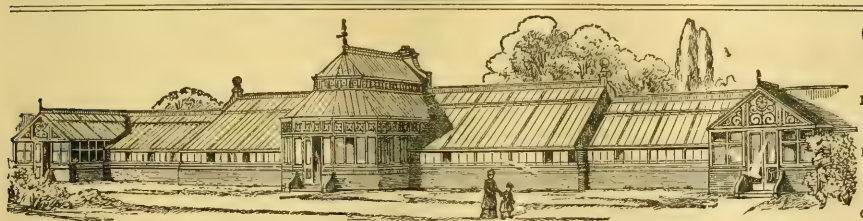
8-inch	..£2 2 0
10-inch	.. 3 3 0
13-inch	.. 4 4 0
15-inch	.. 5 5 0
18-inch	.. 6 6 0

WOOD ROLLERS (for attaching to Machine when Cutting Verges) :—
8-inch, 2s. 6d.; 10-inch, 2s. 9d.; 13-inch, 3s.; 15-inch, 3s. 6d.; 18-inch, 4s.

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Please send me "THE GARDENERS' CHRONICLE" *for* _____ *Months,*

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SPECIAL LOT.

Good, useful, open, and strong texture, suitable either for Netting or Shading, 72 inches wide, 50 yards long, price 6*d.* per yard.
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Also same cloth, 48 inches wide, price 2*d.* per yard.
TIFFANY, 55 inches wide, extra strong, price 4½*d.* per yard.

Write for Patterns to
MANAGER, Albert Mill, Swinton, Lancashire; or to
Mr. G. C GILLESPIE, 12A, Bread Street, London, E.C.

SKELETON HANDLIGHTS, to hold Glass or Slates (or Wire Netting for Ventilation and Protection from Rabbits, Fowls, &c.); either can be exchanged in a few minutes. The Glass, Slates, or Wire Netting, is secured by Patent Adjustable Clips. They are equally efficient as Handlights or on a Frame; can be made any length, with or without Frames. A Light 5 feet long, 2 feet wide in clear, without Glass, &c., 10*s.*; with Glass, or Slates or Wire Netting, 15*s.*
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VIRGIN CORKWOOD, for Ferneries, Rockeries, and Ornamental Work, in Gardens. Wholesale to the Trade.—WM. RANKIN AND SONS, 10, Carlton Place, Glasgow; and Lisbon, Portugal.

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.





GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME" FRAMES, PLANT COVERS, and PROPAGATING BOXES: also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price LISTS Free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheet of Plain or more elaborate Design, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
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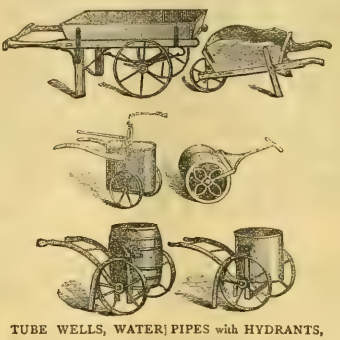
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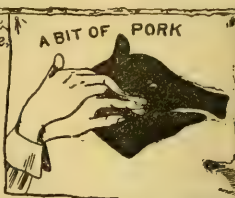
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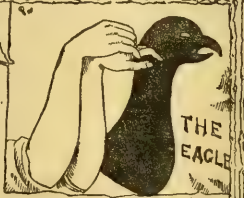


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Friday Next.

ANGRÆCUM LEONII.
VANILLA HUMBLOTI.
ORCHID species from Madagascar.
LISSOCHILUS DILECTUS, &c.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, London, E.C., on FRIDAY NEXT, June 18, at half-past 12 o'Clock precisely, a grand importation of ANGRÆCUM LEONII in splendid condition; leaves are fresh and green, and plants compact and well shaped. VANILLA HUMBLOTI, in good condition and sound pieces; a new ORCHID from Msdagascar, in really fine order: also a good lot of CYPRIPEDIUM CAUDATUM, ONCIDIUM AMPLIATUM MAJUS, ONCIDIUM JONESIANUM, EPIDENDRUM STAMFORDIANUM, LISSOCHILUS DILECTUS, and many other choice ORCHIDS.

On view morning of Sale, and Catalogues had.

Orchids in Flower. Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their next SPECIAL SALE of ORCHIDS in FLOWER will take place on TUESDAY, June 29, for which they will be glad to receive notice of entries in due course.

Thursday Next.—(Sale No. 7174.)

Consignment from Brazil, received direct:—280 ONCIDIUM CRISPUM, 200 ONCIDIUM ROGERSII, 100 CATTLEYA ACLANDIÆ, 50 CATTLEYA BICOLOR, 60 LÆLIA PERRINII, 100 SOPHRONITES, and many other Orchids.

MR. J. C. STEVENS will include the above in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 17.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7174.)
IMPORTATIONS OF ORCHIDS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 17, at half-past 12 o'Clock precisely, by order of the New Plant and Bulb Company, a consignment of CATTLEYA TRIANÆ, and ODONTOGLOSSUM HASTILABIUM, in fine condition and splendid masses; ODONTOGLOSSUM ALEXANDRÆ, EPIDENDRUM BICORNUTUM, the best variety, with long spikes and large white flowers; BRIGHTONIA SANGUINEA, &c.

On view morning of Sale, and Catalogues had.

Terrington St. Clement, and Wiggenhall St. Mary (Saddlebow), Norfolk.

To MARKET GARDENERS and OTHERS.

MR. STEPHEN GREGORY will SELL by AUCTION, at the "Globe" Hotel, King's Lynn, Norfolk, on TUESDAY, June 15, at 3 for 4 o'Clock precisely, the following VALUABLE PROPERTY.

IN TERRINGTON ST. CLEMENT. LOT 1.—All that very desirable Piece or Parcel of LAND, containing 6 a. 2 r. 32 p. (more or less), in Terrington St. Clement, and abutting west on the high road leading from Terrington Railway Station, to the village towards the north by an estate belonging to the Trustees of the late James Walker, deceased; south by land of Mr. Samuel Offley, and east by a public drove; together with the substantially and well-built House, with useful Outbuildings standing thereon, now in the occupation of Mr. William Minns. This lot is copyhold of the Manor of Howard's in Terrington.

N.B.—The soil upon this lot is a rich loam, and admirably adapted for the growth of Fruit and Vegetables, and lying, as it does, in close proximity to the railway station, renders it very desirable to any one wishing to embark in this business, and is held on a lease terminable at Michaelmas, 1888.

Apportioned tithe, 4s. 6d. per acre; land tax on the Lot, 5s. 8d.

IN WIGGENHALL ST. MARY (SADDLEBOW), LOT 2.—All those Two well-built Brick and Slated COTTAGES or TENEMENTS in Saddlebow aforesaid, together with 1 acre (more or less) of very fine GARDEN LAND at the back thereof, and occupied therewith and in the several occupations of George Orford and Robert Alger, and bounded on the north by land of Mr. William Batterham, south by the higway, east by land of the Mayor and Burgesses of King's Lynn, and west by the estate of Mr. S. Marsters.

For further particulars apply to to the Auctioneer, at Tilney All Saints; or at the office of SIR LEWIS W. JARVIS AND SON, Solicitors, King's Lynn.—June 3, 1886.

The Hall, Thirsk, Yorkshire.

To GENTLEMEN, NURSERYMEN, and EXHIBITORS.
IMPORTANT SALE of 1000 to 1200 choice STOVE and GREENHOUSE PLANTS.

MR. GEO. FREEMAN has the pleasure to announce his instructions from Reg. Bell, Esq., to offer for SALE by AUCTION, at the Gardens, The Hall, Thirsk, on THURSDAY, June 17, the whole of the valuable collection of PLANTS, ORCHIDS, FERNS, &c., viz.:—A number of specimen plants, including Allamandas, Bougainvilleas, Crotons, Cycas, Pandanus, Plumbagos, Azaleas, Camellias, Heaths, Epacris, Palms, and Ferns. Also a quantity of Decorative and Grouping Plants. Sale at 11 o'Clock in the morning.

For particulars see Circulars, sent free to applicants. May be had of Mr. J. MILNE, Head Gardener, Thirsk; or of the Auctioneer, at his Offices, Castlegate, Thirsk.

Thirsk, June 3, 1886.

Oak Gate, Augustus Road, Edgbaston, Birmingham.

IMPORTANT UNRESERVED SALE of a VALUABLE COLLECTION of STOVE and GREENHOUSE PLANTS, including Azaleas, Camellias, Ericas, Lapagerias, Allamandas, Dipladenias, Ixoras, Orchids, Ferns, Palms, &c.

MESSRS. THOMAS AND BETTRIDGE are instructed by C. E. Mathews, Esq. (who is ceasing to exhibit), to SELL by AUCTION, at the above Residence, on THURSDAY, June 24, commencing punctually at 1 o'Clock, his very valuable COLLECTION of SHOW PLANTS, all in first-class condition, which have taken many 1st prizes during the last twelve years. On view from 9 o'Clock on the morning of Sale, but at no other time. A tent will be provided on the lawn.

Catalogues may be obtained at the Offices of the Auctioneers, 21, Temple Row, Birmingham; or of Mr. WALTER JONES, Gardener, at the House.

Heathrow, in the Parish of Harmondsworth, in the County of Middlesex. About 14 miles from London, and a short distance from G.W. and S.W. Railways.

IMPORTANT SALE of valuable FREEHOLD ESTATES, all Tithe Free.

MR. E. P. NEWMAN is instructed by the Trustees under the Will of the late Samuel Hunt, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on TUESDAY, June 22, at 1 for 2 o'Clock, an exceedingly valuable property known as the HEATHROW FARM, with comfortable Farmhouse and numerous Buildings, forming 2 Homesteads, 16 Cottages, Orchards, and Gardens thereon; the whole comprising about 135 acres, and calculated to produce about £650 per annum. The land, which is well drained, is principally arable, has been highly farmed, and comprises a good depth of rich Loam; it is in a very clean state, and well adapted for Market Gardening, Seed Growing, or Nursery purposes, and the whole Property will be divided in 9 Lots. There are very extensive Building Frontages to good roads, and there is Brick Earth on a considerable portion of the estate. Possession on completion of the purchase.

May be viewed 7 days prior to the Sale, and particulars with Conditions and Plans may be obtained at the Auction Mart, London, E.C.; Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; and of the Auctioneer and Estate Agent, 42, High Street, Uxbridge, Middlesex.

Brixton, Surrey.

PRELIMINARY ADVERTISEMENT.

VALUABLE NURSERY PROPERTY.

MR. L. GRAHAM LEWIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, EARLY in JULY NEXT (unless previously disposed of by private treaty), the extensive

LEASEHOLD NURSERY PROPERTY,

situate No. 114, Loughborough Road, Brixton, comprising substantially-built, double-fronted, Detached Residence, with the Nursery Grounds in the rear, about 1 acre in extent, having seventeen Glasshouses, covering about 18,000 feet super., with concrete tanks for the storage of rain-water, and fitted with Hot-water Apparatus, driven by "Weeks'" Duplex and other boilers; admirably adapted for carrying on a large business, being especially suitable for Orchid-growers, Florists, Nurserymen, and others.

Particulars and Plans and Conditions of Sale will shortly be ready, and in the meantime all particulars may be obtained of the Auctioneer, at his Auction and Estate Agency Offices, 46, Chancery Lane, W.C.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Lælia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

FOR SALE, a NURSERY, in full working order, 9 miles from Covent Garden.—About 550 feet length of glass, well-built, and nearly new; well heated with 4-inch pipes. Lease, eighteen and a half years, at £20 rent, including Dwelling-house. Price £850; part can remain on mortgage.

For further particulars apply to H., A. A. Tombrell, Esq., Solicitor, 2, Arthur Street East, London Bridge, E.C.

To Nurserymen, Fruit Growers, &c.

FOR SALE, situate in the Parliamentary Borough of Bristol, a large and well appointed BUSINESS PREMISES, well stocked and in full working order, comprising nearly 20 Acres of Freehold Land, tithes free and land tax redeemed, with all Minerals, which include large and valuable beds of Limestone with Coal underlying. The House, built six years ago, is large and convenient: on ground floor, entrance hall, drawing-room 27 feet by 16 feet, dining-room, 18 feet by 16 feet, breakfast-room, two kitchens, larder, china pantry, and offices; on first floor, five bedrooms and large room, 24 feet by 16 feet, used as billiard room and library. The Glasshouses are two ornamental Ferneries, opening from drawing-room, large Camellia-house, two Vineries, each 55 feet by 16 feet; Rose-house, 64 feet by 16 feet; Fernery, 64 feet by 11 feet; Cucumber-house, 64 feet by 14 feet; range of three Forcing-houses, 120 ft. long; Stove, Propagating-house, Tomato-house, range of Pits, &c., with several hundred hand-glasses. The whole is heated by two large boilers and from 3000 to 4000 feet of hot-water pipes.

The other buildings consist of two nearly new Cottages, stabling for three horses, potting sheds, Mushroom-house, 64 feet by 15 feet; ranges of lofts, used as fruit-rooms, &c.; about 180 feet long, sheds, &c. The Working Stock is too large and varied to be put in an advertisement, and includes many thousand Standard, Pyramid, and Bush Fruit Trees; of Pears alone there are over 1000 standard and pyramidal trees of the choicest and best bearing kinds; also large numbers of Cherry, Apple, and Plum trees of the best cropping sorts.

The greater part of the fruit trees having been planted nearly twenty years, are in full bearing, and the crop of fruit is very heavy and valuable.

Photograph of house, &c., with fuller particulars, or to view, apply to GEO. HARDING, The Grove, Fishponds, Bristol.

To Nurserymen, Florists, and Others.

FOR SALE, or to LET, on LEASE, several ACRES, in large or small quantities; well adapted for all the requirements as above, and only a few minutes from Hampton Station. Price Freehold from £300 per Acre.

JOHN EMBLETON, Suffolk House, New Hamptou.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

115, Listria Park, Stamford Hill, N.

RICHARD WALKER can supply the following for cash:—CABBAGES: Early Rainham and Enfield Market, and Robinson's Champion Drumheads and Thousand-headed, all at 3s. per 1000. BRUSSELS SPROUTS, the best of all, at 5s. per 1000. Cash with order.

Market Gardens, Biggleswade.

ROYAL HORTICULTURAL SOCIETY.
GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5, 1886.

GREAT EXHIBITION of PLANTS, FLOWERS, FRUIT, VEGETABLES, &c., in the BOTANIC GARDENS and WAVERTREE PARK.

Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.

NOTICE.—Entries close JUNE 21.

ROYAL HORTICULTURAL SOCIETY.—
GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5, 1886.

GREAT EXHIBITION of IMPLEMENTS, GARDEN STRUCTURES, TOOLS, and APPLIANCES, in the WAVERTREE PARK.

Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.

NOTICE.—Entries Close JUNE 12.

Applications for Advertisement Space in the Official Catalogue should be made at once to ADAMS AND FRANCIS, Advertising Agents, 59, Fleet Street, London, E.C.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.

The ANNUAL EXHIBITION will be held at Farningham, on WEDNESDAY, June 30. Enlarged Schedule with several attractive novelties. The Band of the Royal Engineers will be in attendance. Schedules and Entry Forms may be had of

W. AND J. HODSOLL, Hon. Secs., Farningham.

GRAND ROSE SHOW, BATH, THURSDAY, July 8.

1st Prizes:—Nurserymen, seventy-two varieties, £8 8s.; thirty-six varieties, £4. Amateurs:—Thirty-six varieties, £5; twenty-four varieties, £3. The 2d and 3d Prizes in proportion. Several other Classes for Roses, Bouquets, Strawberries, and Plants—thirty-one Classes in all. Entries close July 3. For Prize Schedules apply to

BENJAMIN PEARSON, Sec.

14, Milsom Street, Bath.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.

A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of

PHILIP MAC MAHON, Curator,

Hull Botanic Gardens.

The following, amongst other valuable Prizes, will be awarded:—Group of Ten Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

BEDFORDSHIRE AGRICULTURAL SOCIETY'S SHOW at Luton, on WEDNESDAY, July 21.

A GRAND SHOW of FLOWERS and FRUITS, open to the United Kingdom, will be held in connection with the above, when the following VALUABLE PRIZES, amongst others, will be offered:—

10 ORCHIDS, 1st, £10; 2d, £6; 3d, £4.
6 ,, ,, 1st, £6; 2d, £4; 3d, £2.
12 STOVE and GREENHOUSE PLANTS, 1st, £15; 2d, £10; 3d, £5.
6 ,, ,, 1st, £7; 2d, £5; 3d, £3.

Also for ROSES, FRUITS, &c. For Schedules and particulars apply to

Mark Square, Luton. Mr. S. C. OLIVER, Hon. Sec.

Borough of Poole.

To LANDSCAPE GARDENERS and OTHERS.

THE COUNCIL of the BOROUGH of POOLE are desirous of obtaining DESIGNS, with Estimates of the probable cost of a Scheme for Laying Out as a People's Park and Recreation Grounds a piece of land situate at Parkstone, in the said Borough, containing about 35 acres.

The Council therefore invite competition for the above, and a Premium of £20 will be paid to the competitor whose design shall be considered by the Council to be the best, and £5 to the competitor whose design shall be considered to be the next best, and such designs and estimates shall thereupon become the property of the Council.

Competitors may also Tender for the Works, Planting, &c.

Plans, endorsed "People's Park and Recreation Grounds Competitive Designs and Estimates," are to be sent in on or before the 20th day of July next, to the Office of the Borough Surveyor, Mr. John Elford, in Poole, from whom a Plan of the Land and conditions to be observed may be obtained, on payment of 10s. 6d., which sum will be returned if a *bonâ fide* design is sent in. The Council do not bind themselves to accept the lowest or any Tender.

H. W. DICKINSON, Town Clerk.

Town Clerk's Office, Poole, May 28, 1886.

FOR SALE, Exhibition Plants.—Grand Plant of APHELEXIS MACRANTHA ROSEA, fit for exhibition now and for a month to come, £10 10s., finest in the country. Also ERICA ÆMULA, £9 9s. Many other SPECIMEN PLANTS, on application to

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CHOICE FLOWER SEEDS for Spring Gardening, of the very best strains; also VEGETABLE SEEDS of all sorts, likewise of the best strains. Priced CATALOGUE post-free.

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100 Herbaceous and Alpine Plants for 25s.

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.

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DAHLIA CONSTANCE, White Cactus, 3s. dozen, 4d. each.
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" Pompon, the finest new varieties, } 3s per dozen.
" Single, superb, the finest varieties, } 4d. each.
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The above plants are not only of A1 quality, but being nearly all from single pots have good roots and are ready for immediate effect. Package free. Cash with all orders.
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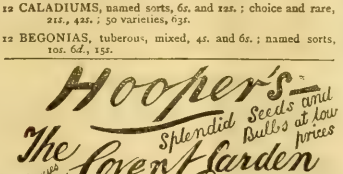
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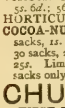
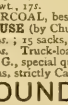
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7.0	Ammonia	8.30
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15.0	Potash	15.0
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Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
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1 ,, of Moisture, and ingredients not of manurial value.
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The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

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1-in.	10 0	15 0	20 0	30 0



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100 yard Reels .. 7*s.* 0*d.*
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530 ,, ,, 1 cwt. 27*s.* 6*d.*
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THE

Gardeners' Chronicle.

SATURDAY, JUNE 12, 1886.

ARUNDEL.

YORKSHIRE, Devon, and Kent are the three counties to which Englishmen, as a rule, seem to think it a high privilege and boast to belong. Sussex, however, has a goodly muster of partisans, who would not, if they could help it, take a fall from any county of England. The district around Arundel, including, as it does, the pastoral scenery of the South Downs, and around the quaint old towns of Petworth and Midhurst, is peculiarly so. The scenery is pleasing, and time after time the thoughts are led back to the closed pages of our country's history.

In that charming novel, *Alice Lorraine*, Mr. Blackmore excuses the lack of reference to scenery in ancient times on the ground that, although the old writers had doubtless very nearly the same feelings on the matter as their descendants, yet they knew better "the large impossibility of describing it." Mr. Blackmore himself, except by stray touches and paragraphs—which, however, suggest as much as pages from most writers—seems, of set purpose, to avoid any description of the landscapes of the South Downs. He must be brave indeed to attempt what the master is chary of, so I will limit myself to one commonplace sentence, and then conclude this preface with another quotation from his tale of the South Downs. The range of grassy hills, in parts deeply riven, and here and there surmounted by strips and clumps of woodland, form a background to English fields and meadows. Into the mind and heart and soul of him who sees for the first time, or of the native on his return, steals "without any painful knowledge, or the noisy trouble of thinking, pure content with his native land and its claim on his love." "The power of the earth is round him with its lavish gifts of life—bounty from the lap of beauty, and that cultivated glory which no other land has earned." Here, indeed, is a part of the heritage of every London-bred Englishman within his easy reach. The busiest will have three days' holiday in the year; he will find few prettier stretches of greensward than the Duke's park at Arundel. William the Conqueror, after his formal coronation, made a great apportionment of his new realm, but little of it was really in his power to give at the time, except the south-east. What corresponds now to the rape of Arundel he gave to Roger de Montgomerie, who had commanded one of the wings at Senlac, and who was one of the mightiest of his knights, and withal sage and cunning in council. With this worthy's heir begins the chequered story of weal and woe, so well set down by Tierny in his history of the *Town and Castle of Arundel*. The prospect of the Castle from the low flat meadows by the side of the Arun, or from Swanbourne Lake, is picturesque, but at close quarters the building

is not so impressive; indeed the new part, in its present cheerless, semi-finished state, makes one turn with cordial relief to the Duchess's flower garden.

Here, under the tutelage of the keep, surrounded by crumbling old-time masonry, to which cling methodically trained fruit trees, one can pace slowly between primly-cut Laurels and yet find no hideous incongruity. Extensive alterations, in the shape of grass walks and long beds of herbaceous flowers, are contemplated; if these be formed, the Laurel standards will have to go—a change for the better probably; but still, "let well alone" is a good, if somewhat fusty, proverb. The place as it is breathes an air of old-fashioned content and stately calm, and is so severed from the rest of the grounds, that little would be lost by allowing it to retain the same sweet dignified allurements. The tangled planting on the mound of the keep is not likely to suffer any change into anything richer and rarer, so appropriate is it. A little way out on the lawn, under the shadow of this mound, is a finely developed specimen standard of Eriobotrya japonica, in vigorous health. This Mespilus is a most ornamental tree, and from the size attained here its planting in sheltered positions in the southernmost counties ought to be a thing of frequent not rare occurrence.

At Mount Edgcumbe some specimens growing on a steep bank sloping seawards are also thriving; and both there and at Arundel the large deep coloured leaves act as a foil to nearly all the other evergreen foliage, and render the immediate neighbourhood the brighter and better for their presence. When going from the Loquat towards the quadrangle of the Castle, some very fine specimens of the large-leaved Box (Buxus balearica) are passed.

On some high ground in the policies, well exposed to winds from three quarters, are some tall Wellingtonias, showing manifest signs of health and liking for their position—a marked contrast in this respect to some sickly Araucarias hard by. At Caen Wood the opposite is the case, the Araucarias showing up far better than the Wellingtonias. The best Wellingtonia I know, however, is growing on a chalky subsoil. Picea Morinda has proved a great success, and so has Cupressus macrocarpa, two fine specimens of it being nearly, if not quite, as good as any in Sussex.

It is far from my intention to retraverse well-exploited ground, and attempt to describe in order the many attractions of Arundel; but if anything I can say can induce a tired or sorrow-blighted spirit to allow black Care to sit on his office-stool while he drinks in health on the South Downs, the purpose of this paper is fulfilled. It is always well to quote convincing testimony if one can—nay, it is almost a duty—to cite Mrs. Browning when talking or thinking of the rich-wooded landscape of Sussex—

> "My woods in Sussex have some purple shades at gloaming,
> Which are worthy of a king in state or poet in his youth."

Few English parks contain finer woodland or a more diversified surface than Arundel. This is caused by the park being in the run of the South Downs. The Duke is very kind in throwing it open to the public, and large numbers of people come from Brighton and elsewhere and "fleet the time" right pleasantly therein. This, notwithstanding the fact that some of the hills have formal round hats of foliage, which this too critical age would change—perhaps only for its own transient conceits. Botanists again, who

> "All cold to smiles and dimpling,
> Forsake the fair, and patiently go simpling,"

will not regret their choice.

Arundel has been the seminary wherein some of our best gardeners have spent their 'prentice days. Its roll of head gardeners, too, is creditable: among the number is McEwan, who has left an irrefragable testimony to his ability by the great share he had in the formation of Swanbourne lake. The bounding line of this fine sheet of water is natural everywhere, a steep chalky bourne in part clambered down by the gadding Ivy being highly praiseworthy. The weir at the foot near the entrance to the park from the dairy, if only by reason of the transparency of the water and its trilling rhythm, makes tarrying awhile an imperative pleasure.

The dairy garden is a dainty sweet nook, well sheltered from blustering winds, especially those from the north and north-east. The worst gales hereabouts, however, come from the south-west. No visitor ought to miss the magnificent standard Magnolias that are planted out in this garden. These Magnolias were planted in 1846, and have matured into wide spreading trees, as healthy and vigorous as can be. The girth of the biggest is 60 inches, this measurement being taken round an unknobbed internode.

Across the road from here is a noteworthy Hornbeam, at the base of a steep wall of chalk. By a landslip the soil has rolled away from the roots, and left them some distance aboveground. They have become moss-grown from exposure; the trunk is eaten, and although the clinging to life is desperate and apparently *vix tolerabilis*, yet successive years still find it responsive to the vernal awakening. Every branch sustains a host of Ferns, and whatever spaces on trunk or branch that are bare of Ferns, lichens and fungi have appropriated. Beautiful in death may truly be said; but, alas! trees like men do not always "crawl unburthened towards death." *Il Vagabondo.*

New Garden Plants.

VANDA CŒRULESCENS, *Griffith.*

THIS has a greyish-green peduncle with red spots. Pedicels white, with a red base. Sepals and petals white. Lip with some light purple near the apex on the diverging keels, with purple spots on the side laciniæ, light purple outside; spur with a light purplish hue. Column light purple at the back, spotted purplish in front; anther crimson.

This was sent me by Mr. F. Sander on two occasions. It is a discovery of Captain Vipan, Hibbington Hall, Wansford, Northamptonshire. *H. G. Rchb. f.*

ODONTOGLOSSUM CRINITUM (*Rchb. f.*) SAPPHIRATUM, *n. var.*

I received this rare plant from Mr. Fox Broome, Wood Lawn, Palatin Road, Didsbury, Manchester, in March, 1882; now it has reappeared in a very fine, widely distinct variety. The original plant has yellow sepals and petals, tinted with cinnamon, and a white lip similarly coloured. The new variety is quite a gem, in the way of Odontoglossum blandum itself; the white, very wavy lip is covered with mauve bluish light spots, reminding one of sapphire. There is also a tint of mauve at the base of the column and at the base of the petals. It was kindly sent me by Mr. A. H. Smee, The Grange, Hackbridge, Surrey. The leaves are stated to be 5 inches long, half an inch broad; bulbs small, green, spotted with brown. *H. G. Rchb. f.*

TODEA GRANDIPINNULA, *n. hyb.?*

FRONDS broadly ovate, irregular in outline, tripinnate, 1—1½ foot high including stipe, 8—9 inches broad, pellucid-membranaceous; pinnæ sessile, crowded, overlapping, oblong-ovate, the basal pinnules (about two pairs) free, those towards the apex of the pinnæ connected by the narrow wing of the rachis; pinnules close-set, overlapping, 1¼ inch long, ovate, deeply pinnatifid, the lobes distinct, wedge-shaped, the obtuse apex cut into about two or three bluntish teeth, or sometimes into short linear segments; sori costal on the basal undivided portion of the veins; stipes tufted, 5—6 inches long in young plants, terete, green, almost naked, as is also the rachis, which with the stipes becomes brownish when dry.

This handsome Fern sprang up in one of Messrs. Veitch & Sons' Fern-houses under conditions that render it probable it may be of hybrid origin; in fact, it originated in the close neighbourhood of T. Fraseri, which had been standing in company with T. hymenophylloides, and several distinct forms were noticed amongst the seedlings which sprang up in this position, most of them being of a semi-depauperate character. The present, however, proved to be from the first a fast grower, with a singularly leafy development, which gives to it an aspect quite unlike that of any known species or variety of this remarkable genus. The plants before us are quite young, being now only some 10 to 12 inches high, but larger fronds than this have been produced, and we have little doubt that when mature it will equal in size either of the species above referred to. The obvious and characteristic peculiarity of the plant is the broad leafy aspect of the fronds, in which both pinnæ and pinnules are very much overlapped at the edge in consequence of their free growth, both of them being broadly ovate in form, and unequal in development, so that both fronds and pinnæ are irregular or unsymmetrical in outline. Whether it be regarded as a hybrid form with the parentage above suggested, or whether it is a foliose sport from T. hymenophylloides, which may possibly be the case, it is a novelty for the Fern-house, and one deserving the full appreciation of cultivators. *T. Moore.*

SELAGINELLA GRACILIS, *n. sp.*

Stems suberect, 2—3 feet long, pinnately branched, subasperous, as are the leaves and the bracts; pinnæ narrowly lanceolate, 4—5 inches long; pinnules erecto-patent, quite simple, the larger ones near the base of the pinnæ an inch long, the rest diminishing in size towards the apex, about one-eighth of an inch wide. Leaves of the stem distant, erect, the larger ones obliquely ovate with the posterior base enlarged, the smaller ones lanceolate. Leaves of the pinnules ovate-falcate, rounded at the anterior, decurrent at the posterior base, having an indistinct costa below the median line, bright green, the underside also green but paler, though not at all silvery; the intermediate or stipular leaves narrow lanceolate, slightly incurved, cuspidate, parallel and close set, the rib prominent on the upper surface. Spikes terminal, tetragonal, half an inch to 1 inch long, the bracts crowded from being close-set, ovate cuspidate, distinctly keeled.

A very elegant species of Club-moss, from the South Sea Islands. It is in the way of and closely allied to S. Wallichii—one of the finest of all the cultivated species—but appears to present tangible differences in its more slender growth and smaller size, its narrower pinnæ, its green colour on both surfaces, its subasperous stems, leaves, and bracts, the more openly set leaves of its pinnules, and the more closely set bracts of its spikes of fructification. The leaves also are of different form, being unequal-sided, with the posterior base decurrent. These differences seem to be sufficient to separate it from the three allied species, S. Wallichii, S. Lobbii, and S. Victoriæ. It has, like them, suberect stems, which are pinnately branched, the pinnæ in this case being of a narrow lanceolate form, from three-quarters to an inch in breadth without the fructification, the spikes of which average an inch long, and are made up of very closely-set cuspidate bracts, arranged in four rows, the spikes thus having a tetragonal form. The pinnules become gradually shorter as they approach the apex of the pinnæ, which is not caudate.

It has been introduced by the Messrs. Veitch & Sons, of Chelsea, who have obligingly sent us the specimen here described. With its allies already referred to S. gracilis will take rank amongst the most beautiful of the Club-mosses. *T. Moore.*

LINNEAN SOCIETY OF LONDON.—A meeting will be held on Thursday, June 17, at 8 P.M., when papers will be read on the following subjects:—1. "Synopsis of Chalcididæ," by Mr. W. F. Kirby. 2. "Eocene representatives of Smilax in Great Britain," by Mr. J. Starkie Gardener. 3. "Lepidoptera of Mergui Archipelago," by Mr. F. Moore. 4. "Chinese Plants" (two), by Messrs. Forbes and Hemsley. 5. "Anatomy Test of Discoidea cylindrica," by Prof. P. M. Duncan.

A PRICKLY GRAPE VINE FROM CHINA.

In a small collection of dried plants from the neighbourhood of Ningpo, sent to Kew by Consul Cooper in 1884, there is an imperfect, that is to say a very young specimen of a species of Vitis accompanied by the following note :—"Thorny Vine, cultivated at Kinhua, bears large purple Grapes." The foliage is so like that of Vitis vinifera that it might well be a variety of it, and Professor Oliver had named it "Vitis, an V. viniferæ var. ?;" but the prickles or bristles—not spines or thorns in a botanical sense—with which the stem is beset, present a character unknown among all the numerous varieties of the common Grape Vine. However, interesting as the specimen was, it was insufficient for determination alone. I happened to show it to Mr. Nicholson, and he remembered that a similar Vine had been figured in the *Revue Horticole* under the name of Spinovitis Davidii. On reference to the volume (1885, p. 55, fig. 10) I found that the specimen from Ningpo was evidently of the same species or variety as the portions of a young plant there represented. From the account there given of the origin of Spinovitis Davidii, and Mr. Carrière's description of the seedlings raised from seed obtained from China, I became very much interested in this prickly Vine, because it struck me that it might possibly prove the wild progenitor of the common Grape Vine. According to extracts from various letters published in the *Revue Horticole*, Spinovitis Davidii was discovered by the Abbé David in the mountains of the western province of Shensi at the great altitude of 3500 metres, or about 11,500 feet, in about 34° latitude, and 108° 50′ E. longitude. I must say that I suspect an error in the altitude; still the particulars of the locality and climate are so circumstantially set forth, that I may be wrong in doubting the figures. In the region where Spinovitis Davidii grows wild the snows begin to fall about the middle of November, and continue probably until April; for, on the authority of David himself, the snow had not altogether disappeared on March 8 in a place some 50 leagues farther south, and at an altitude of only 1390 metres, about 5375 feet.

Concerning the seedlings of this Vine that he has raised, Mr. Carrière states that they present great diversity, the stems varying from quite glabrous in some to harshly hairy or sometimes even prickly (spinescent) in others; and the leaves are equally variable.

It does not appear from the article in question whether this Vine is cultivated, but it is stated that there are white fruited and black fruited varieties; the latter when ripe being as black as Blackberries. And I think that the specimen sent from the district of Ningpo by Consul Cooper is undoubtedly the same. On the other hand the Abbé David writes to the effect that he is not aware that any other naturalist had penetrated the valley where he discovered the Spinovitis Davidii, hence he had little doubt that it was new. Perhaps this note may elicit some further information on this interesting subject.

In conclusion I may add that David discovered in the same province a second species of Vine to which the name Vitis Romaneti has been given; and Carrière mentions that he had received seeds of two other Chinese species of Vitis, bearing the provisional names of V. Chiaisii and V. Ritordi. China is certainly richer in species of Vitis than I had anticipated, and they exhibit the greatest variety in size and foliage. Including three or four species which I only know from descriptions there are at least twenty-five species in China, among them, five represented in the Kew herbarium by specimens sufficient to show that they do not belong to described species, yet insufficient for satisfactory descriptions. *W. B. Hemsley, Herbarium, Kew.*



Fig. 165.—Ottelia ovalifolia: flower and leaf.

OTTELIA OVALIFOLIA.

As this Ottelia has now been raised in several European gardens from seeds procured by me, it may be interesting to give an illustration in the *Gardeners' Chronicle*, copied from my *Key to the System of Victorian Plants*. There should be no difficulty in naturalising this pretty aquatic in the South of Europe. The plant is also remarkable for its dimorphism, the flowers with preponderating stamens being the largest, those with preponderating styles and seeds being the smallest. Ottelia tenera is the plant in its first year's age. The dimorphism of the genus Ottelia seems never yet to have been illustrated. *Ferd. von Mueller, Melbourne.*

The Ottelias constitute a very beautiful group of aquatics allied to our British Stratiotes, with bright yellow, or white, or more rarely rose-coloured flowers. The whole plant is submerged except the flowers, which appear emitted from a green utricle at the surface of the water. They are very delicate, and somewhat fugacious, and solitary. Most of the species are natives of tropical regions, and would require some such treatment as Limnocharis, &c. But the species figured (fig. 165) from a drawing made by Baron von Mueller, is an Australian plant, and few species are more worthy of cultivation in the aquarium. It appears from the account given by Baron von Mueller in the *Flora Australiensis* to be a native of the cooler as well as of the warmer parts of the colony, and therefore it would probably be not impatient of cultivation in the aquarium. It is a graceful plant, with white flowers nearly 2 inches in diameter.

ROUND LIVERPOOL.

(*Continued from p.* 7.6.)

Calderstone, Allerton, the Residence of Mrs. McIver.—Trains run frequently from Lime Street Station to Mossley Hill Station, which is about a mile and a half distant from Calderstone. This is a nice place. The pleasure-grounds are somewhat extensive and well laid out. Trees and shrubs appear to thrive well, Rhododendrons and Hollies especially; of the latter there is a good collection of large specimens. On the lawn may be seen an old Oak that has attained much larger size than this tree usually does in this part of the country; it measures some 19 or 20 feet round the trunk at some distance from the ground.

There is a good conservatory, well stocked with fine Camellias, Azaleas, and other suitable things. A large number of houses are devoted to fruit and plants; amongst the latter is a small collection of Orchids, very well grown. There are a few nice specimen hard-wooded plants, including Heaths; Eucharis amazonica is particularly well done. Over a path in one of the stoves is an extraordinary example of Bougainvillea glabra, planted out at one end of the house; it is pruned in annually, so as to confine it to a single straight stem like a Vine, and is over 30 feet long, the stem at the bottom being almost as thick as one's arm. Chrysanthemums, of which Mr. Tunnington, the gardener, is a leading exhibitor, are grown in quantity; the plants are strong and promise to do good service.

Fruit is grown in large quantities under glass, and very well done. Of Pines the greater portion are kinds remarkable for good quality—Queen, Black Jamaica, and Charlotte Rothschild. The different vineries include one devoted to Muscats, which were very promising at the time we saw them—the early house of Hamburghs was colouring a nice lot of bunches. In the late house, consisting of Lady Downe's and Black Alicante, the Vines are in very good condition, showing quantities of fruit, as also is the case in another house, principally Muscats, with one or two Vines of Golden Queen. Two Peach-houses contain fine trees in very good condition, carrying a large crop.

Hardy fruit is likewise well represented. Mr. Tunnington, who, we believe, has been a long time gardener here, has every reason to be proud of his trees, both as regards those on the walls and in the open ground. Pears, which succeed in the neighbourhood of Liverpool in a way surpassed by few, if any, parts

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of the kingdom, not alone in the appearance of the fruit but still more so in flavour and texture, are grown largely, the trees in beautiful condition. A walk intersecting the garden is arched overhead with Pears; in this way they rarely fail to do well in localities suitable for their cultivation. There is a good Peach wall, the trees abundantly set with fruit.

RIVERSDALE, AIGBURTH, THE RESIDENCE OF E. HARVEY, ESQ.,

is situated within five minutes' walk of the Mersey Road Station, which can be reached from the Liverpool Central or St. James' Street Stations, from which it is only a quarter of an hour's run. In this pretty little place may be seen the work of an enthusiastic amateur, who has got together a nice collection of Orchids and alpine and herbaceous plants. With the help of an intelligent young man, who likewise seems to take a great interest in Orchids, they are as well managed as in some places where more experience is brought to bear on their cultivation. Riversdale is beautifully situated facing the river, which is here a broad expanse of water, over which there are extended views as far as the eye can reach.

In the first house, occupied at the time of our visit with mixed kinds, there was a beautiful lot of well-grown Odontoglossum vexillarium in flower, amongst them being some splendid varieties; O. crispum, also very well done. This common, but none the less charming species, is represented by considerable numbers of plants, O. Rœzlii, likewise flowering, was in good condition. Masdevallias thrive here remarkably well. Of those in flower may be named several scarce varieties of the Harryana section, including Bull's-blood, Dennisoniana, and versicolor. Amongst other things was a plant of Dendrobium Jamesianum, that had made a bulb some 2 feet long, bearing sixteen flowers.

The plants in the Cattleya-house look well. Along with numerous other things was the not often met with Cymbidium Parishii. Amongst various subjects in flower in this house were two nice examples of Cattleya Skinneri alba. The Mexican division contains the usual assemblage of intermediate heat-requiring kinds. Here is a fine row of Lælia purpurata, and a nice plant of Epidendrum Wallisii. In another house are various warm species, including a good collection of Cypripediums, in which C. Spicerianum was thriving well. A good specimen of Saccolabium guttatum giganteum was in flower, as also was a beautiful plant of the white variety of Dendrobium crassinode. Aërides Sanderiana was showing bloom. There is another mixed house in which are located quantities of various species, including a very good plant of Cœlogyne Massangeana. A large collection of Phalænopsis is grown on rafts.

EDDISBURY.

At Mr. James Latham's, Eddisbury, Hayman's Green, West Derby, near Liverpool, is, it is supposed, the finest Camellia tree in England. Mr. Latham will, we understand, allow any one presenting his card, during the period of the exhibition of the Royal Horticultural Society at Liverpool, to see the plant.

Mr. Latham adds that his tree is about ninety years old, and that it was one of the three first imported from China into England by Messrs. Barton, Irlam & Higginson, and bought from them some years after by Mr. Edward Porter, then Mayor of Liverpool, who planted it in its present position. The variety is the old double white. The tree is growing in a bed 16 feet 6 inches each way, surrounded by a brick wall. It is about 18 feet 6 inches in height, and about as much through; the circumference of the main trunk is 2 feet 7 inches, that of the three main branches from 1 foot 3 inches to 1 foot 9 inches.

It generally flowers from September till April. Since October last no fewer than 10,182 buds have been thinned out, and some have fallen off, but even then a very large quantity of flowers remained. Mr. Latham proposes to take off 7000 buds in October next, and invites the curious or the incredulous to be present at the count.

(To be continued.)

CUPRESSUS LAWSONIANA: WHITE VARIETIES.—It is worth noting that while the ordinary green forms and the golden forms all survived the last winter with us, the silver variegated forms all perished. It is true our experience is but small, but it is uniform, and goes to show that some chlorophyll is better than none,

THE PENTSTEMON.

THIS is perhaps the most useful of all garden plants for flowering in the late autumn months. When most other flowers have succumbed to October rains and frosts, the Pentstemons bear up bravely, and are exceedingly useful either to furnish beds or borders, or to decorate flower-vases indoors. Like the Aquilegia, the Pentstemon has a considerable tendency to sport into varieties of many colours; one cannot presume to say how the first garden varieties were obtained. The florists of to-day take the good things handed down to them, and do not trouble themselves much with questions of primogeniture. The garden varieties are very numerous, and they are certainly in their way a very distinct and graceful class of plants. Numerous varieties are annually raised from seeds by enterprising florists, who make a specialty of such things. In many cases they are merely chance-saved seeds, doubtless saved from the best varieties, but with no attempt at crossing one variety with another. Some years ago the most successful raiser of Pentstemons was Mr. John Laing, of the Stanstead Park Nurseries, Forest Hill; but Mr. Laing is too old a hand at seedling raising to trust to chance-saved seeds of any florists' flower, but would rather raise a much smaller number of seedlings from carefully crossed varieties. Pentstemons are very easily crossed with each other, and doubtless if any distinct allied species could be introduced amongst these choice garden varieties, some startling results might be obtained. Nearly the whole of the species have been introduced from the Rocky Mountains, California, or other parts of North America. The colours of the named varieties are not sufficiently varied, the habit and characteristics of the plants are also of a kind which readily admit of improvement; most of them are too tall in growth and the flowers are not produced so near to the ground as might be desirable. Pentstemon speciosus, introduced from North America in 1827, seems to be one of the parents of our present garden varieties. Another very interesting and beautiful species, allied to our garden varieties, is P. Gordoni; it has large sky-blue flowers, thickly placed on an erect stem, a foot high or more. It seems to have been introduced from the Rocky Mountains about 1845, and was first flowered by the late Mr. Edward Leeds, of Longford Bridge, near Manchester, from whose garden it was figured in the *Botanical Magazine*, t. 4319. Mr. Leeds remarked of it that it was quite hardy, but impatient of too much moisture from November to February—characteristics of all the garden varieties at present in cultivation. Another truly splendid species is P. cyananthus, also figured in the *Botanical Magazine* (a year or two subsequently), t. 4464. The seeds of this beautiful species were also sent from the Rocky Mountains to Messrs. Lucombe, Pince & Co., of Exeter. It flowered in their nursery for the first time in May, 1849, and proved to be quite hardy. Better known than either of the above is P. cobæa, a remarkably distinct and handsome species, which has been in cultivation for fifty years. Seeds of it can be obtained from the principal seedsmen, and may be sown in spring to flower the following season. It produces a tall plant 3 feet high, and a large handsome spike of beautiful flowers. The best examples I have seen of it were grown in Mr. T. Ware's nursery at Tottenham, but it was rather late in the season; indeed, that is a fault of this fine species—it flowers too late in the northern districts of England and in Scotland to be useful.

P. Jeffreyanus is a more recently introduced species than either of the above, from California. It grows from 1½ to 2 feet high, and produces graceful spikes of purplish-blue and red flowers in June and July.

The dwarf-growing species of the P. confertus type, with its heads of blue flowers scarcely rising above the foliage, and the P. procerus—the creeping Pentstemon—are interesting herbaceous plants, which might doubtless be improved by cross-breeding amongst themselves, but would scarcely make good allies for the tall growing section named above. All are excellent plants for the herbaceous borders, and though most of them are hardy it is not safe to trust them altogether out-of-doors—our changeable climate in winter (alternate frost and wet) does more damage to mountain plants than a much more severe but steady frost in their native country, and it must not be forgotten that such plants are sheltered from a zero temperature by a very thick mantle of snow, which without such a protection would undoubtedly be destroyed. Besides the primitive method of propagation by seeds to produce new varieties, the Pentstemon is very easily propagated by cuttings, and in order to make sure of keeping a stock safely through the winter a few of each variety or of each species should be propagated in this way. It is not necessary to put them in very early in the autumn. The end of September is a good time, or early in October. They may be planted in 5 or 6-inch pots in sandy soil, and the pots may be placed in a cold frame or hand-glass. If they are plunged in cocoa-nut fibre refuse they may remain in cold frames through the winter, protected in severe frost with a mat thrown over them. Early in spring they may be planted out in boxes 3 inches apart, and still sheltered by the glass lights, to be planted out where they are to flower in May, or perhaps the end of April. We treat them in exactly the same way as the bedding Calceolarias. To obtain the best results, they require a deeply worked and rich soil to grow in, and during hot weather in summer a plentiful supply of water must be given to them, the object being to obtain vigorous specimens which will flower late in summer, and continue through the autumn, later than any other of our garden favourites. In order that they may continue to flower well, the seed-pods must be removed once in a week; of course if the seeds are allowed to ripen this exhausts the plants, and puts a stop prematurely to the development of the flowers. Some of the catalogues give a list of over 200 varieties. From that large number I can recommend twenty-five, and that is a sufficient number for any garden:—Abbot's Meadows, Archibald Anderson, Colonel Long, Corsair, Dr. Masters, Decision, First Prize, George Harris, Helen Wood, Invincible, James Begg, Jessie Forbes, Joseph Cockfield, Lady Margaret, Miss F. Hope, Miss Watson, Mrs. Nixon, Mr. Blower, Robert Dodds, Samuel Johnstone, T. S. Ware, Walter Armstrong, William Barron, William Miller, William Scott Watson. *J. Douglas.*

TREES AND SHRUBS.

THE DOUGLAS FIR AT CASSIOBURY AND DROPMORE.

IN the article on Cassiobury in a recent number of the *Gardeners' Chronicle* the tree of this species at that place is stated to be larger than the one at Dropmore. This may have been the case at one time, but the finest at Dropmore is now much the larger tree, the height being 124 feet, and girth 15 feet. This tree was planted in 1830. Another, planted in 1865, is now 90 feet high and girthing 10 feet 4 inches, the girths in both instances being taken at 3 feet from the ground. This last-mentioned tree has made the remarkable growth of 20 feet a year.

WALNUT TIMBER.

IF it were generally known that the Walnut succeeds far better when sown where it is intended to grow into a timber tree, than when planted at however young an age, many persons would be tempted to cultivate the tree who are now debarred from doing so by the cost of young trees. The ground intended to be sown with the nuts must be trenched and manured the winter before sowing, or if it be intended to plant at wide intervals, as is sometimes done in orchards and fields, then stations of 2 yards square only need be so manipulated.

In sunnier climes than our own—for instance, in France and Southern Germany—the trees are grown in two lines, say 40 feet apart, and then a space of 30 yards to the next double line, and so on over the whole area of the field. Early maturing crops of grain, as Oats and Barley, Potatos and Cabbages, are then sown and planted in the open spaces.

Sown Walnuts have two advantages over planted ones besides that of cheapness, namely, great power to withstand wind by reason of the retention of the great tap-roots (which are generally lost in trans-planted trees), and which go deep into the soil, and by the absence of all check to growth experienced by transplanted trees, which lose one to two years' growth by the operation. The high price (5*s.* per cubic foot) the wood of the Walnut now fetches in the market, owing to its increasing scarcity, should induce landowners to pay attention to its cultivation. Upland sites are preferable for growing the tree, as it is spring tender both here and on the Continent when grown in low-lying

localities, the young shoots often getting cut with frost when they have reached 9 inches in length. In warm sheltered sites, and in the south of the country, the tree may be planted on lower lands without disadvantage, although the finest marked timber, either pollarded or not, will be found in the colder positions, as these favour a somewhat slow rate of growth. For military gun-stock purposes the straighter grained wood, grown unpollarded and quickly, is, we believe, most liked. *M.*

THE COLONIAL EXHIBITION.

THE COCOA-NUT PALM IN THE INDIAN COURT.—As supplementary to the description of the manufacture of coir matting, given by Mr. Jackson in a recent number, it may be interesting to furnish a few details as to the importance of the trade in coir and Cocoanut oil, and to draw prominent attention to one of the most complete and varied collections of the products of this Palm ever perhaps shown, and which is now on view in the economic and commercial Indian Court of the Exhibition at South Kensington, prepared by Mr. M. C. Pereira of Bombay. The value of the cocoa-nut oil, nuts, and fibre which we receive annually, exceeds half a million sterling. The oil and coir are chiefly received from Madras and Ceylon, the nuts from Brazil and the West Indies.

The collection of Mr. Pereira will be found near the Bamboo trophy, and his descriptive enumeration of the exhibits (eighty-three in number) deserves a more extensive publicity. First is shown coir, the fibre obtained from the husk of the Cocoa-nut, which in this state is used for stuffing cushions, beds, pillows, making rope mats, cordage, &c. Spoon made of the shell, used in the cook-rooms of Europeans, and by the natives for drinking gruel (rice conjee); it has the advantage over the metallic one of not corroding. A drainer used for draining food that has been fried in *ghee* (clarified butter) or oil; a large ladle, used for water; a smaller one, used by the natives for taking out oil for daily use from an earthen vessel containing the yearly or quarterly stock; it is not corroded by the oil. Hubble-bubble; or hookah of the poorer classes. Beads, made of the shell. Vinegar, made of the juice or sap of the Palm. Pickle made of the pith of the top of the fresh tree, with vinegar of the juice (toddy) of the same Palm. The spathe of the blossom, the rib of the leaf. A broom made of the leaf-ribs: these are much used for sweeping purposes. A strainer made from the bracts of the tree, by which the leaves are held firm to the tree. It is used for straining (toddy) cocoa-nut juice and cocoa-nut milk, and for general straining in the cook-room. Woolly floss, much used as a styptic for cuts by the toddy drawers and cultivators. The blossom in the state when it is tapped for drawing juice (toddy). Chain used round the waist to retain the loin-cloth: the size is for a child—set in metal it may be used as a watch-guard. Drum made of a piece of the trunk of the tree. Wood, pieces of rafter made of the lower part of the tree, 10, 20, and 25 feet in length. Oil, as expressed in the native mills for commerce. Oil extracted from fresh Cocoa-nuts by rasping fine, drying and pressing between coir, and twisting with the hands, or by extracting the milk and separating the oil by heat. It is used internally in lieu of cod liver oil, and externally for ulcers with good results. Cocoa-nut hair-oil; arrack, a spirituous liquor, 60° u.p., distilled from Cocoa-nut juice (toddy) and drank hot. Punch made from the juice of the Cocoa-nut Palm, with spices and sugar, from the recipe of the Portuguese. One or two cupfuls are drank hot for a cold. Liquor made of toddy by redistillation, 20° u.p., formerly much used for making medicinal tinctures and country brandy; a Cocoa-nut (the fruit takes a year to ripen).

A sweetmeat prepared from the kernel of the nut; another kind is flavoured with saffron. Splints made of spathe of the blossom used for this purpose by the toddy drawers and natives of Goa, &c.

Door mats made of the fibre, of many shapes and sizes, by natives, and in the gaols. Buggy mats and carriage mats are also shown. Floor mats are also made in Malabar, and in the Bombay gaols, of different sorts and colours.

A bird-cage made of the rib of the leaf. Horns, large and small, made of the leaf of the Palm, give a loud sound when fresh. Toy parrots in cage, made by children, of the leaf of the Palm. Cadjar, or woven leaf of the tree, used for thatching houses; has the advantage over tiles of keeping the house cool. The astringent root is used medicinally, and as a gargle for sore mouth. Coir ropes of various sizes are extensively used for different purposes. An oil bottle hung beneath the labour cart with castor oil and brush in it for lubricating axles. Immature nut, used medicinally as an astringent; children are fond of it.

Trough made of Coco-nut tree used for catching water drawn from a well with a Persian wheel for irrigation purposes, of which a model is shown. A conduit as put under the trough for conveying the water. Piece of the adapter used for connecting the native still to the condenser. Tuntuna, a native musical instrument used by the poorer classes. Piece of beam of the shape used for houses. It is also used for fishing-stakes in the sea; generally two Cocoa-nut trees make a stake 60 to 70 feet long. A rosary-box made of immature Cocoa-nuts.

Charcoal powder, the burnt shell, used for preparing black and lead coloured washes for houses. Broom made of the ribs of the leaf, used by the Bombay and other municipalities for sweeping roads, streets, yards, &c. Brooms made of the stems of the blossoms and nuts are used by the cultivators for collecting dry leaves for burning on the fields. Crab traps are made of the stems of the leaf, and fish traps of the ribs.

String of pots. This is made of fibre of 60 or 70 feet in length, and about fifty or sixty earthen pots fixed to it and put on the Persian wheel, which in rotating brings up the pots filled with water and takes down the empty one.

Violin used by the lower classes of natives, particularlarly the Gosavies, a class of professional beggars. A sling, used for keeping sundry articles of food out of the reach of cats, rats, and ants, by hanging it on a hook to the ceiling. Tied to the ends of a bamboo it serves for carrying water-pots, baskets, &c. A small one is used by milkmen for carrying milk for sale.

Flesh-glove, used for washing and rubbing cattle and horses. Tar with acetic acid, made by burning the shells in a pot with a small hole in the bottom, placed on another, heated by fire on all sides. It is used by the natives for ringworm and skin diseases. A brush made of the husk of the nut for cleaning sieves, washing baskets, and rice-strainers. Sugar and molasses made of the toddy or juice in Goa.

A band peeled from the outer part of the stem of the leaf, which is used as a cord by the toddy drawers. A gilded Cocoa-nut, offered by the higher classes of Hindoos to appease the sea on the Cocoa-nut fair day. At weddings the bridegroom and bride carry it in their hands. Cocoa-nut husk, used as fuel, especially for baking purposes and for making fibre; scoops made of the shell—the round and deep ones are used as drinking cups. Neck-belts, used for yoking bullocks and buffaloes to carts, ploughs, oil-mills, &c. Sack, used for sending out articles in; a somewhat similar one is attached to the cart for carrying straw or grass.

The pedicels of the blossom are used for tooth-brushes, and the peduncles are used as brushes for whitewashing houses, &c. A blind, used for blinding bullocks and buffalo while yoked to the Persian wheel, oil-mills, &c. Nest, made by birds out of the fibre of the leaf. Soap, made with cocoa-nut oil, which holds a larger percentage of water than any other soap.

Rings, whips, neckties, rattles, crosses, puzzles, and toys are made of it, also cricket-pads of the wood. Poonac or oilcake from the native mill, used for manure and feeding poultry. A patensur or ship and fishing boat, made by boys of the fisherman class.

Copra or kobral, the dried albuminous kernel of the nut—the stem used as a broom. Model of a charpai or cot used by the natives. Crude potash from the stem of the leaves; they produce 20 per cent. of ash. Abortive Cocoa-nuts used as floats for beginners in swimming. The spadix, prepared for drawing juice or toddy. A thin slice is cut from the Palm stem three times a day. The juice flows from this and drips down into an earthen pot suspended on purpose. A small piece of the leaf is fixed above to prevent the bottom of the pot from touching the point, the sheath of the leaf covering the mouth of the pot to keep out flies.

CULTIVATION.

This useful Palm requires considerable care and cost to bring it to the state of bearing fruit. The ripe good-sized nuts from an old tree are kept in a well of water for three months, until they germinate; they are then put into the ground in beds of fifty or a hundred, and watered every day. In three months more they begin to grow up, and after three years or more they may be transplanted in regular spaces of from 15 to 20 feet, watered regularly every other day, and manured occasionally. In about twelve or fifteen years they come to bearing, but the yield is in proportion to the care taken to water and manure; at this stage the value of the tree is from £2 10*s.* to £3 each.

CEYLON.

From Ceylon it is officially stated that the cultivation of the Cocoa-nut Palm, with its multifarious uses, is the most important in the life of the low-country Cingalese. The spirit he drinks is distilled from the sap, the kernel of the nut is a necessary element in his daily curry, the "milk" of the nut is the beverage offered to every visitor; his only lamp is fed from the oil; the nets for fishing are manufactured from the fibre, as is also the rope which keeps his goat or cow from straying; while the rafters of his house, the thatch of the roof, and the window-blinds, are made from its leaf and wood. The extent and value of the cultivation of this Palm may be gathered from the fact, that while, as already stated, its many products are a universal necessity in the daily life of the island population of 3,000,000, the export of oil, copra, and fibre, exceeds in amount £700,000 annually, and the revenue derived from the excise duty levied on the spirit (arrack) distilled from the sap exceeds £170,000.

The shipments of Cocoa-nut oil from Ceylon in 1884 were 383,955 cwt., valued at £447,948; and of arrack, 140,742 gallons, value £24,290; exclusive of the coir fibre, £77,454, and nuts, £6900. Under the name of poonac, 150,000 to 200,000 cwt. of cocoa-nut oilcake is also imported annually for manure from the Malabar coast, to the value of £60,000 to £70,000.

Besides India, Cocoa-nut products are shown in the Ceylon, Fiji, the West Indian Courts, and Honduras. The value of the exports from Fiji in 1884 were:—

Cocoa nuts	£2 219
Copra	53,741
Coir fibre	1 501
	£57,961

Trinidad has 3000 acres planted with Cocoa-nut Palms. About 5,500,000 Cocoa-nuts were shipped from Jamaica in 1884, which realised nearly £21,000. *P. L. Simmonds.*

ALPINE PLANTS.

(*Continued from p. 727.*)

THALICTRUM ANEMONOIDES is a sweet little alpine that just now, and indeed ever since the middle of March, has quite charmed us with its succession of Anemone-like flowers. For some semi-shady position such as alongside or even under a tall growing shrub, it is particularly well adapted, the finely divided foliage and almost pure white umbellate flowers forming a pleasing and highly attractive carpet. As regards soil I think it is far from particular, but that of a peaty description, perhaps suits it best, although it is doing well here planted in garden loam of only ordinary quality. Our native alpine Meadow Rue (T. alpinum) is a plant that must not be despised, for whether in flower or otherwise it is both interesting and instructive. Half a dozen tufts collected some five years ago on the Snowdon peaks, and carefully transferred to my garden have done well, but are gradually disappearing, for one visitor after another on seeing the tiny dark green varnished foliage, perchance the pretty white nodding flowers, gets enamoured and bestows that amount of praise that borders on begging, until one is reluctantly, I was going to add, compelled for decency's sake to offer a plant.

OXALIS ACETOSELLA PURPUREA

—another native plant—is now well in flower, and when allowed to ascend some crumbling stone or become half hidden in the recess of a rocky chink, it looks at its best and fills the place with more grace and beauty than almost any other plant we know of. To see patches of this pretty flower growing in company with the blue wood Anemone in its native wilds, as we a few days since had the pleasure of doing, makes one sorry that such scenes are not oftener met with in our woods and downs. It increases rapidly,

seedlings springing up here and there along the shady ledge on which it is planted; but failing in this, division of the roots in autumn is a speedy and sure method of multiplying the stock of this desirable rock plant. Well decayed vegetable matter and a somewhat moist situation suits its wants well.

ARABIS LUCIDA VARIEGATA.

This is at all times a handsome rock plant, the finely marked foliage, and neat habit of growth rendering it a particular favourite with cultivators. The golden-yellow markings on the leaves are very effective, but particularly so when the plant is placed contiguous to dark coloured rock, or along the margins of the peat bed. It is of slow increase, and rarely exceeds 2 inches in height, qualities that render it well adapted for growing where space is limited, and in company with the smaller growing and choicer of alpines. The flowers are not of particular value in a decorative point of view, and are better nipped off as they appear, this method of treatment having a decided influence on the plant's growth as well as beauty of foliage.

HUTCHINSIA ALPINA.

This is another dwarf-growing rock subject that at the present time charms us with its rich profusion of glistening snow-white flowers. Once thoroughly established the increase is rapid, seedlings springing up in unexpected portions of the rockwork, and flowering profusely from year to year. As a low-growing carpet plant this Hutchinsia is of great value, and may be used with advantage in almost any position—high and exposed or low and dry. Good-sized tufts are at present very telling from the number and brilliancy of the flowers, these in numerous instances being so freely produced as to quite envelope the foliage in a shroud of white.

PRIMULAS.

These in variety are just past their best, but amongst the various members of this interesting family none are perhaps better suited for the ordinary cultivator than P. purpurea and P. rosea, these being easily managed, profuse bloomers, and of rapid increase. We have rarely, indeed, seen purpurea in better form than this season — irregular-shaped masses, having a peculiarly distinct appearance, and imparting quite a dressy aspect to the borders or rockwork in which they grow. *Emergo.*

FORESTRY.

BARKING.

WITH a month of almost incessant rain, varied at times by heavy sleet and snow showers as well as fierce gales of wind, the work of barking has been considerably retarded and much of the produce has been rendered all but useless, the continuous damp deteriorating the quality in a very marked degree. Even last week the lower spurs of the Snowdon range of hills were topped with snow—an almost unprecedented circumstance in June—and one at times feels quite as chilly as during the cold east winds of March.

The forester's attention must now be directed to finishing up the bark-harvest and storing or delivering the bark, for on no account must it be left on the ranges waiting a buyer, but when ready for delivery it must either be stacked or conveyed to the shed or other erection set aside for its reception.

Lose no time after peeling is completed in having all branches, firewood, and large timber removed from the woodlands, the ditches scoured out and put right, bare patches of ground sown down with rough-growing grasses, fences repaired, and the rides and drives freed from all surface irregularities occasioned during the transit of timber. The branches may be collected in heaps alongside the clearance roads and made into faggots for oven-heating, firewood, lotted in about cartload sizes, and the heavy timber removed either at once to the saw-mill and seasoning yard or lotted in some field contiguous to the wood. In choosing a site for this latter be particular to see that the road joining the main road is in a fitting condition for the transit of heavy timber, as on this, to a great extent tat least, will depend the prices realised when the wood is offered for sale.

PRUNING.

Attend now to the pruning and disbudding of trees generally, the side branches and contending leaders of young hard-woods being reduced to proportionate dimensions, the terminal buds of overgrown or rival shoots on coniferous trees pinched or removed, and all dead or twisted branches neatly cut off, the wounds dressed with a sharp pocket-knife or adze, and painted over, more particularly when these are visible from drives and roads in the park and pleasure grounds. Where trees have been uprooted by the late storms they should be cut up and removed at once. Bury the stumps and roots by digging suitable holes immediately behind these, and into which they will fall when severed from the trunk. The boles should be removed to the *depôt* for such odds and ends, while the firewood and branches are carted to some out-of-the-way place for sale.

CLEANING NEWLY TRANSPLANTED TREES, AND OTHERS.

In order to prevent rank herbage interfering with the growth of recent transplants, it will be well to send round a few men with scythes or shearing-hooks to cut away such as is likely to occasion damage. The margins of plantations adjoining tilled ground should likewise be examined, and all plants of the Dock, Thistle, Nettle, Burdock, &c., cut over, thus destroying the vitality of the seed in course of formation. We make a point of attending to this work regularly from year to year, and find that the small expenses in connection therewith are more than repaid by the cleaner state of the woods, and adjoining cultivated lands. Cut Ivy from woodland trees, as well as from such standards as it may be deemed advisable. By simply severing the stems near the ground-level the work may be considered as well done, but we find it advantageous, not only to do so, but also to grub up the roots of the Ivy for a couple of feet in diameter round the base of each tree. This occasions a good deal of extra work, but it is perhaps well repaid, more especially in woods like ours, where the ground is literally carpeted with the beautiful but injurious creeper. Here it is a continual fight between the Ivy and those employed at its extermination, for when the woods have all been gone over the workmen may turn round and start with the wood they first operated upon. Ten boys with a man in charge were for a number of years constantly employed at this work, and really to-day the woodlands first treated are now nearly as bad as ever, the humid maritime situation favouring, in a marked degree, the growth of the plant. Walls and other buildings on which Ivy is allowed to grow for appearance sake should be pruned closely in at least once each season, and no better time for such work could be recommended than the present. Where trimming has been annually performed the work will be comparatively easy; but in such places where the Ivy has been allowed to grow at will the better plan will be to cut it close in to the wall at once, when a rich young growth will, in a remarkably short space of time, take its place. *A. D. Webster, Penrhyn Castle, N. Wales.*

THE GENUS ODONTOGLOSSUM.

(*Continued from p. 596.*)

ODONTOGLOSSUM CITROSMUM. — This lovely Orchid is distinct from all the rest of the genus, its smooth shiny pseudobulbs, hard dark green leaves, and slender racemes of showy flowers being unlike any of the others. It, however, possesses that peculiarity which exhibits itself in most of the Odontoglossums, viz., the variable character of its flowers as regards size and colouring. The flowers generally measure 2 inches across, some of them being pure white, with a lemon-coloured claw in the centre, and others of various shades of blush and rose, with yellow to orange claw; some are prettily dotted all over, and all have wax-like, symmetrical flowers in which all the segments are broadly developed. Throughout the early summer it is a very fragant and attractive plant in the Orchid-houses, where it does best, and shows to the best advantage when suspended from the roof. It does well in a cool house, and rejoices in pure air and a good light while the plants are in flower. It wants a fair amount of water, and a copious supply until the bulbs are mature, when they should be placed in a cool house where they can get what sunlight there is in the winter, during which season and until the flower spikes appear in spring, they should be kept dry but not suffered to shrivel. O. citrosmum was first imported from Mexico, by Geo. Barker, Esq., of Birmingham, and flowered by T. Brockleburst Esq., of Macclesfield, who exhibited it at the Royal Horticultural Society's Gardens at Chiswick in 1842.



FIG. 166.—ODONTOGLOSSUM KRAMERI: FLOWERS PALE ROSE-COLOURED.

O. PULCHELLUM.—This has the same texture of pseudobulb and leaf as O. citrosmum, the bulbs are, however, slender, clustered and upright, leaves narrow and grass-like. The flowers, which are borne on upright spikes, are wax-like, pure white with a yellow crest. It was introduced by Mr. Skinner from Guatemala, and flowered in several gardens in 1843. A cool place in the Cattleya-house suits all the varieties of O. pulchellum best.

O. PULCHELLUM MAJUS is a very fine winter flowering plant, larger in all its parts than the preceding.

O. EGERTONI.—This may be regarded as a small flowered form of O. pulchellum. There are good and bad forms of it, some of them coming near to O. pulchellum, while others have spikes of bloom with partially closed flowers like those of a bad Lily of the Valley. It is a native of Guatemala.

O. KRAMERI—of which an illustration is given in fig. 166—is a pretty dwarf-growing plant, producing short peduncles of blush or rose-coloured flowers with yellow centres from the base of the bulbs. It should be grown in shallow pans or baskets, and suspended in the Cattleya house. It is a native of Costa Rica, and with O. Œrstedii forms a small section of the genus.

O. Œrstedii, as will be seen by the accompaning illustration (fig. 167), is a very neat and floriferous plant with fine white fragrant flowers with an orange-coloured blotch in the centre. It comes from a high elevation in Costa Rica, and does well with cool treatment similar to that given to Sophronitis grandiflora.

O. Œrstedii major is a local form well deserving the name, as it is a stronger grower than the ordinary form, and has much larger flowers. *James O'Brien.*

(To be continued.

VITALITY OF SEEDS BURIED IN THE SOIL.

No subject in vegetable physiology is more interesting, both for theoretical and practical reasons, than the power which some seeds undoubtedly possess of preserving their vitality for an apparently indefinite period.

In the autumn of 1879, nearly seven years ago, Mr. W. F. Beal, Professor of Botany and Forestry to the Michigan Agricultural College, N.S., commenced a series of experiments, with a view of learning something more in regard to the length of time the seeds of some of the most common plants would remain dormant in the soil, and yet germinate when exposed to favourable conditions. Fifty freshly-grown seeds of each of twenty-three different kinds of plants were selected. Each lot of seeds was mixed in moderately moist sand, taken from a depth of 3 feet below the surface, and placed in a pint bottle, the bottle being filled but left uncorked, and placed with the mouth slanting downward, so that water could not accumulate about the seeds.

These bottles were buried on a sandy knoll about 20 inches deep, and left undisturbed until July, 1884, when they were taken out of the earth, and the contents placed in some shallow porous saucers, which were set in a very little water, and placed in a favourable position for warmth. During a part of August the weather was unusually cool, but at other times and in September it was very warm. The sand was exposed in this way, drying out once or twice till the middle of November, when it was dried and kept in a cool room over winter, when it became frozen for the first time. The sand was not disturbed again until June 25, 1885, when it was again moistened and exposed in test plates.

The results arrived at from each lot of fifty seeds were as follows :—

Amaranthus retroflexus (Pigweed).—Nineteen seeds germinated in 1884, and two in 1885.

Ambrosta artemisiæfolia (Ragweed).—None germinated ; several empty seed-shells were seen.

Brassica nigra (Black Mustard).—None germinated.

Bromus secalinus (Rye-like field Brome-grass).—None was seen to germinate, but in three instances one or more dead, slender roots were found, showing that they had sprouted, and died while in the bottles under ground.

Capsella Bursa-pastoris (Shepherd's Purse).—Forty-three germinated in 1884, and seven in 1885.

Lepidium virginicum (Pepperwort, or Cress).—Thirty-six germinated in 1884, and eleven in 1885.

Euphorbia maculata (spotted Spurge).—None germidated, but in 1884 a number of seemingly plump and sound seeds were found.

Lychnis Githago (common Cockle).—None germinated ; many old seed coverings were seen.

Anthemis cotula (Mayweed).—Fourteen germinated in 1884, and twelve in 1885.

Malva rotundifolia (common Mallow).—One germinated ; many empty seed-coats were observed.

Œnothera biennis (Evening Primrose).—Forty germinated in 1884 and one in 1885.

Plantago major (broad-leaved Plantain). — None sprouted ; some empty seed-husks were found.

Polygonum hydropiper (Smartweed). — Three germinated ; many empty seed-coats were seen.

Portulaca oleracea (Purslane).—Nineteen germinated in 1884.

Rumex crispus (curled Dock).—Forty-four germinated in 1884, and one in 1885.

Setaria glauca (Pigeon-grass).—Thirteen germinated in 1884, and twenty-one in 1885.

Stellaria media (Chickweed).—Thirty-six germinated in 1884.

Thuia occidentalis (Arbor-vitæ or White Cedar).—None sprouted ; many empty seed-vessels were seen.

Trifolium repens (white Clover).—Two germinated in 1884.

Verbascum Thapsus (common Mullein).—Thirty-eight germinated in 1884 and four in 1885.

If we are unable to give good reasons for the long time required for some seeds to germinate, we cannot fail to see that it is beneficial to the plants themselves and need not wonder at the multiplication of weeds, even with all the care bestowed by the gardener in their destruction. If weed seeds come straggling along at different times, some of these are bound to find favourable conditions for growth, and the production of more seeds. One good crop of weeds will stock the soil for years to come, hence the truth of the old adage, "One year's seed means seven years' weed."

We also see from the foregoing experiments that decomposition is the chief cause of death in seeds, and this can only occur in a moist atmosphere. In a damp country like England no precaution, therefore, should be neglected to keep seeds dry and cool before the time of sowing. *J. J. Willis, Harpenden.*



Fig. 167.—Odontoglossum Œrstedii.

Papaver argemone.—Mr. W. G. Smith sends us flowers of this plant in which the petals are branching, so that they appear to be deeply laciniate. The variety would be worth fixing for ornamental purposes.

Orchid Notes and Gleanings.

LÆLIA MONOPHYLLA.

ADVERTING to my note on Lælia monophylla, Hook., in *Gardeners' Chronicle*, vol. xxiv., p. 457, and to my prediction, that it would probably be found at similar elevations in other parts of the island, I have now to record its discovery in a third locality agreeing in every particular with those previously mentioned.

As this plant has been found not to thrive at higher or lower elevations, even under the most careful cultivation, it would appear that the temperature is a most important point to be considered in the treatment of this little gem, and I therefore give it as near as possible. The maximum at these elevations seldom rises to more than 80° Fahr. or falls lower than 50°, giving a mean annual temperature of about 65°. It should also be remembered by cultivators that the plant is found growing on smooth perpendicular stems, at a distance of 10 or 12 feet from the ground. Such a position would tend to afford to the plant a supply of nutriment, as the rain-water must of necessity be impregnated with plant food formed by the decaying vegetable matter always found on the branches of trees in a tropical forest, and our home growers would do well to imitate this condition in treating a rather difficult subject, being careful also to keep a nearly saturated atmosphere during growth, with a fair amount of shade at all times. *J. H. Hart, Superintendent, Government Cinchona Plantations, Jamaica.*

ACANTHEPHIPPIUM BICOLOR.

In these days of incessant hurry, when amongst other things the nomenclature of Orchids is assuming such a serious phase, few botanists, we should be inclined to think, would venture to invent such an unwieldy name as the above, especially as the etymology of the word shows that it has no apparent application whatever to the plants arranged under it. To augment the evil, Blume, who first used the name, spells it as above, and also Acanthophippium, both of which are equally insignificant in the present instance. Three or four species only are known, of which the above was the first introduced and flowered in this country. The sepals are united by their edges for the greater part of their length, and give the flowers that peculiar shape which has earned for them the name of Barrel Orchid—a name, however, not very frequently used. The lateral sepals are drawn out at the base, forming a broad, blunt, bifid, spur-like process, very distinct from most or all of the other species, which are shortly conical, or forming an elongate spur. They are yellow, with brownish-purple spreading tips, and more or less white externally. The yellow petals and labellum are included in the sepals. The labellum is three-lobed, with peculiar hatchet-shaped lateral segments, between which, in the median plane of the labellum, are three longitudinal short lines of small tooth-like processes. The three-angled petiole of the leaf is also another peculiar character of this Orchid. A figure is given in the *Botanical Register*, vol. xx., t. 1730, and a flowering specimen may be seen in the Orchid-house at Kew in the East Indian division. The plant is a native of Ceylon. *J. F.*

MASDEVALLIA VEITCHIANA.

A truly handsome variety of this species is to be found in Mr. Dorman's garden under the name of grandiflora. It is larger and of greater substance than the fine form exhibited from Mr. Southgate's garden, Streatham, under the name of majus. The beginner in Orchid culture would do well to obtain good varieties of the most popular species of Orchids; they require the same space and the same attention as the common varieties, but are of more value when grown into specimens. In this respect Orchids are much like show Tulips. I had a fine collection of named varieties of these sent to me when I first began to grow Tulips; but I soon learned from experience that names were nothing, and "strain" was everything. I have now Mr. Barlow's and Mr. Turner's best strain of Tulips, and my collection of the same varieties to name have long since gone to the rubbish-heap. The comparison with Orchids must not go so far as this, as no one would throw away even the common forms of M. Veitchiana.

Another interesting and instructive feature in Mr. Dorman's garden was the conservatory attached to the house, for instead of its being filled with Calceolarias, Pelargoniums, &c., it was made gay with a pleasing arrangement of good forms of Cattleya Mendelii and C. Mossiæ, and a few Indian Azaleas in flower, the rather formal appearance of the Orchids being relieved with some graceful Ferns—Adiantum cuneatum, &c, being intermingled with them. The conservatory was kept rather warmer than these structures sometimes are, 55° at night; but this is not more than comfortably warm in the month of May, and with a dryish atmosphere Cattleya blooms would remain in good condition for three weeks. *J. D.*

ODONTOGLOSSUM VEXILLARIUM.

I see on p. 682 of last week's number a reference to "remarkable progress" of this plant at Woodhatch Lodge, Reigate, which states that the collection is but "four years old;" and the largest plant, which has been "grown from a very small plant, now measures about 3 feet across, and bears over 240 blooms." I am fond of this plant, and would like to know to what Mr. Ridout, the gardener, treats it to produce such a result "from the small bits purchased three years ago." I would like to know the size of the "small bit," and the rate it has bloomed at and grown at annually, if Mr. Ridout can supply it me. Mr. Douglas is a great grower of this plant, and his specimens astonish all beholders. It seems as if another collection of them ere long should appear at the Royal Botanic. *De B. Crawshay.*

The Rosery.

ROSES IN POTS.

THE Rose season under glass is now very nearly over, and as the plants pass out of bloom they must be placed in a position out-of-doors, where they are sheltered from high winds, and in a week thereafter the growths may be cut back a little in order to obtain a second growth, which will also give another season of bloom. The bushes must not be placed very close together, and it is a good plan to place each pot on two bricks laid parallel to each other, with a space between. The hole in the bottom of the pot will be immediately over this space, and the arrangement not only causes the air to circulate up amongst the drainage and roots; but prevents worms getting in, which they will do sometimes, even if there is a bed of ashes under the pots. There are two parasites which are likely to attack the young growths as soon as they are placed out-of-doors—green-fly and mildew; and if these are not destroyed as soon as they attack the leaves great mischief will be done. In hot dry weather another very insidious pest, red-spider, will attack the under-sides of the leaves, and its presence may not perhaps be suspected until the leaves assume a rusty appearance. Of course, all these ills may be avoided with good management. Syringing the leaves well daily will usually keep them clean and healthy. The water supply to the roots should be applied with judgment. If rain or river water cannot be obtained well water should stand in an open tank for twenty-four hours before using it. I find some of our plants require repotting, and this being the case there is no need to wait. As soon as the young shoots begin to grow turn the plants out of the pots, remove as much of the exhausted soil as can be done without injuring the roots; drain the pots well and place some tough fibrous turf, from which most of the clayey particles have been shaken, over the drainage. The potting material for Tea Roses should be three parts loam, one of peat, one leaf-mould, and one of decayed stable manure, with a sprinkling of sand; for hybrid perpetual Roses the peat may be left out. They will speedily root into this compost and grow with great vigour. If a glass house can be afforded the Teas they will do much better there than outside—indeed, they ought to be grown under glass all the year round. *J. Douglas.*

ROSE PROSPECTS IN EAST ANGLIA.

Abnormal weakness and lateness are still the two most prominent features of Rose trees and roseries; the latter is easily accounted for with frosty nights and cold winds, with a few trifling exceptions, running almost right through May. This morning if it did not actually freeze, the thermometer on the grass must have run down to 33°; and the cold has been so continuous that, unless we have warmer weather, there will be fewer Roses in this June than we have had for years, and probably most June fixtures will have to be advanced into July.

We have Tea Roses on walls of a great number of aspects, and have often gathered quantities of these, especially Maréchall Niel, from the middle of May, or even earlier; but this year up till now we have only gathered one Tea in the open, and that an Alba rosea, off a south wall, and we shall not gather an open-air Maréchal Niel in May. As to the perpetuals and Teas in the open not a bud is showing. So much for the lateness of Roses in the spring of 1886. As to their weakness that may be more difficult to account for; but it seems pretty general, and possibly originates from the same cause, viz., the long-continued low temperature. It seems almost as if the roots fail to meet the demands of the top for great supplies of food when that in the buds becomes exhausted; if so, the semi-attenuated shoots are simply the products of starvation. I have noted weakly growths before in abnormally cold springs, but never to the same extent as this season. Often, too, with genial weather has come a rush of nourishing sap, that has almost transformed the weakly shoots into strong ones, and the spring promises have resulted in plump and fat performances; and one may yet hope that to some extent this may prove to be the case this year.

But in not a few cases the young growths are too far advanced for such welcome and charming transformation, and the chief hope of not a few rosarians will rest in their second or successional, rather than their first flush of bloom. As proof of the ungenial low temperatures of the season another and a decisive proof may be given. All who grow those exquisitely beautiful and floriferous Banksian Roses will have noticed a considerable difference in the hardiness of the common white and yellow varieties, the white being much more tender. We have two fine plants on a south wall side by side: during favourable seasons they vary but little in their degree of floriferousness, though the yellow always exceeds the other. But this season the white is almost bare of bloom, while the yellow is one mass of golden sprays, and this is always the case in abnormally cold springs. Of course, in stating that we have gathered no out-of-door Roses, I excluded the yellow Banksian, which has been in bloom on the south wall since about the middle of May. Here again, too, the white differs from the yellow in cold springs, being generally a fortnight later, and now the few blooms on it are just expanding. But the yellow is not as fragrant as the white, the latter yielding one of the most delicately fragrant perfumes of this pre-eminently sweet family. *D. T. F.*

The Bulb Garden.

DOUBLE WHITE NARCISSUS.

THERE can be little doubt but that the pure double white form of Narcissus poeticus is the most valuable for market work, because it blooms so late, and also at a season when, for numerous reasons, white flowers are greatly in demand. It is not so many years since this useful form was introduced into this market flower-growing locality, but it is now in many hands, and grown in large quantities. But as late as the evening of the last day of May a neighbouring market gardener was the happy possessor of a considerable breadth, and as the price just then had leaped up from 6*s.* to 10*s.* per dozen bunches, of course high anticipations were formed of the price to be obtained from the last cutting. It was therefore somewhat exasperating when visiting the garden next morning to find that others had anticipated the cutting, and that the flowers had disappeared. In the face of this fact there seemed nothing to do but to swallow the disappointment. However, "a sweet little cherub," in the shape of an intelligent policeman, seemed to have been watching over the flowers, though somewhat remote, for late the same night he came across three men of the genuine plant and flower-thief type carrying on their backs the too well known wicker baskets in which Ferns, Primroses, or other comeatable roots, are hawked for sale. These men were the thieves, and their big

baskets filled with the flowers, with which they had tramped some five miles, and were nearly safe to their homes. After the depredators were locked up, this admirable constable tramped over to this district, and through due inquiries found the owner, who was but too pleased to recover his lost flowers. These, little the worse for their rough usage, were bunched, and in the market obtained, at 14s. per dozen bunches, between £5 and £6. It is satisfactory to learn that the spoilers will spend a few months in gaol. The lateness of blooming, which was special in this case, seems to have been the result of an accident, the bulbs having been buried rather deeper than usual, hence deferred growth and enhanced prices. The best prices for almost all things are found in early and late produce. *A. D., Bedfont.*

Plants and their Culture.

CAPE AND OTHER BULBS.

The different species of these should now be gradually allowed to rest. Under this head may be included the Lachenalias, Hæmanthuses, Veltheimias, and Ferrarias. A cold frame shelter will suit them best for the next three months, and by exposing them fully to the sun it will be found that some varieties will retain their foliage for a much longer time than others; these, therefore, must be treated accordingly, and be carefully watered. Sparaxias and Ixias which were started early must now be kept a little drier at the root, but sufficient water must be given them to enable the bulbs to retain their foliage for some time longer, thereby preventing a too rapid cessation of growth in the bulbs. By so treating them the bulbs will flower successfully for many years in succession. Amaryllis must have every attention; these bulbs require comparatively small pots, but at the same time root cramping must not be carried to excess, or the bulbs will not attain their full size, and their natural increase by means of offsets will be lessened.

For any plants of these requiring more pot-room, a shift into pots an inch or two wider will be sufficient, using good fibrous loam, with a little sand added. In potting ram the soil quite hard. Keep the stock of these freely syringed every day to check the increase of insects.

Pancratiums, Crinums, and Hymenocalis will now be making new leaves, and with liberal treatment large spikes and fine blooms may be looked for. These sun-loving plants must be kept well up to the light, for if this point is overlooked all the other details will be of little use. Pancratiums will be found to stand more sun in the middle of the day than the Crinums, the foliage being of a tougher nature, but at no time should more shading be used than is requisite to prevent the scorching of the leaves.

BOUVARDIAS.

Plants of these which have been pruned in, potted, and started into growth, and any which have during the last few weeks been hardened off, may now be planted out in the open, if they are not wanted for potting up, but to cut from. I find that they will grow in a satisfactory manner planted out in pits, or frames where early vegetables have been grown on fermenting material, as they root freely into this, and lift well in September, throwing fine trusses of bloom. The double varieties, such as Triomphe de Nancy, Victor Lemoine, Thomas Meehan, President Garfield, and Alfred Neuner are well adapted for buttonhole flowers and sprays for ladies' wear, they being more lasting than the flowers of the single varieties.

SOLANUMS

which have been grown as advised in a former calendar may now be planted out in a warm border. By this time the plants should have a good quantity of the blooms set, which should always be the case before the plants are put out, as it will sometimes occur that the early blooms will not set well after being planted out *A. Evans, Lythe Hill, Haslemere.*

Pæonies and Poppies.—We are glad to find more attention being paid to these gorgeous plants so well adapted for decorative purposes. In the Pæonies especially the range of colour is very great.

Fruits Under Glass.

MELONS.

These will be approaching maturity in the second early house, thus necessitating a drier and more airy atmosphere being observed in order to insure highly flavoured as well as finely coloured fruit, and with this object in view a little air should be left on at night.

Successional Plants.

Plants swelling their fruit should be kept well supplied with tepid liquid manure at the roots—more especially will this be necessary when the latter are growing in a confined space, such as in narrow well drained borders, pots, or boxes in which case the supplies should be more liberal and frequent than plants having more scope for root-action would require. In watering avoid wetting the soil to a few inches round the stems of the individual plants, so as to prevent them from being affected by damp. They should be subjected to a moist and growing atmospheric temperature, with a minimum of 70° and a maximum of 85° with sun and plenty of air, allowing it to run up to 90° or 95° at closing time, the house being well charged with moisture. The same sort of conditions of the air as those recommended for plants ripening their fruits will suit the requirements of the plants in flower. The blossoms should be fertilised about mid-day when the pollen is dry, until a good set is secured, after which the number of fruit should be reduced to three or five on each plant, according to the strength of the latter and the size to which the fruit of the variety grown attains to; distributing the same as evenly as circumstances will permit over the principal shoots, and leaving the most even and best placed fruits for the crop, so that they all may swell and ripen together.

Planting.—As the ripe fruits are cleared off the plants in the early and second early houses, the latter should have the glass and woodwork washed with tepid water and the brickwork with hot lime, preparatory to replanting the house with a fresh batch of plants, which should be raised a few weeks prior to the preceding crop being ripe for that purpose. The surface-soil of the bed should be loosened a little and removed, and replaced by about half a peck of soil taken from the mounds on which the old plants were growing. This should be replaced with a like complement of new soil in which to set the young plants, making the soil firm about the roots in planting, and taking care in doing so not to bury the stems of the several plants any deeper in the mounds (which should only be sufficiently high above the level of the intervening space as to prevent the lodgment of water about the stems) than they were in the pots. Then give water to settle the soil about the roots, and shade the plants for a few days from bright sunshine until the roots have taken to the soil, when it should be discontinued. Damp the plants morning and afternoon with clear tepid water, and in other respects (minus the supplies of liquid-manure being given at the roots until the fruits have set) treat as recommended for plants swelling their fruits. Add some soil to the hillocks as the roots protruded through the sides in recently planted houses. Thinning, tying, and stopping of the shoots, one or two joints beyond the fruit, must be attended to regularly two or three times a week in the case of plants in full growth, so that there may be no overcrowding of the shoots, or needless exhaustion of the plants. Raise plants for successional planting, and for planting in pits and frames now being vacated by Potatos and bedding plants.

FIGS.

Houses in which the fruits are ripe or approaching maturity should be ventilated freely during favourable weather, and a somewhat dry atmosphere should be aimed at to insure high flavour. As soon as the fruits have been gathered give the trees a good soaking of clean water at the roots and a good wsshing overhead with the syringe, and keep the house rather warmer and the atmosphere more moist, to encourage a second crop of fruit to swell. The trees in successional houses should have occasional waterings of tepid liquid manure at the roots, and should be syringed overhead morning and afternoon with clear tepid water, as much with a view to keeping the foliage free from the attacks of red-spider as to promote a growing atmosphere in the house. Pinch out the points of young shoots as soon as they have attained to a length of 18 to 20 inches, to encourage thereon the formation of young fruit, as well as to obtain balance of growth on the trees.

Temperature and Ventilation.—In the carrying out of these important cultural details the cultivator must be guided by a variety of circumstances, such as the character of the weather and the kind of structures in which the trees are growing as well as the stage of growth at which they have arrived in the respective houses, and the time at which it is desirable to have ripe Figs. However, in a general way, a night temperature of from 60° to 65° should be aimed at in houses in which the trees are swelling their fruit, 70° to 75° by day and fire-heat, and 80° to 85° by sun-heat, running the temperature up to 90° at closing time, with plenty of atmospheric moisture at the same time. Open the ventilators a little at top and bottom the last thing in the evening, closing them again the first thing in the morning, except in houses in which the fruit is ripe or nearly so, when the quantity of air left on should be increased. When the thermometer registers a temperature of 75° in the morning a chink of air should be given, afterwards increasing or decreasing this according to the rise or fall of the temperature, until the house is closed, which should be from half-past 3 to 4 o'clock during the next few weeks. *H. W. Ward, The Gardens, Longford Castle.*

Hardy Fruit Garden.

PROTECTING FRUIT FROM BIRDS.

The stock of netting on hand should now be overhauled, in order to ascertain the requirements for the season, in the way of new material. In woodland districts birds begin to work mischief amongst the red Currant bushes soon after they are out of bloom, and these should be the first to have the netting protection placed over them. The netting should always be suspended a sufficient distance from the bushes to allow the summer's growth to grow to its full length without reaching the netting, for the advantage of both trees and nets. With the aid of a few stout Oak or other durable kind of post driven into the ground at regular distances, and some strong galvanised, wire, a kind of framework may soon be constructed for supporting the nets, and one which will remain intact, and answer the purpose for several years without removal. Such a simple contrivance is alike most serviceable for Currants, Gooseberries, and Raspberries, and when obtaining the posts for driving in the ground, they should be in the first instance about 8 feet long. To net over a quarter of bush fruits into this manner takes a little more netting, but it lasts much longer, as the framework should be constructed 6 feet high from the ground, so that once the nets are in position they need not be moved about until the whole of the fruit is gathered. The nets should be placed over the earliest bed of Strawberries before the fruit commences to colour, or those who have not forced Strawberries under glass may lose their most prized fruit. *G. H. Richards, Somerley, Ringwood.*

The Kitchen Garden.

BROCCOLI.

The ground for this crop if not previously prepared, should be got in readiness the first opportunity. Although Broccoli, like other varieties of the Brassica tribe, delight in a rich heavily manured soil, it is not advisable, especially for kinds intended to stand through the winter, that these should be planted in such, but preference should be given in the first place to the site for planting on, which should if possible be an open one and sloping towards the south, well drained and sheltered from the north and east winds. A stiff, moderately rich soil is to be preferred, and if the surface is loose enough to plant in nothing further will be required. Where, however, the ground is in an exhausted and poor condition, manure will be necessary and should be dug in one spit deep. In planting, shallow drills should be drawn at least 2 feet apart, and the plants dibbled in about the same distance in the rows; this will allow ample space for earthing the plants well up in autumn, and also ensure a sturdy compact growth which will enable them to resist frost very much better than if planted too thickly together; in fact no greater mistake can be made than to plant Broccoli or any other of the Brassicas close together with the idea that they afford shelter to one another in winter; as when overcrowded they become drawn and weakly, and after the first sharp frost drop all their leaves, the tender stems being left exposed to the action of the weather; therefore, to avoid this, plant out early in moderately rich firm ground, not too thickly. *J. Austen, The Gardens, Witley Court.*

APPOINTMENTS FOR THE ENSUING WEEK.

THURSDAY, June 17 { Meeting of the Linnean Society. Sale of Imported Orchids from the New Plant and Bulb Co., and others, received direct from Brazil, &c., at Stevens' Rooms.

FRIDAY, June 18 { Exhibition of the Scottish Pansy Society, at Edinburgh. Sale of Imported Orchids, at Protheroe & Morris' Rooms.

IT is but a few years since SCHLŒSING and MUNTZ, and later on our own countryman, WARINGTON, made known to us the action of the BACTERIA or microbes which exist in the SOIL. By those observers it has been proved that certain otherwise inert substances become, by the agency of these organisms, converted into matter available for the food of plants, and that thus the nitrogenous matter in the soil of organic origin becomes converted into soluble nitrates. If the bacteria be absent, or killed by heat or other means, this process of nitrification does not take place.

Recently M. EMILE LAURENT, Professor in the School of Horticulture at Vilvorde, has attacked the problem from another side, and has cultivated plants in a soil artificially deprived of bacteria, in order to obtain comparative results as to the development of the plants so treated, with the growth that takes place under ordinary circumstances.

M. LAURENT'S experiments are recorded in a recent number of the *Bulletins* of the Royal Academy of Belgium (t. xi., n. 2, 1886), to which we must refer the reader for full details. It must suffice here to say that the soil in which the plants were to grow was rendered sterile by heat, which kills the bacteria, and stringent precautions were taken to exclude bacteria from the pots, these also being subjected to red heat before being used. It may be doubted, however, whether any precaution that could be taken would suffice absolutely to prevent the access of bacteria, but that a large degree of success was attained by M. LAURENT is proved by the results of his experiments to be hereafter mentioned.

Four sets of experiments were carried out. In the first set the plants were grown in natural soil; in the second in soil sterilised or deprived of bacteria artificially by means of heat, but subsequently inoculated with them; third, in sterilised soil alone; and fourth, in sterilised soil to which chemical fertilisers were added.

It is needless for us to detail the elaborate precautions taken to secure accuracy, suffice it to say that at the end of the experiment the first series of plants were most highly developed; the second series, grown for a time in sterilised soil and afterwards rendered fertile by inoculation with bacteria, showed at first inferior growth, but subsequently as good development as the first series. The third set of plants, grown continuously in sterilised soil, showed the effect of the starvation diet to which they were subjected by the enforced privation of bacterial agency, the want of which was partly compensated for in the fourth series by the addition of mineral manures, including a little potassic nitrate.

The general results, then, are satisfactory at all points, and we congratulate our Belgian friends and the School of Horticulture at Vilvorde on the important step which their Professor, M. LAURENT, has taken in establishing a truth of such cardinal importance in the cultivation of plants for whatever purpose.

—— IMPATIENS HAWKERI. — Last autumn we were privileged to see in Mr. BULL'S nursery an Impatiens, which, even with an editorial distaste for adjectives, we could but call magnificent. At the time we were bound over to secrecy and did not even obtain a specimen for botanical determination. In Mr. BULL'S *Catalogue* for the present year we find an illustration of this species which by no means does justice to the plant, and hence we commissioned our artist to make a sketch for us, which is here reproduced. The name Hawkeri we take from Mr. BULL'S *Catalogue*, and here cite his description:—"It is a native of the South Sea Islands, where it was discovered by Lieutenant HAWKER. The sharply serrate leaves are elliptic acuminate. The magnificent flowers are very large, flatly expanded, and of the most brilliant, rich, deep carmine colour; this is relieved by a lustrous bluish tinge round the small white eye; the dorsal sepal is roundish, and the two lateral lobes oblong and bilobed; the spur is red and about 2 inche long." The handsome flowers of this superb new Impatiens are produced in greatest profusion from March until October. The plant is of free growth and of good habit, and cannot fail to become one of the most useful of decorative plants.

—— FRUIT CROP RETURNS. — Owing to the pressure on our space occasioned by the Royal Horticultural show to be held at Liverpool at the end of this month and the beginning of next, the reports on the fruit crops will not appear in our columns before the third week in July.

—— LEECH'S SKETCHES.—Messrs. BRADBURY, AGNEW & Co. have rendered a public service by issuing in an inexpensive and handy form JOHN LEECH'S incomparable sketches, so full of harmless fun, so destitute of vulgarity, so excellent as monitors. As fashions change, and a new generation has sprung up since LEECH'S time, the fun of some of the sketches is already lost upon the new comers, for whose benefit, as well as for the refreshing of the memory of the elder ones, the sketches should have the date of publication affixed to them, and thus their historical value would be enhanced.

—— MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—Mr. BRUCE FINDLAY reports that there is every prospect of an extremely fine exhibition at Manchester (which opened yesterday), the entries being even more numerous than last year, and the plants generally are in the best condition. The Orchids are said to be particularly fine, and one of the best displays ever seen at Old Trafford is expected. Unfortunately the new house—a lofty structure in two divisions, the two combined covering a space of 120 feet by 48 feet—will not be completed by Whitsuntide, but this miniature palace of glass will be found very useful by Mr. BRUCE FINDLAY for accommodating giant Palms, Araucarias, &c., that are too lofty for the new show-house. It is an imposing structure, and forms a striking feature in the grounds. It is being erected by Mr. NEAL, of Manchester. The houses are well worth an inspection; the Orchid-house is getting very gay with Cattleyas, Masdevallias, Dendrobiums, &c. The grounds, freshened by the recent rains, are pleasant to the eye, and the trees are in the full flush of their spring leafage. But fine, open, warm, sunny weather is badly needed in the Manchester district; and, encouraged by the change which commenced on Friday the 4th, the Council are hopeful the weather preceding and during Whitsun week will be all that could be desired.

—— THE COLONIAL EXHIBITION.—One of the most interesting of the minor features consists in the illustrations of the uses made of flowers, grasses, &c., for ornamental purposes. In the Cape Court, for instance, a botanist of our acquaintance who has made the Restiaceæ a subject of special study for nearly a quarter of a century, and has been twitted for his devotion to so unattractive and so generally useless a race of plants, was delighted to find his favourites thought ornamental enough by the Cape ladies to be used as decorations for their hats, together with leaves of the Silver tree (Leucadendron), everlasting flowers, &c. In the West Australian Court are some ornaments constructed of what we take to be scales from the involucre of a Protead. They are effective, but we have not yet been able to examine them closely. Popular names are, as usual, an intolerable nuisance; some magnificent things are made in various Australian Courts from "Cedar," but the Cedar of one court is not the Cedar of another; and whatever be the true name neither of them is entitled to be called Cedar. The collections of timber, economic plants and their products by Baron VON MUELLER, Dr. SCHOMBURGK, Mr. BROWN (South Australia), Mr. BAILEY, the colonial botanist of Queensland, the officers at the Cape and Natal, British Guiana, Canada and India are full of interest to the botanist and cultivator. Baron VON MUELLER sends his wood samples in the form of little books, which admit of the various sections, transverse, vertical, or radial, being seen, while it allows the specimens to be packed book-fashion in small compass. Each "book" has for title the name of the plant from which it is produced. Mr. BROWN mounts small sections of wood bark, &c., with the dried flowers on grey board—the whole very neat, compact, and effective. The Queensland woods are in the form of small slabs let into card-board mounts like photographs. The photographs of the Melbourne and Sydney Botanic Gardens, as well as those of Ceylon and Calcutta, are excellent. Our readers will be familiar with some of these from the illustrations that we have from time to time published. The Botanic Gardens, Ballarat, is, however, new to us. The models of fruit from Australia are interesting, but their interest is lessened by the considerable importations, in excellent condition, of fresh samples.

—— "DICTIONNAIRE DE BOTANIQUE." — M. BAILLON'S excellent publication has now reached its twentieth part, and with it the completion of the second volume, bringing the work to the conclusion of the letter G. The woodcuts are excellent, and the coloured lithographs artistic. With the present part is issued a coloured plate of a new parasitical plant, called Hachettea, for the description of which we shall look forward with interest.

—— "GREVILLEA" has attained to the completion of its fourteenth volume. It is indispensable to all students of Cryptogamous plants, particularly Fungi. From the current number we learn that the whole of Dr. COOKE'S herbarium of Fungi has been acquired for the nation, and deposited in the Herbarium at Kew, where the collections of the Rev. M. J. BERKELEY are also preserved.

—— VICTORIAN PLANTS.—Baron VON MUELLER has published his *Key to the System of Victorian Plants*. The chief feature consists in a series of 152 woodcut illustrations of the genera, with botanical details. These, and the condensed summary of geographical distribution, will prove most valuable to students. This little book, while unpretending in appearance, will prove one of the most generally useful of the Baron's publications, and one that no one but himself could have produced so successfully.

—— "THE FLORA OF OXFORDSHIRE."—This volume, which has been prepared by Mr. G. CLARIDGE DRUCE, author of a *Flora of Northamptonshire*, &c., will, we learn, be published immediately. It will give a list of all the plants recorded for the county, with their habitats, times of flowering, &c., the localities of the rarer species, and the comparative distribution in the border counties of Bucks, Berks, Warwick, Northampton, and Gloucester. Altogether nearly 400 species and varieties, additional to those given in WALKER'S and SIBTHORP'S *Flora*, will be enumerated. The appendix will contain, *in extenso*, Mr. H. BOSWELL'S *Oxfordshire Mosses*, and a large list of fungi. A coloured map will be included, showing the seven botanical districts, based on the river drainage, into which the county has been divided. A slight sketch of the topography, meteorology, and the physical geopraphy of the county will be given, in addition to brief biographies of the botanists connected with the University and county. The botanical authors from A.D. 1500 downwards, and the Herbaria of Oxford, British Museum, &c., will be fully quoted, and many hitherto unpublished notes of local botanists, such as the Rev. J. WALKER, will also be incorporated.

—— COTTAGE GARDENING.—Mr. BADGER has published a revised edition of his useful little book, which is admirably suited for the purpose. We protest, however, against the retention of the obsolete words "spongioles" and "spongelets," as conveying a wrong impression. One objection to mulching, not mentioned in this little book, is that unless care be taken to procure a proper material, it is often the means of introducing a formidable crop of weeds into the garden.

—— FLOWERS IN SEASON.—Some highly-coloured hybrid Mimulus in variety, Aquilegias, single and double, in colours red, brown, blue, yellow, and pink, and Iceland Poppies in orange, yellow, and white



FIG. 168.—IMPATIENS HAWKERI, HORT. BULL: FLOWERS DEEP CARMINE. (SEE P. 760.)

have been sent us from the gardens of Mr. E. J. LOWE, Shirenewton Hall, Chepstow. This dwarf and quite hardy strain of Mimulus was obtained by crossing M. luteus with M. cupreus and with M. cashmirianus. By crossing Aquilegia glandulosa with A. chrysantha and with A. canadensis that of the Aquilegias was secured. Beds of these plants, placed in suitable aspects and positions, afford pleasing variety to the garden in early summer. As masses or big groups in a mixed border they are likewise of value.

—— NOMENCLATURE. — When some ill-judging scribe called Saxifraga pyramidalis, S. nepalensis, he inflicted an injury which it seems impossible to repair. The plant now so common in the market has no more right to the term nepalensis than it has to be called a whale. It is S. pyramidalis, or, if you like, S. cotyledon, for the two are synonymous, or, if not, then only slight varieties one of the other. Anyhow, the word nepalensis ought to be banished, and the label writers at the Royal Horticultural Society, Chiswick, should certainly set the example.

—— SUMMER SHOW OF THE ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—At a meeting of the Council of this Society, held on the 9th inst., it was resolved, after careful consideration, to abandon the Summer or Rose Show, which was to be held on July 7 and 8, owing to the impossibility this late season of having a good display of Roses at that date, and the numerous other popular attractions in Edinburgh during the same week, which will, to a material extent, detract from a horticultural exhibition held under such unfavourable circumstances. The Council, however, agreed to do everything possible to make the Summer Show of 1887 a great success, in connection with which the show of the National Rose Society is to be held at the same time under its auspices at Edinburgh.

—— ORCHID DRAWINGS.—One of the features of the late show at the Royal Horticultural Society consisted in some truthful drawings of Orchids by Mr. A. FOORD HUGHES. What perversity was it which induced somebody to spoil a looking-glass and render it useless by blotching a spike of Odontoglossum crispum over it?

—— RHODODENDRON FALCONERI.—In the interesting garden belonging to the Rev. Canon HODGSON at Saltwood, Kent, we lately saw this fine Himalayan species in bloom. It is growing in a very sheltered, warm, moist situation, not far from the sea, but it did not look happy. We were, however, surprised to see it out-of-doors in Kent. It is not so hardy as the Camellia, apparently. A tiffany frame thrown over it would probably be sufficient protection in winter, and enable the plant to put on a more attractive appearance.

—— CLEMATIS: DIMORPHIC FOLIAGE.—A correspondent sends us specimens of Clematis Jackmanni, the representatives of a whole batch grafted last season on roots of C. flammula, and in which, while some of the leaves are of the ordinary character, others have very long narrow linear segments. Other specimens grafted on C. vitalba and C. Viticella, have shown no such tendency. What the reason for this sudden check to growth may be, we cannot tell. It is possible that the stock may in this case exercise some change in the form of the leaves on the graft.

—— MR. JOHN WATERER'S RHODODENDRON SHOW.—The usual yearly show of Rhododendrons held in Cadogan Gardens, Sloane Street, is better furnished with splendidly flowered specimens than we remember ever seeing at any former exhibition. The method of arranging the plants is the same as has been followed at former shows; that is an almost square space of about a quarter of an acre provided with a broad serpertine border next to the sides, and large irregular beds distributed over the rest of the area, with spacious walks around them all, and the whole covered with a canvas booth. Some of the plants are of a large size, and large and small are loaded with open flower or opening buds, so that the display will last for a fortnight longer at its best. The following are some of the newer and choicer varieties to be found in flower:—Duchess of Connaught, white, with lemon markings; Duchess of Bedford, crimson, light centre; Countess of Normanton, pale, almost white, with beautiful dark markings; Duchess of Edinburgh, crimson, light centre; Duchess of Cambridge, white, yellow spots; Countess Cadogan, clear rose; Kate Waterer, crimson, large yellow mark; John Waterer, rich crimson; Loquendum, scarlet, white centre; Mrs. Charles Leaf, rose, light centre; Mrs. Tom Agnew, white, lemon blotch; Mrs. William Agnew, pale rose, brighter at edges, yellow centre; Sir H. de Trafford, bright rose, yellow centre; Baron Schroder, plum colour, yellowish centre.

—— DENDROBIUM DALHOUSIEANUM.—Mr. PIDSLEY sends us a curious flower of this, in which there are six sepals in two rows alternating, then two lateral petals, followed by four others, two of the ordinary character, two developed as lips; finally three columns confluent into one—in all fifteen parts. We imagine the peculiarity to have arisen from the union in a very young condition of three flowers, some of the parts of which have not been able to grow from the pressure, and so have been "crowded out," while others have "settled down" as best they could.

—— HULL HORTICULTURAL EXHIBITION.—We have received the schedule of the summer show, to be held in the Hull Botanic Gardens. The prize list is a liberal one, more than 200 guineas in prizes and Gold and Silver Medals being offered. There will be an exhibition of garden implements and appliances, and a trial of lawn-mowers. Messrs. E. T. SHARP, JAMES DIXON, and PHILIP MACMAHON, Curator, Hull Botanic Gardens, are the Honorary Secretaries.

—— KNICKERBOCKER RADISH.—This introduction of Messrs. J. CARTER & Co. should prove a serviceable variety for sowing to come in during the hot weather, as it has the advantage of remaining eatable even when running to seed, which other sorts have not. It is of that class of large Radishes which on the Continent, especially in Bavaria, the beer drinkers take with them to the "Bierhalle" for consumption there, considerably to the advantage of "mine host."

—— SALE OF ORANGE BLOSSOMS AT PARIS.—We learn from the *Deustche Garten Zeitung* that, according to the ancient rule, the Orange blossoms of the gardens at the Luxembourg and the Tuileries were on May 22 last sold by public auction in presence of the Inspectors of the Administrators of Domains, such being the property of the State. The harvest at the first named garden reached 10 kilog., and at the Tuileries, 100 kilog. The price obtained for the Luxembourg flowers was 2 francs 35 cents. per kilog., but what the others fetched is not known. The 150 trees of the Tuileries garden were taken into the garden rather late, namely, after the close of the Industrial Festival, which was held there. Of this number of trees forty of them date from the reign of Francis I. (1515—1547).

—— THE LATE MR. R. KYRKE PENSON.—A correspondent has pointed out that the late Mr. PENSON, the horticulturist, was an architect by profession, as well as a skilful landscape painter and an exhibitor at London exhibitions of pictures. He was a Fellow of the Society of Antiquaries, and one of the Secretaries of the Cambrian Archæological Association. His art knowledge and keen, correct eye, accounts for the criticisms mentioned by "A. D." on p. 731. Mr. PENSON was frequently at the Welsh Archæological meetings with Professor BABINGTON, of Cambridge; Professor WESTWOOD, the Rev. W. A. LEIGHTON, Mr. WORTHINGTON SMITH, and a few others who have long worked at archæological and horticultural subjects hand in hand. Mr. PENSON'S plants and pictures have been described in former numbers of the *Gardeners' Chronicle*.

—— STRIPED CALCEOLARIA HERBACEA. — We have received from M. ERNEST BENARY, of Erfurt, specimens of Calceolaria flowers of a large size which differed from the type by being marked in stripes instead of being spotted or blotched. We can scarcely declare a preference to these over the old form, the markings being rather dull, and not well distributed over the whole of the upper surface of the bloom, in some instances half the flower being striped whilst the other half exhibited merely the ground colour. By further selection something better may be made of this curious strain.

—— BUXUS HILDEBRANDTII. — In view of the failing supply of Box-wood for engraving purposes it might be of material service to set about the propagation and planting of this species in some of our colonial possessions where the climate is sufficiently warm to suit its requirements in that respect. It is a native of Socotra and probably other places on the neighbouring continents, and was collected on the above-mentioned island by Professor BAILEY BALFOUR in the spring of 1880. Specimens of it grown at Kew show its growth to be remarkably slow. The wood is said to possess a dense, very fine grain, and is used in its native country for the same purposes as the wood of Guaicum officinale or Lignum-vitæ, which is noted as an exceedingly hard, heavy, and dense wood. As a stove plant Buxus Hildebrandtii is neat and attractive, with larger leaves of much greater substance, and differently coloured from those of our native species, and, judging from dried specimens and the living plant, as variable in the leaves as our native species. They range from long, narrow, spathulate-emarginate forms to a short and rotund-obcordate form.

—— PLUMS AND WALNUTS IN FRANCE.—Some curious facts connected with the trade in French Plums and Walnuts at the port of Bordeaux are given in a recently published report of Consul WARD. Last year's crop of Plums, it is stated, was a good average one, though it was about one-sixth less in quantity than the crop of 1884, and prices ruled rather higher in consequence. The quality was very good, and business must have been satisfactory for growers, as no stock whatever now remains on their hands. Exporters at Bordeaux, though they did a considerable trade, are, however, considered to have gained small profits in consequence of the large amount of competition in this branch of trade at this port at present. The stocks remaining on hand at Bordeaux are only about one-half what they were at this time last year, and a moderate spring demand from the United States, the chief consumers of Bordeaux Plums, will suffice to clear them off entirely. Of Walnuts last year's yield is stated to have been very large, and to have exceeded that of 1884 by about one-quarter. Owing, however, to the unusually wet weather during October and the first half of November, the nuts did not dry properly, and their quality became unsound. Large shipments were made from Bordeaux to New York, but as the nuts arrived in bad condition they entailed loss both to shippers and consignees, and considerable stocks remain on hand, which will be difficult to dispose of owing to their inferior quality.

—— PUBLICATIONS RECEIVED.—*Recherches sur la Respiration des Feuilles a l'obscurité.* By MM. P. P. DEHÉRAIN and L. MAQUENNE (Paris: G. MASSON).—*Rus in Urbe, or Flowers that Thrive in London Gardens and Smoky Towns.* By Mrs. HAWEIS (FIELD & TUER, Leadenhall Press, E.C.)—*The Camera*, vol. i., No. 1 (London: WYMAN & SONS, 76, Great Queen Street, W.C.).—*Tracts on the Irish Question: No. 3, Coercion* (Dublin: Irish National League, 43, Upper O'Connell Street).—*Hong Kong: Report of the Acting Superintendent of the Botanical and Afforestation Department, 1885.*—*Some Additional Notes upon Trees and Tree Planting in Massachusetts.* By C. S. SARGENT (Boston: WRIGHT & POTTER).—*Relevé Monographique des Anthurium aujourd'hui connus.* By M. E. BERGMAN.—*Annalen des K.K. Naturhistorischen Hofmuseums*, vol. i., No. 2. By Dr. FRANZ RITTER VON HAUER (Vienna: A. HOLDER).—*Horticultural Buildings.* By F. A. FAWKES (London: SWAN, SONNENSCHEIN & Co.).—*Les Abeilles; leurs mœurs, leur industrie, leur culture.* By VICTOR RENDU (Paris: HACHETTE & Co., 79, Boulevard St. Germain).—*New Commercial Plants and Drugs.* No. 9. By T. CHRISTY, F.L.S., &c. (London: CHRISTY & Co., 155, Fenchurch Street, E.C.).

GARDENING APPOINTMENTS.—JOHN WILLIAMS, Foreman at Rufford Hall Gardens, Ormskirk, has been appointed Gardener to J. WHITEHEAD, Esq., Penwortham Priory, Preston, Lancashire. — Mr. EDWIN ROWLAND has been appointed as Head Gardener at Aldersey Hall, Chester.

Notices of Books.

The Gallery of Marianne North's Painting of Plants and their Homes, Royal Gardens, Kew. Descriptive Catalogue, compiled by W. Botting-Hemsley, A.L.S Fourth edition, much enlarged. London: H.M. Stationery Office. Sold at Kew Gardens. 1886.

This edition of the official guide to Miss North's paintings is something considerably more than a "descriptive catalogue." It is, indeed, a handbook to geographical botany, equally valuable to the student at home as to the visitor to the gallery of paintings: indeed, we may say it is indispensable to both.

The increased value of the present edition over its predecessors lies not only in the fact that there are descriptions of 220 additional paintings, which have been recently placed in the gallery, but also that it contains an "enumeration of the plants named, alphabetically arranged under their natural orders," and some notes on the "general features of the vegetation of the countries visited." Some idea of the extent of the enumeration of the plants may be gathered when we say that it occupies thirteen pages, and its usefulness is much enhanced by the addition of the native country to each species. Mr. Hemsley summarises this list by saying that "out of about 200 natural orders of flowering plants as defined and limited by Bentham and Hooker, 146 are represented in this collection of plants, and the plants depicted belong to no fewer than 727 different genera. With regard to species, the number actually named is under 900; but as specific names have only been given to such as could be identified with ease, or without too great an expenditure of time, this number is considerably below the total number painted."

In Mr. Hemsley's notes on the general features of the vegetation of the several countries, he has wisely arranged those countries in the same order as Miss North has arranged her pictures; thus all parts of the catalogue are made subservient one to another, and a concise, but withal sufficient description is given of the botanical features of Chili, Brazil, Jamaica, North America, India, including Ceylon, South Africa, the Seychelles, Teneriffe, Borneo, Java, Japan, New Zealand, Tasmania and Australia. From a mere enumeration of the above places, a very good idea may be gathered of the extent of Miss North's travels, but to make it more clear, the two hemispheres are shown with the countries visited by Miss North, coloured red, and other floras partially illustrated in the collection coloured green.

A very good descriptive list of the woods which form the pannelled wainscot below the paintings is given at the end of the book, followed by an excellent index; making altogether a book of 160 pages, which is sold at the low price of fourpence. Mr. Hemsley is certainly to be congratulated on having produced one of the best of the new series of Official Guides now issuing from Kew.

The Naturalist's Diary.

Mr. Charles Roberts has issued (through Messrs. Swan, Sonnenschein, Le Bas & Lowry) a diary intended for the registration of facts connected with "Meteorology, Phenology, and Rural Biology." But it comprises a good deal more than a mere blank diary, inasmuch as it comprises indications of the temperature, rainfall, winds, flowering of plants, appearance of insects, reptiles, &c. The accumulated or aggregate temperature of successive days, starting from 42° Fahr., is given; so that taking, let us say, April 21, we find that on that day the aggregate useful temperature (degrees below 42° being omitted as useless, if not injurious), amounts on the average to 374°. The accumulated rainfall is treated in the same way. The statistical data are founded upon the observations taken for twenty or more years at Marlborough, Wilts. The work is intended as a standard for comparison with other localities, and if local circumstances are duly considered and allowance made for individual variation, which is often very great, there is no doubt that useful results will ultimately be obtained. The problems to be solved are complicated and vast, influenced by conditions and combinations of conditions which are at best only imperfectly apprehended, and some of which have in all probability yet to be discovered.

Some of the author's statements are open to question. We do not think that winter Aconite, Snowdrop, and spring Crocus, Apricot or Peach, are natives of countries having warmer winters than our own; quite the contrary. Considering, however, the complexity and difficulty of his subject, Mr. Roberts has produced a suggestive and useful book, and one which will doubtless be progressively improved if the re-issues the author contemplates are carried out. In process of time the diary will form a most valuable record for cultivators, medical men, and those interested in meteorology.

Orchids: Their Structure, History, and Culture.

Mr. Castle has issued (*Journal of Horticulture* Office, 171, Fleet Street) a second edition of his useful little book, which is well adapted for beginners and amateurs. Additional chapters have been supplied, including a list of books concerning Orchids, and a list of the principal Orchid growers, both of which might be extended. A very useful chapter is that which gives a list of the principal Orchids which flower in each month.

WILD FLOWERS NEAR OXFORD.

ONE would hardly expect to find wild flowers of any importance in the heart of such a closely-built and populated place as Oxford; yet there are several that maintain a foothold in the crevices and on the tops of old walls with a persistency that is truly surprising. Amongst those flowering at present may be mentioned Senecio squalidus, Cheiranthus Cheiri, and Linaria cymbalaria. The Wallflower is evidently a yellow-flowered garden form, and in all probability encouraged to grow there. Whatever the origin of the Senecio, it is perfectly able to maintain its position, and flower profusely, where there is a small morsel of soil between the stones. Although not considered a true British plant it is thoroughly naturalised here, as well as at a few other stations. It is one of, if not the, showiest of our Senecios, with numerous large deep yellow flowers, and probably enjoys immunity from the hawker's basket, because it is merely a yellow Ragwort. A very different case is presented by Fritillaria meleagris, popularly known as the Snake's-head, which finds its way into the Oxford flower-market in great quantities, as do also the Cowslip and wild Hyacinth (Scilla nutans), all of which grow wild in the immediate vicinity of Oxford. The Fritillary adorns the moist meadows about Iffley, on either side of the Thames, at that part known as the Isis, and occurs in greater or less abundance for several miles down the river. Where they are plentiful, and the meadows have escaped spoliation, the nodding purple flowers give a distinct hue to the grass. There is an extreme variation both as to size and colour, the latter ranging from a deep dull purple to pure white, or nearly so, with all intermediate shades, some of which are beautifully chequered with different shades of purple, and the segments of some are tipped with white. It is to be regretted that the wanton destruction of so rare a British plant should be carried to an extent threatening extermination; for many evidently collect and afterwards strew them heedlessly about. Education, and a dissemination of plant lore, would do much to foster a love of plants and put a stop to the wanton destruction now carried on.

Leaving the city behind, and progressing southwards, wild flowers become extremely abundant both in species and quantity; but a most noticeable feature is the predominance of yellow colours, notwithstanding a fair admixture of white, pink, and purple. Whole meadows appear monopolised with Caltha, Taraxacum, or Buttercups; while near Sandford-on-Thames, and at various intervals along the valley, the soft yellow hue of the Cowslip in thousands gives its own characteristic tone of colour to the field, and makes it extremely enjoyable and pleasant to the eye of the beholder.

Amongst all this wealth of the commoner but none the less attractive flowers, one can frequently pick up specimens of the rarer and choicer natives. Viola hirta has ceased to produce large and showy flowers for a season, while the pretty pink Valeriana dioica is hardly at its best. The plant delights in abundance of moisture, and deserves cultivation as a bog plant. In some of those meadows more or less densely carpeted with the Cowslip, Orchis Morio and O. mascula are dotted about, and afford a pleasing and attractive relief of deep purple. Both species exhibit variations of colour, but the former undergoes the most interesting gradations in that respect, ranging from deep purple with the usual green lines on the sepals and purple markings on the labellum, to a pale pink or flesh-colour. At this stage of their growth the spike is dense, and shows none of that laxity characteristic of their habit later in the season. The flowers of O. Morio are by far the most handsome, both as to size, colour, and markings, and the whole plant is neat and attractive.

Below this point of the river the scenery becomes richer and more varied. On the Oxford side the banks ascend at a gradient steep enough to partake of the character of low hills, richly clad with trees just bursting into leaf, and on a warm May morning were particularly inviting to parties on the water in quest of health or amusement. The flat and flowery meadows on the Berkshire side are bounded by numerous hedgerows, with a more distant background of copsewood and taller trees. The Adder's-tongue (Ophioglossum vulgatum) springs up abundantly, yet almost unnoticeable, amongst the grass in rich black, moist soil, with simple barren tongue-like fronds that were even less common than the branched and fertile ones.

Near Abingdon a broad dry bank of a hundred yards or more in length was covered as with a white sheet consisting of the large-flowered Saxifraga granulata. This rising ground, now a little distance from the river, had evidently been at no distant date the immediate brink of the river. A rarer or more local plant, Cerastium arvense, according to its usual habit, forms broad spreading patches, abundantly furnished at this season with conspicuously white flowers as large as Stellaria holostea. It is often cultivated as a rock-plant with good effect. A most interesting series of forms, or rather varieties, of Arum maculatum nestle comfortably under the hedges, and grow even more luxuriantly on moist shady banks. Here, as elsewhere, the commonest varieties are those with simply green, or else with spotted leaves. In these instances the spathe is coloured to match, being sometimes beautifully spotted; but even where it is of the normal yellowish-green, it is generally margined with purple. Specimens occur where the whole interior of the spathe is of the same dull purple as the spadix is normally, but a more interesting case is that where the spadix is a clear yellow throughout its length, which is one of the chief characteristics by which to distinguish the closely allied A. italicum. *F. F.*

DISEASE OF VINES.—III.

PERONOSPORA VITICOLA, *Berkeley.*

PERONOSPORA VITICOLA, the fungus which has wrought such terrible mischief in America and on the continent of Europe, is a close ally of the fungus of the Potato disease, Peronospora infestans, Montagne. The first appearance of Peronospora viticola in Europe was upon American Vines grown in France, in 1877, The first Vines which showed the disease had been imported from America on account of their supposed power of resisting the attacks of the Phylloxera. In 1879 the disease had spread to Upper Italy, and in 1880 it was reported from Switzerland, Hungary, Carniola, Lower Austria, and South Tyrol. In 1882 it had spread to Alsace and Bavaria. At present, although expected every season, it has not yet been recorded from Britain. As with many other species of Peronospora, we are indebted for the original description of P. viticola to the Rev. M. J. Berkeley, by whom it was described in a list of North American Fungi in *Grevillea*, vol. iii., 1874, p. 109, as occurring on the under-side of leaves of Vitis æstivalis by the Santee River, and in New England and Missouri. The following is Mr. Berkeley's description:—"Forming orbicular white spots; flocci articulated, much branched above; the apices emarginate or shortly forked and acute; spores ovate. In those varieties where the leaves are woolly beneath the spots are less conspicuous."

The fungus mostly attacks the leaves of the Vine in humid weather and in damp situations, the mycelium grows in the intercellular spaces of the leaves

and emerges through the organs of transpiration on the under-surface. Downy leaves are generally more badly attacked than smooth ones. In the living examples examined by me the fungus had the peculiar habit of at first growing in white patches close to the chief nerves or veins, and from these positions it would rapidly spread over the entire under-surface of the leaves. By destroying the cells and utilising the cell contents the fungus sets up putrescence in the plants it invades. The fungus cannot spread in cold or dry air. In colour the Peronospora is somewhat more grey in tint than the familiar Vine mildew (Oidium Tuckeri) already described (*Gardeners' Chronicle*, May 15 and 22), 1886.

In fig. 169 is illustrated, enlarged 200 diameters, a fragment of the lower surface of a Vine leaf, with three fruiting threads, or "conidiophores," of the Peronospora of the Vine emerging at A, A, A, through the organs of transpiration. In some instances many conidiophores will burst through a single organ of transpiration. The mycelium is seen ramifying amongst the cells inside the leaf at B, B. The mycelium is furnished with numerous minute suckers which pierce the leaf-cells, and so help to break down the leaf-structure and bring about decay. As the conidiophores proceed in growth they send out numerous branches at right angles from the main fungus stem, and these branches send out other branches also at right angles with the secondary branches, and in many instances a third or tertiary series of branchlets is produced, capped by from one to four little spicules or spore supporters, as shown at D, D, in the illustration. The spores, which are produced in immense numbers, are large, ovoid, and pale grey in colour. A single conidium or spore is shown, enlarged 1000 diameters, at E. As regards size the Vine Peronospora is one of the largest and handsomest species of the genus. When the spores or conidia fall upon any damp surface, they germinate, and usually discharge a series of ciliated zoospores exactly similar with those belonging to the fungus of the Potato disease, the zoospores swim about, aided by two vibrating hairs, for from fifteen minutes to four or five hours, and then germinate, the germinal thread being capable of piercing the cells of the leaf, and so reaching the interior. When this germinal thread once reaches the intercellular spaces it pierces and breaks down the cell structure, and sends new conidiophores through fresh organs of transpiration. This process of growth is repeated over and over again till the infected Vine falls into putrescence.

As in the fungus of the Potato disease, the Vine Peronospora produces resting-spores within the substance of the leaf. A swollen vesicle, termed an oogonium, is formed within or at the end of a branch of the mycelium; another smaller vesicle, termed an antheridium, comes in contact with the oogonium, and a fertilised oospore or resting-spore is the result. The resting-spores, which are bright yellowish-brown in colour, hibernate in the dry or decaying Vine foliage all through the winter, and germinate in spring exactly in the style of the resting-spores of the fungus of the Potato disease.

It is recorded by Professor Magnus, of Berlin, in the *Garten Zeitung* for 1883, that Millardet placed dry Vine leaves containing oospores or resting-spores of Peronospora viticola, in pots, in which Grape stones were sown, and a large proportion of the Grape seedlings grew up infected by the fungus.

The application of sulphur as a remedy against the Peronospora, the treatment so successful in Vines suffering under the Oidium, is quite useless. On the Continent, where Vines are grown in the open air, the following application has been found successful in dry weather:—A powder consisting of 4 kilog. of pulverised sulphate of iron, or green vitriol, mixed with 20 kilog. of pulverised sulphate of lime. In a plantation sprinkled with this mixture the young shoots did not suffer, but the disease spots became black, and the leaves became intensely green. The success of this experiment was the more remarkable as the Vines experimented upon were between two sets of diseased Vines which had not been similarly treated. Another plantation, vigorously attacked by the Peronospora, was on September 24 sprinkled in a similar manner, and also cured, but in this the young shoots and tender leaves were blackened, possibly by reason of the abundant rain, which quickly dissolved the vitriol. It is obvious that if this experiment is repeated it should be made in dry weather.

The Oidium and the Peronospora of the Vine, though such totally different fungi, are both popularly termed "Vine mould" and "Vine mildew;" the names are interchanged at random. To make the confusion worse, the Peronospora is sometimes referred to on the Continent as "the Oidium," often as "the mildew." The consequence of this has been that the methods adopted for destroying the French "mildew" (Peronospora) have been reprinted in some horticultural journals of this country as methods for destroying our common "mildew" or Oidium. As the two fungi are so totally different in habit and nature, any attempts to destroy our Oidium by the means adopted by the French against their Peronospora must have led to disappointment, if not disaster.

Since these notes on Oidium Tuckeri and Peronospora viticola were written, the illustrations engraved, and the MS. partly printed, the Editor of the *Gardeners' Chronicle* forwarded to me some notes on the same subjects, written by Dr. C. V. Riley, and printed in the *Rural New Yorker* for January 30 and February 6 last. Dr. Riley considers that Oidium Tuckeri gives rise to the Uncinula spiralis described

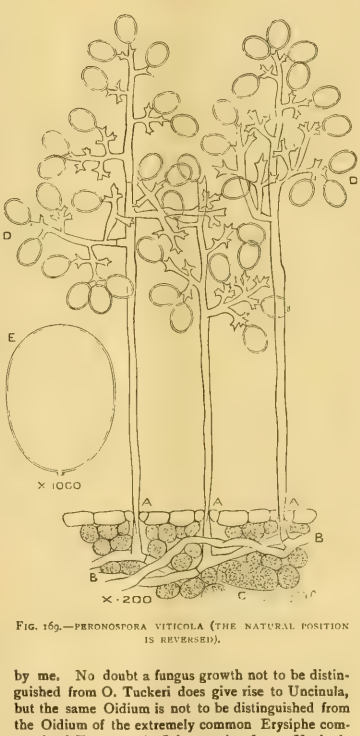


FIG. 169.—PERONOSPORA VITICOLA (THE NATURAL POSITION IS REVERSED).

by me. No doubt a fungus growth not to be distinguished from O. Tuckeri does give rise to Uncinula, but the same Oidium is not to be distinguished from the Oidium of the extremely common Erysiphe communis of Europe. As I have pointed out, Uncinula and Erysiphe communis grow in company on Vines in America, where they arise from two Oidia so much alike (and at the same time so variable within certain limits) that it is impossible to distinguish one from the other. Several other Oidia, as the Oidium of the mildew of Hops, &c., are extremely like the Oidium of Uncinula and Erysiphe communis. Von Thümen and some other authors have indeed said that the Oidium of Hop mildew is no other than O. Tuckeri: the similarity, however, is a mere case of resemblance, not identity.

To me, as to Professor Riley, it appears certain that Uncinula spiralis is the chief result of the Oidium in America, and to me (as first suggested by Mr. Berkeley) there is no doubt that the Oidium of the excessively common Erysiphe communis is no other than the Oidium Tuckeri of Europe.

There is an unfortunate misprint in Dr. Riley's report. In the paragraph beginning, "We thus have in Uncinula," should read, "We thus have in Peronospora." The result of this fatal misprint is that two paragraphs which purport to describe the Uncinula (perfect state of Oidium) really refer to the totally different parasite, Peronospora.

In reference to the destruction of the Peronospora Dr. Riley writes:—

"During my visit to South France in the summer of 1884 I was struck with the prevalence of this downy mildew (Peronospora) in most of the vineyards, and the French Grape growers around Montpellier felt far more anxiety as to the consequence of this Peronospora than they did as to the work of the Grape Vine Phylloxera. They feel now that with the aid of our American stocks they can control and defy the underground pest; but the Peronospora, which was a few years ago unknown to them, and which has been introduced with the American Vines, has so far entirely baffled them, as, I believe, it has baffled our own Grape growers.

"In an address which I had the honour to deliver before the Central Society of Agriculture of the Department of Hérault, in June, 1884, and which treated principally of insecticides and insecticide appliances, I took occasion, in view of the interest then felt in this mildew, to recommend the use of the following as a promising fungicide:—The ordinary milk-kerosene emulsion prepared after the formula given in my late official reports as United States Entomologist, with from 2 to 5 per cent. of carbolic acid and the same percentage of glycerine, and then diluted in twenty to fifty parts of water to one of the emulsion and sprayed on the under-surface of the leaves by means of a cyclone nozzle of small aperture, so as to render the spray as fine as possible. The suggestion of the carbolic acid was due to the results obtained by Professor Gustave Foëx, Director of the Ecole Nationale d'Agriculture at that place.

"It was very gratifying to find this recommendation at once acted upon, and, up to the time when I left Montpellier, with satisfactory results. Reports of further trials showed also that this mixture so sprayed at once arrests the spread of the mildew. I was well aware of the difficulty of dealing satisfactorily with a fungus which may in a single night, without any warning, manifest itself all over a vineyard; but it is a great point gained to know how to check it, even if the knowledge may at times be of little practical avail in large vineyards. But much good nevertheless resulted, and 'Le Procéde Riley' was much written about in *La Vigne Americaine* and other viticultural journals a year ago. However, the experience of the past year in France has furnished a remedy which, from all accounts, is in every way satisfactory, because it not only destroys direct, but acts as a prophylactic.

"My attention was drawn some months ago to two articles by C. B. Cerletti, published on the 15th and 30th of August in the *Revista di Vitticoltura ed Œnologia Italiana*, announcing the success of hydrate, or slaked lime. My friends, M. J. Lichtenstein and P. Viala, of Montpellier, the latter having charge of the Laboratoire de Viticulture at the Ecole Nationale d'Agriculture de Montpellier, soon thereafter communicated to me the discoveries made. M. Velicogna in a report in the *Actes et Memoires de la Société imperiale et royale d'Agriculture de Gortiz*, for September and October, 1885, has also discussed the effect of hydrate of lime at length, his formula being 2½ kilogrammes of the lime (*chaux éteinte*) in 100 litres of water.

"The general tone of the experience with this hydrate of lime is satisfactory, but a mixture of hydrate of lime and sulphate of copper is still more conclusive, and numerous communications to viticultural journals and to the French Academy attest the complete efficacy of the remedy. It has been the custom in some of the wine-growing parts of France to sprinkle lime and verdigris upon those Vines which border on the roadside, as a means of warding off depredators. It was found that Vines so spattered were not infested by Peronospora, while the rest of the vineyard might be attacked. This discovery led to further experiments.

"Various formulas have been given, but the most important articles are those by M. A. Perrey in the *Comptes Rendus de l'Académte des Sciences*, October 5, 1885, and by M. A. Millardet in the same publication, and reproduced in the *Messager Agricole du Midi* for November 10, 1885. From this latter article I condense the following:—Dissolve 8 kilogrammes (18 lb.) of ordinary sulphate of copper in 100 litres (about 22 gallons) of any kind of water (well, rain, or river) in a separate vessel. Mix 30 litres (about 6½ gallons) of water, and 15 kilogrammes (about 34 lb.) of coarse lime, so as to make a milk of lime. Then mix with this the solution of sulphate of copper. These will form a bluish paste. Pour a portion of the mixture into a bucket or other vessel, thoroughly shaking it, and brushing the leaves with a small broom, taking care not to touch the Grapes. There is no fear of any accident, not even to the most tender portion of the Vines.

"The treatment was made from July 10 to 20. At some points the operation was repeated a second time at the end of August, but without much advantage. It

was therefore demonstrated that one application was sufficient.

"The mixture, when dry, sticks very fast to the leaves. After the Vines were treated there were several showers the beginning and end of August, also the frequent September rains, notwithstanding which the evidence of the efficacy of the treatment, where no more than half the leaves were touched by the mixture, could easily be detected. That this remedy will prove effectual for the many other similar white mildews on other plants, caused by other Peronosporas, there can be little doubt.

"The same fear of danger as to the effect of this fungicide on the Vine and on the wine has been experienced in Europe as we experienced in this country in the early use of Paris-green as an insecticide, and experience alone will settle the amount of danger there may be in the use of this new remedy."

All diseased material should be carefully gathered together and burnt or deeply buried.

Note.—In the *Gardeners' Chronicle*, May 22, 1886, p. 661, fig. 150, the illustration at A, of which no explanation is given in the legend, shows part of the base of the main stem of a bunch of Grapes attacked and swollen by Oidium Balsamii, natural size. *Worthington G. Smith, Dunstable.*

THE MARINE PARK AT SOUTH SHIELDS.

THE South Shields Corporation are to be congratulated on the enterprise and public spirit they have displayed in the matter of beautifying their thriving town, and in enhancing its attractiveness to persons in quest of a seaside resort during the summer months. The northern half of the Marine Park is now completed. It speaks volumes for the taste and skill of Mr. Matthew Hall, the borough engineer, who has indeed transformed a sightless barren waste into a landscape which will form a most healthful ornament to the town when the remaining, or southern half, just commenced, has been completed.

A beginning was made with the north park at the end of 1883, and a large amount of relief labour has been employed in its construction. It is thirteen acres in extent, covers the site of the old playground, and has been carried out within the estimated cost, viz., £6000. The formerly bare ballast hills to the north form part of the park. They are now green and covered with verdure, and from the terraces which run along the slopes a grand view of the sea is obtainable, the highest elevation being between 70 feet and 80 feet.

The grounds of the park are handsomely laid out in walks and terraces. There is a broad straight walk running from south to north, and at the latter end a flight of broad stone steps leads to the ballast hill sloping terraces. There is a carriage-drive on the western boundary 50 feet wide, which it is intended hereafter to extend nearer the sea. At the entrance from Park Terrace Road is the gardener's lodge—a neat building of brick, enriched with terra-cotta. Nearly in the centre is an ornamental band-stand, encircled by a gravel walk 30 feet wide, some fine rockeries being conspicuous accessories. Abounding throughout the grounds are comfortable seats on cast-iron standards, and of neat design. There are a spacious lawn-tennis ground, bowling-green, &c. The footpaths and terraces are formed of red ash, the outcome of the underground fire. The park is thickly planted with trees, evergreen shrubs, &c., with flower borderings. On the east is a sea-wall, serving as a protection against sand-drifts, &c. It is of concrete, and is battlemented.

The south park, with which a start has just been made, is to cost £10,000, and will cover eighteen acres of land. It is intended to make it superior in all respects to its neighbour. Its principal feature is to be a fresh-water lake two acres in extent. On the north-east side will be a circular drive, to extend from Pier Parade to the new road to be formed by the Commissioners from Westoe Lane to the Bents. On the south the park will be bounded by a road, to be made by the Harton Coal Company, in continuation of Ravensbourne Terrace. Here also a band-stand will be erected, and a gardener's lodge; while provision is made for a large conservatory, &c. The laying out of the various walks and terraces will, we understand, be entrusted to a first-class gardener.

A refreshment-house has already been built on a triangular plot of ground opposite the salt-water baths, which will prove a great convenience to excursion and pic-nic parties. The building is of brick with stone dressing, and is adorned with an ornamental tower of novel design. On the second floor there is a spacious well-lighted room, with cloak-room, lavatory, &c. It will serve as a valuable adjunct to the parks. *Newcastle Daily Chronicle.*

THE GOOSEBERRY BUD MITE.

SOME years ago we received, in the spring, some Currant sprigs on which we found a number of very minute red six-legged mites beneath the scales at the base of the buds, but none within the scales themselves; the mites were in too young a (six-legged) state for identification (*Gardeners' Chronicle*, vol. xi., n.s., 1879, p. 413). These little mites were nearly circular in form, the six legs not so long as the body, the mouth formed of two porrected pieces, nearly truncated at the tips, and the body furnished at its hind part with about eight short bristles. We mention these particulars, as they evidently show a close connection with the little red mites represented in the accompanying cut (fig. 170), which in the month of March were found in very large numbers infesting in



FIG. 170.—THE GOOSEBERRY-BUD MITE.

masses the young shoots of Gooseberry bushes, and, as it seemed, confining themselves to the shoots at and near the base of the spines and of young leaf-buds. The body of the mites is broadly ovate, rather than rounded, finely wrinkled transversely across the middle of the back; the front of the head is slightly produced into a rounded lobe in the middle, with two sharp short triangular mandibles and two broad short palpi, slender at the tips; the eight legs are shorter than the body, the anterior pair being the longest. The hind part of the body is furnished on each side with a few short bristles, and there are a few very short hairs at the sides of the forepart of the body which are not shown in the engraving. Of course where these mites occur in large numbers they must greatly diminish the supply of sap to the young buds, which ought to be carefully examined and the infected buds destroyed.

We presume this mite belongs to the genus Tetranychus, but so little has been determined as to the species of these little creatures, that we are unable to determine whether it has been previously described.* It may for the sake of convenience of reference be named Tetranychus grossulariæ.

Our fig. 170 (2) represents part of a Gooseberry twig with two leaf buds and their spines of the natural size, the mites being indicated by the very minute black dots; fig. 170 (1) represents one of the leaf-buds and adjoining part of a twig highly magnified, and fig. 170 (3) shows the mite, also highly magnified. *I. O. W.*

* We find no such species described in Mr. Andrew Murray's exhaustive work on apterous insects, published in the South Kensington Museum Handbooks.

SCOTCH NOTES.

ORCHIDS, &c., AT WOOD BANK, DUMFRIES, THE SEAT OF C. WALKER SCOTT, ESQ.

IN many respects this is a remarkable place, and one that possesses features that should render it famous. The somewhat limited grounds are characterised throughout by marks of cultured taste which are enhanced by the abounding neatness and finished style of keeping that penetrates into every corner even to the regular daily blackleading of the furnace fronts and the polishing of the brass handles of the doors of the numerous glasshouses. The potting shed even is a model of neatness and utility combined. It is a spacious glasshouse fitted with roomy benches, on which hundreds of Odontoglossums or other Orchids can be conveniently placed and dealt with at once or at leisure in the matters of cleaning or potting in a thorough business-like way. The house is well heated and ventilated, and the plants may, if necessary, stand for days in it without injury—an arrangement of very obvious advantage, especially where, as is the case here, the various houses must at all hours of the day be in a state of perfect neatness and order. Every arrangement and every appliance in connection with the houses and the culture of the extensive and varied collection of plants have been carefully devised and adapted to meet the absorbing desire of Mr. and Mrs. Scott, that beauty and harmony shall prevail everywhere. Indeed, their own refined ideas direct everything in regard to matters of taste, and we have rarely met with a case where the result was more perfect and completely satisfactory. Contributing more largely to this result than may appear from the mere statement of the fact is the circumstance that every pot used for every class of plant in the varied collection is glazed and of a fine brown tint that harmonises perfectly with the innumerable colours of flowers and foliage. The stages are richly carpeted with a varied blending of Tradescantias, Pileus, Cissus discolor, small plants of Adiantum cuneatum, Selaginellas, &c., which are planted out in the gravel and permitted to drape the sides and descend and meet the ascending growth of similar plants that are growing in trays on the floor level, thus completely concealing the heating apparatus and ventilating gearing from view, and forming a beautiful groundwork, whence the Orchids and other inhabitants proper of the several houses stand out in adorned relief. The effect is beautiful, and is easily produced when intelligently set about. Here every house is adorned in the same manner, the subjects being chosen with due consideration for their adaptability to the temperature and general atmospheric conditions required by the plants grown in each. Ficus repens is very successfully used as a tracery covering on the partitions dividing the several warm houses. It is not permitted to become heavily matted, and consequently a nest for dirt, but merely encouraged to trace its elegant growth over the woodwork and glass, to the latter of which it clings with as much tenacity as to the former. But turning to a closer consideration of the collection of plants, we shall first look into the

ODONTOGLOSSUM-HOUSE,

which contains as uniformly healthy and vigorous a lot of plants as could possibly be found. A remarkable feature is the perfectly clean condition of all, the enormous size of the pseudobulbs, the leathery texture, and deep bronze olive-green tint of the foliage, all betokening the most robust health, and bespeaking the production of noble spikes of grand flowers by-and-bye. The bulk of the stock, comprising a good many hundreds of plants, is O. Alexandræ, and only superior varieties are grown. Some very distinct forms were in bloom, one especially attractive, with large broad petals and sepals of extraordinary substance, pure white, densely spotted with rich crimson; another most distinct form, with flowers somewhat resembling O. Andersonianum in colour and structure, was very strikingly beautiful. There were splendid specimens of O. Ruckerianum, O. Andersonianum,

O. mitis, O. triumphans, O. gloriosum, and O. Rossii majus, many of the latter in flower, exhibiting blooms of great size, purity of colour, and substance. In the same house are masses of Oncidium incurvum throwing up numerous strong spikes more than a yard in length, yet not more than two-thirds, grown. There were good specimens also of various Masdevallias, conspicuous among which was a plant of M. Harrisonii superba, about 20 inches across, in full bloom, being literally covered with its fine rich crimson flowers. Dendrobium Jamesianum had just completed some very fine growth, and from the roof, suspended on blocks of virgin cork, were some recently imported pieces of Lælia anceps alba, breaking with great strength and promise.

The Croton-house

contains, as may be inferred from its name, a collection of Crotons. It is a large roomy structure, very light, and well adapted to do these fine, foliage plants well. The Crotons comprise a selection of the best varieties in cultivation, which it is needless to particularise farther than to remark that they are good specimens and in good condition as regards health and colour. A few Palms, Dracænas, and Ferns, grouped among the Crotons, impart elegance and variety of form to the gorgeously coloured masses on the floor and stages below, while the rafters are festooned with masses of Dendrobium Wardianum, D. crassinode, and D. Devonianum, making their growth, which was remarkable in its luxuriance.

The Fernery

contains a choice collection of Ferns and Palms; conspicuous amongst the latter are specimens of Kentia Fosteriana, K. Belmoreana, Cocos Weddelliana, and Thrinax gracilis. A feature here in the decorative way, a conception of Mr. Scott's, is worthy of note on account of its tasteful effect. It is the planting of Ficus repens, Asparagus plumosus, and other similarly light, graceful plants in the pots containing the Palms, and allowing them to clamber about the stems and stipes of the latter in a light natural manner, crowding being restrained, that is very pleasing. There are some good specimens of various species and varieties of Gleichenias, fine samples of the various species of Dicksonias, and well-grown plants of Adiantums, Aspleniums, and other genera which space forbids our enumerating. The baskets, however, of several Goniophlebiums and Nephrolepis exaltata furcans, suspended from the roof, are noteworthy on account of the graceful drapery they impart to the space between the roof and the higher fronds of the Palms and Tree Ferns. The baskets are of large size, the plants well established and luxuriant, and the pendent fronds arch out in graceful outline a couple of yards or more, giving a charming aspect to the whole of the upper part of the house, where usually only bare rafters meet the eye. The light elegance of form and colour of Asparagus plumosus is turned to account in this house, also in baskets suspended from the roof, and in arches and festoons over the pathways.

The Anthurium-house.

So named because the chief space in it is devoted to various Anthuriums and other Aroids, but it contains many other widely different genera. Among the Aroids is a specimen of Anthurium Veitchii with eleven perfect leaves, averaging 4 feet long by 1 foot wide, and a plant of Phyllotænia Lindenii with unusually large and beautifully coloured leaves; but the chief interest to the lover of beautiful flowering plants in this house centres in a lot of Phalænopsis amabilis, P. Schilleriana and P. grandiflora to the extent of a hundred or more. There were several of these in flower, and the flowers of all were remarkable for their size, substance, and purity of colour. A thrifty lot of Calanthes, chiefly C. Veitchii, were suspended from the rafters in glazed bowl-like pots, making sturdy growth.

East Indian-house.

It would be difficult to meet with such another collection of valuable and rare species and varieties of Orchids as is contained in this fine house. Among Cypripediums were particularly notable C. Dominianum, 4½ feet across, with a hundred or more bloom-scapes, passing, present, and coming on; C. caudatum, 2½ feet across, with many flowers in perfection; C. caudatum roseum, said to be one of the finest plants in the United Kingdom, a strong luxuriant mass in an 11-inch pot; the pretty and interesting C. Pearcei, plants of C. stelligerum, C. Boxalli, C. Roezlii, and many others, all in exceptional health. In reference to Cypripedium culture it may be of interest to many Orchid growers to learn that Mr. Cole's results with this interesting genus are produced, in part at least, by a departure from the beaten track as regards the soil used in potting his plants. He does not side with the majority in favour of using loam, but uses peat, pure and simple, of the best quality he can obtain; and if results prove anything in the case, they prove that he is right. Of Cymbidium eburneum and C. e. Dayanum there are some masses in this house; two or three plants of the former, measuring 6 feet across, must be something grand when in flower. Of Oncidium sarcodes several fine plants were opening flowers on panicles of 6 feet in length. A plant of the rare Dendrochilum filiforme, in an 11-inch pot, was opening the first racemes of over a hundred that were in various stages of development on it. Aërides, Vandas, and Dendrobiums were making good growth, especially the species Wardianum and tortile roseum of the latter genus, the bulbs of which were very sturdy.

The Cattleya-house.

The species in bloom were chiefly Mossiæ, Mendelii, Gaskelliana, and Skinneri, along with good varieties of Lælia purpurata and Perreni. After all, C. Mossiæ when seen as it is here, is unsurpassed by any other species for richness of colouring, and the grand proportions of the flowers. Several dozens of plants here were each sufficiently distinct in the colour and the form of the flowers to deserve distinctive names. The variety C. M. Osmani is good, with petals and sepals 9 inches from tip to tip, and the lip 4½ inches by 2½ inches. Many other species of Cattleya are represented in healthy plants; a recently imported batch of C. Dowiana were starting with great success, showing freely those sturdy buds which are the delight of the Orchid grower, and the best assurance of ample vigour being in reserve in the old pseudobulbs. Passing through

The Conservatory,

which is gay with late Azaleas, tuberous Begonias, Chorozemas, Ericas, &c., elegantly toned and relieved by Ferns and small Palms, we entered a small house devoted to a portion of Orchids in flower. Here we found a splendid variety of Cattleya Mossiæ in a 10-inch pot, carrying eighteen flowers of great size and substance; fine varieties of Odontoglossum Roezlii smothered in bloom masses of 20 inches or 2 feet across; O. R. album, with large, purely-coloured flowers; O. nebulosum, also fine; a fine plant of Lælia purpurata, with fifteen splendid flowers on three panicles; L. purpurata, a beautiful variety resembling L. p. Schrœderi; L. p. alba, with large pure coloured flowers; the singular and interesting Bulbophyllum Lobbi, the lip of which gyrates as if it were as delicately poised as the magnetic needle, and were subject to the same influence; Cypripedium villosum, with forty fully expanded blooms; Dendrobium Deari in the way of D. infundibulum, and D. lutescens belonging to the same section of the genus as the last, but with small canary coloured flowers; Sobralia macrantha, Vanda suavis, and many other species and varieties which we must omit to particularise.

The Old Cattleya-house,

so called because formerly entirely devoted to Cattleyas, is now a mixed Orchid-house containing some beautiful and thrifty plants of Cattleya citrina, Dendrobium Wardianum, D. thyrsiflorum, the latter carrying twenty thyrses of fresh flowers, and the former just ripening stout growths of about 4 feet in length; Anguloa Clowesii successfully flowered; and good plants of Cœlogyne cristata, the Chatsworth variety.

The Propagating-house

is a compact little house, well designed for the purpose indicated by the name, but roomy enough to enable Mr. Cole to accommodate some fine half-specimens of Ixoras, among which we noted I. salicifolia doing well.

The Erica-house

contains some specimen and half-specimen Ericas, such as æmula, Marnockiana, and others, along with various Pimeleas. We have to confess here that our preconceived notion, that glazed pots were unsuitable for the culture of hard-wooded plants, received a somewhat rude shock on witnessing the capital health in which the collection of those plants here growing in those pots were. We have not yet quite done with Orchids, for in this house we came across some fine pieces of Disa grandiflora and a grand mass of Masdevallia ignea Pattersoni in full flower, and rich in its luminous crimson tint.

The Azalea-house.

Here was a batch of specimen and half-specimen plants in good condition and mostly finishing their growth. Like everything else in this place they bore marks of superior management. There is no tying or pruning into rigid, unnatural shapes, yet the plants are compact and thoroughly balanced. I have only further to remark, in concluding this record of a most gratifying and instructive visit, that I am much indebted to the courtesy and attenion of Mr. George Cole, the gardener. A son of the late elder William Cole, of Withington, Manchester, he is, like all the sons of that eminent plant grower, imbued with a love of his profession, and has proved himself at Wood Bank and elsewhere a master in Orchid cultivation and a good all-round gardener; everything under his care testifies to his painstaking intelligence.

The Apiary.

MANIPULATING HOUSES, &c.

Since I wrote my last article on subduing and handling bees I have been still further considering the subject. It may be that many of your readers are in the same predicament as myself, and have small premises; or, even if that is not the case, the space which can be spared for the bees is limited. In cases like these it is extremely useful, and in some cases necessary, to have some place where various operations can be performed in quiet; such, for instance, as putting foundations in sections, extracting, and many others which will immediately suggest themselves to the intelligent reader. It is not always pleasant to do these things in or close to the house, as there may be those dear to us whose heads we should not like to see swelled to the size of a Pumpkin through the intrusion of the bees. There are some very nice manipulating or bee-houses, made by Messrs. Boulton & Paul, of Norwich. With the permission of the Editor I give an illustration of it (fig. 171).

These houses are just what is required for the purpose, and are certainly cheap and well made. They are well painted; the sides and lining to the roof are covered with tongued boards, which are bee-proof; the roof is corrugated iron. They are very portable, and can be easily put together, and taken apart again, as it is only a matter of bolts and nuts. One great convenience about it is a revolving window. If you should happen to bring any bees into the house, they will, according to their nature fly to the light. When the window is covered with bees, simply revolve it, and the bees will be out-of-doors instead of indoors, and being at liberty will immediately fly home. There is a floor, and a door which will lock, and also a bench which can be used either to stand hives upon as in the illustration, or to work upon. If any one is in need of a growlery *à la* Dickens, this would suit well. An observatory hive would be very nice in them. Tents, especially rejected army bell-tents, are often used for this purpose, and make a tolerably fair substitute, but of course they are not equal to the above houses, a substantial building being at all times better than a tabernacle.

Be careful now to look out for swarms, and see that they are not lost. If you do not desire swarms, look again at the advice given in the *Gardeners' Chronicle* of May 15, which I can assure you is not theory, but the results of experience. *Walter Chitty.*

Combe Wood.—Messrs. Veitch send us from Combe Wood specimens of the noble Viburnum plicatum, figured in *Gardeners' Chronicle*, vol. vi., 1876, p. 140, and which should be generally cultivated; Cornus brachypoda, and the singular Grevillea sulphurea, with its linear leaves and pale flowers, so distinct from any other hardy or half-hardy shrub, except the nearly allied G. rosmarinifolia, which is also hardy.

HOME CORRESPONDENCE.

Orchid Nomenclature.—I am glad to see Mr. Douglas is determined to keep this subject before the public. I beg to append another instance of "Where are we going to?" At the last meeting of the Royal Horticultural Society the Floral Committee awarded a First-class Certificate to Vanda cœrulescens Vesta, described in the various Saturday papers afterwards (I gather from them collectively as they differ in the terms used) as sepals and petals white, lip rose-purple or violet-purple. Mr. Douglas was there, and he must have noticed its very close resemblance to V. c. Boxalli, which has white sepals and petals, and a bluish-purple lip. I have a plant of this species which came from Provost Russell's collection, which has bloomed, and, therefore, am sure of it. This Orchid is now appearing to produce more variety than before. A variety named Torniana, with pink sepals and petals and magenta lip, is mentioned in the *Garden* of April 18, 1885, p. 353. V. c. Boxalli has been figured in the *Botanical Magazine*, the type in the *Orchid Album*; and it would be interesting to have the newcomer "on paper" also, for it is a beautiful little Orchid and much neglected. But to return to the original idea. This subject if not dealt with at once, and in no half-hearted way, bids fair to be more refractory than ever. It has now taken a new stride. Some varieties are "Latinised," some Anglicised, according to the owner's proclivities. Here would be a grand work for the poor Orchid Society (that got so severely frost-bitten—a frost-bitten plant frequently breaks up from the roots in more leads than originally), to commence its labours with. Did it arrange this one matter and then die (which it would not), it would have done good work that all would be grateful for. It is to be hoped that the committee at the provincial show of the Royal Horticultural Society at Liverpool, when appointed for this matter will invite the growers from all parts, and make a large, really representative body, to confer together, and become a standing committee, whose object shall be to create another conference, or rather series of these, as I long ago advocated, at which the various Orchids would be shown, the name of the variety either upheld or published as misleading, and a request to the owner to discontinue it. How many varietal names are there printed weekly (I make no mention of any place in particular—all are alike), and none are retained after the plants pass hands. I have been disgusted at some results when named varieties of plants bloomed which I had bought, believing in the name when out of bloom. A grand named variety of C. Mossiæ turned out a bad variety of the type: so much for that owner's varietal names. I looked on it charitably—that he was ignorant, though he ought to have known better. I also remember another curiously doubly named plant. Cattleya Percivaliana alba was certified by the Royal Horticultural Society's committee and also named afterwards by Professor H. G. Reichenbach as C. crocata. Holding the same opinion as others, that the Professor, who does his best to please us all, knows what he is about, I fancy that his name ought to stand and C. P. alba should fall, though I would be the last to cut away a *protégé* of my friend; argumentatively speaking, it would be done so. At all events, it is additional evidence of you know "where we are going." Lælia purpurata is now blooming all over the country, and owing to the immense importations of it of late years, we are beginning to find grand new forms: *vide Garden* report of "Holloway Orchids" of this—May 29, 1886—issue. I have also bloomed two this last week equally fit to be named, but here is the fix—What and how are they to be named, and who is to do it? Where are we to go to? Not expecting the Professor to name each plant of mine, I do not send them. I would suggest cutting off all names (unless given by a recognised botanist of eminence) *pro tem.*, and this work being taken in hand at once, an organisation got ready to make a clean sweep of the whole stock in 1887, commencing with the C. Trianæ in the winter season. *De B. Crawshay.*

Choisya ternata.—This plant grows and flowers freely with us here, planted against walls outdoors. Some four years ago I put my first plant outdoors, which has grown vigorously, and has had no protection during winter. The late winter was a severe test to all tender subjects, and seeing that the Choisya survived this I should say there is no fear but that it will withstand any future one. It is a lovely plant for walls, and should find a place in all gardens, not only on account of its lovely white fragrant orange-like flowers, but the foliage is a recommendation in itself. About six years ago, when looking over the gardens at Kew I saw a good-sized plant on one of the walls there outdoors, and if it has survived till now it must be a very fine plant. Perhaps this note may catch the eye of some one at Kew who would be good enough to report if the Choisya is still there, planted in the open air. *R. Greenfield, Priory Gardens, Warwick.*

Sweet Brier Hedges.—In answer to the enquiry of "W. H. S." (p. 733) it may be said that the Sweet Brier is like a good many selfish people who like plenty of money and to be left all alone in their glory. They will not grow under trees or dotted in among other shrubs. It is quite a mistake to plant them among Thorns or any other hedge trees. They should be planted or sown by themselves in rich and moderately retentive soil and in an open space. Two rows of plants 9 inches apart each way will soon make a good hedge; they should be kept free of weeds. Do not prune more than is absolutely necessary to keep the hedge in good shape, as they will not bear to be chopped about. In about three years from the time of planting they will have exhausted the soil, and should have a dressing of old hotbed manure laid over the ground 3 or 4 inches thick and at least 2 feet wide. This should be done every autumn, and will wash in during the winter and keep them in a healthy condition. Sweet Briers will grow or keep alive under many conditions, but like their near kinsman the Rose they require plenty of pure air and abundance of good nourishing food to keep them in good condition. Very old Sweet Brier hedges are rarely to be met with. As soon as they begin to die off in patches it is best to renew them. It is a good thing to have near one's habitation, as the scent of the foliage in early morning and after a warm shower is delicious—it is a plant that requires to be often renewed in towns, as it does not like smoke, but it is too cheap and too good to be dispensed with, even in towns, and it should be grown in pots on balconies or planted near the windows of the house that its delightful perfume may find its way into the rooms. The Sweet Brier and the old

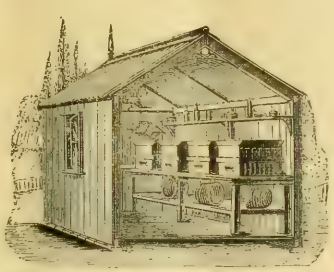


FIG. 171.—BEE HOUSE. (SEE P. 766)

Lemon-scented Verbena, are two of the most permanent and most lovely scented plants known. *C. D.*

—— The oldest Sweet Brier hedge I know grew at Ellon Castle, Aberdeenshire. It was planted in 1852 or 1853, and was still in perfect beauty in 1873, when I last saw it. On visiting the place again last autumn I at once missed the Sweet Brier. The hedge had been killed by the severe winter of 1881—82. Scotland is the land of finely-kept hedges (in parts where they exist at all), and that may account for this one of Sweet Brier flourishing as it did for nearly thirty years. We have a Sweet Brier hedge in this garden. It is now some years old, and is very charming, although not by any means a model hedge, being too thin near the roots. It has never been very closely trimmed, since I prefer its flowers to its keeping, and one cannot have both. I believe that such a hedge should be kept rather rigorously clipt from the first, to prevent thinning below. It is either Gerard or Parkinson who counsels that you "cut your Sweet Brier hedge regularly like grass." There seems to be no difficulty about growing Sweet Brier, although there may be little chance of our country ever being overrun with it, as in New Zealand, where, since its first introduction from England, it has become a pest impossible to be got rid of. *E. V. B., Bucks.*

The Recent Rainfall: *Moor Park, Hertfordshire.*—The following is the amount of rain in inches and hundredths of an inch which fell here from May 10 to 31; a quantity not exceeded in the same space of time during the century:—May 10th, 0.04 inch; 11th, 0.40; 12th, 1.25; 13th, 0.22; 14th, 0.04; 15th, 0.09; 16th, 0.18; 17th, 0.16; 19th, 0.06; 20th, 0.08; 21st, 0.59; 22d, 0.32; 24th, 0.89; 25th, 0.32; 26th, 0.26; 27th, 0.08; 29th, 0.08; 31st, 0.01. Total, 5.07 inches. *J. C. Mundell.*

—— *At Haughton, Shifnal, Salop.*—The rainfall at this place during the whole of May amounted to 7.40 inches; on the 12th and 13th rain fell incessantly for sixty-four hours, the quantity then registered amounting to 4.50 inches. *A. B Kemp, Oppley Villa.*

Larix Griffithii.—Seeing a notice of Larix Griffithii in your issue of June 5, I send you measurements of one we have here; it is a very beautiful specimen, much finer than that in the drawing. I should think this must have been one of the first planted in this country. I should like to know if there are any more specimens in this country. Height, 48 feet 6 inches; diameter of branches, 37 feet 6 inches; circumference of bole, 4 feet 9 inches. *W. Nauseawen.* [Is it true to name? ED.]

Solomon's Seal Scented.—It is a surprise to me to find a belief current that Solomon's Seal is not scented. In our wild garden here, where it grows in large masses 5 feet through, the scent is apparent to the passer-by when the time is favourable, and we frequently notice it when large clumps are forced in the greenhouse. I have gone carefully over some thirty or forty large clumps to-day, and I find certainly some which are inodorous. And these are mostly the tallest plants. By Solomon's Seal I suppose Polygonatum multiflorum is meant. And under this name we have a variety giganteum, and possibly this may be scentless, which, however, I doubt. Our native variety, P. officinale, the angular stalked Solomon's Seal, is very fragrant, and I notice that in the fragrant varieties of P. multiflorum the stem, instead of being rounded, has an angular form, which may possibly indicate a cross between the two forms, the scent also having been imparted as well as the angular stem. I send herewith examples of P. officinale, which you will find strongly odorous, and of the smaller P. multiflorum, which is also scented, but not so strongly. If "D. T. F." is at our flower show in Whit-week, and will visit Brockhurst, he can see abundant examples, as they are now at their best. *W. Brockbank, Brockhurst, Didsbury.*

—— In your current issue I see a note by "D. T. F." saying that the Solomon's Seal is "virtually odourless," and you confirm him in that statement. This much surprises me, for I have had plants for many years which I have introduced into my conservatory in spring, and which when in bloom have emitted a very strong perfume, like that of the kernel of the Cherry stone, or that of the Heliotrope. Therefore I am at a loss to understand the paragraph. *R. C. T.* [Other correspondents write to the same effect. ED.]

Trees at Messrs. Lucombe, Pince & Co.'s Nurseries at Exeter.—In continuation of my former note on fine specimens at the above nurseries, I may mention the following:—

Wellingtonia gigantea (the Mammoth tree), 40 feet high; girth of trunk near base, 15 feet 3 inches, 30 feet wide.

Fagus betuloides (the Evergreen Beech), 25 feet high; girth of trunk near base, 21 inches.

Salisburia adiantifolia (the Maidenhair tree), 39 feet high; girth of trunk near base, 56 inches.

Sciadopitys verticillata (the Umbrella Pine), 10 feet high.

Larix Kæmpferi (the Golden Larch), 18 feet high; girth of trunk near base, 42 inches, 18 feet wide.

Biota filiformis, 12 feet high; girth of trunk near base, 24 inches, 12 feet wide.

Glyptostrobus pendula, 20 feet high; girth of trunk near base, 16 inches.

Ilex dipyrena, 15 feet high; girth of trunk near base, 24 inches.

Viburnum plicatum, 7 feet high, 7 feet wide. Just now this grand specimen is the lion of the famous rock garden here, being literally covered with its balls of snowy-white flowers.

W. Napper, Alphington Cross.

The Irish Shamrock.—It is to be hoped that historical accuracy (p. 730) may not require the Watercress to be adopted as the "Irish Shamrock," for it would at once destroy the point of the pretty legend which connects it with the teaching of St. Patrick on the doctrine of the Trinity, as he is said to have used the "three leaves in one" of the Shamrock as an illustration of the doctrine. The Oxalis would of course suit this legend as well as the Trefoil; the latter, however, has the advantage of being sanctioned by custom. *C. M. O.*

Educational Flower Shows.—Your correspondent "J. F." in his excellent communication (with the main of which I agree) on this subject, thinks that I lay too much stress on English plant names; well, on this little point we must "agree to differ." I do not advocate the abolition of Latin names to plants. What would the poor botanists do? Their vocation (in a measure) would be gone. The subject of English *versus* Latin plant names would not have been introduced had the English name been attached to that not very pronounceable and understandable plant Myositidium nobile. Have Latin names by all means, but, if possible, for the education of the public, let

the English equivalent accompany them; also let it be stated (a step further) if the subjects be hardy, greenhouse, or stove. A flower show, indeed, should be a school where "he who runs may read." This subject of Educational Flower Shows is a wide one; we have only "touched the hem of the garment" of the question, to bring out only one or two of the many points involved in it simply by way of illustration. A young gardener visiting, say, a great fruit show, is struck with the Grape exhibits—he is particularly interested in the perfect finish displayed in some Madresfield Court, a Grape which has its peculiarities as to the right mode of treatment. It may be he has charge of a house of Vines at home, amongst which Madresfield Court figures, but it "cracks" so under his treatment he wants to know how to avoid this. Supposing that a system of lectures were to be established at our shows in which the lecturer touched upon some of the most prominent of the prize-taking subjects, such a detail as the successfully getting over the cracking in this particular Grape might be adverted to, to the advantage of not a few; and so on with other subjects. Then again—point No. 2—as to the arrangement of our shows. Formal rigid lines seem to be the order of the day. A happy break in this respect was made at the last show of the Crystal Palace Company. Perhaps if there is one case more than another in which some attempt at least might be made to desert the "old love," it is in that of our Rose shows. Long lines of green boxes, of which the eyes necessarily tire, charming and beautiful though the occupants of the boxes be. A suggestion here: perhaps it is not practical, so must be taken for what it is worth. How would a Rose show take—one means, of course, in effect—supposing that the blooms were arranged (plunged in some suitable and moist material, doing away with the boxes), on a series of "mossy banks" under a tent?—a Rose garden in fact—the canvas not to be too high, as this would tend to dwarf the exhibits, which should, to relieve the monotony, and take off the unavoidable glare of colour, have a generous "foil" of suitable greenery. The effect, too, of such a show would be enhanced when seen under the "dim religious light" usually prevailing in tents, and another advantage gained would be that the flowers would escape "the fierce light that beats about" (not a throne!) but glass buildings, generally to the utter discomfiture of the poor flowers, of which every visitor to a Rose show will have had ample and sad experience. It is a matter for legitimate regret that the "Queen of Flowers"—the national emblem, and of which poets in all ages have sang so sweetly and gracefully—should not be better cared for in the way of some artistic arrangement (when shown in the cut state) than is at present the case at the ever increasing exhibitions of this beautiful and popular flower. *B.*

Berberis Darwinii.—This deservedly popular Chilian flowering shrub is now so familiar to us all, and frequently seen that description is unnecessary. I should, however, like to notice two remarkable specimens that have come under my notice recently. One is at the Torbay Rosery, and the other in the beautiful grounds of Indeo, Bovey Tracey (C. A. Bentinck, Esq.). Both are densely branched from the ground, and shaped somewhat like the old-fashioned beehive. Mr. Bentinck's specimen is just 30 paces around, and from 16 to 18 feet in height, whilst the other is more formal looking (the result of training), and a trifle smaller. The impression on my mind is yet fresh with these gorgeous floral pictures, clustered as they were from base to top and on all sides—two huge masses of brilliant gold. *W. Napper.*

Thunbergias.—Quite an interesting and representative collection of these is growing in one of the plant-houses at Dunedin, Streatham Hill, the residence of N. Sherwood, Esq. The plants are in small pots, well-established, and they are used for standing at the edges of the plant stages in front of flowering and foliaged subjects, where the shoots fall down outside, and form a kind of fringe. The plants, though in small pots, are growing and flowering freely, and they appear to be quite free from that deadly foe of the Thunbergia when grown under glass, the red-spider. They are treated as annuals, which is the best mode of growing them successfully. The East Indian T. alata, or winged Thunbergia, is the type, and produces large, flat, and almost rounded flowers, colour yellow, with a black throat or eye. Aurantiaca has the flowers deepened to orange, and also with the black eye; this is in all probability a seedling from alata; it is very showy, because of the contrast between the orange and the black. Alata alba has pure white flowers, but one called Bakeri appears to be larger, purer, and with a dense black throat, quite striking, and an excellent decorative plant. Lutea has yellow flowers, but, unlike alata, there is no black in the throat, which is also yellow, but there is a tinge of orange in the centre of the flower round it. Freyeri has deep orange flowers without the black; there is a slight zone of this colour round the throat. This makes six in all, every one of which is worthy of cultivation. The seeds are sown in a little heat in spring, the plants are potted off when large enough, and when hardened off used in the way above-named. Thunbergias make charming plants for the outdoor garden, provided they can have an open, warm, sunny spot, and a light, free soil. At Messrs. Sutton & Sons' Portland Nursery, at Reading, the plan is adopted of planting out in a border, and putting a few sprays of Hazel or anything of the kind to support the plants as they make growth. They grow up between the sprays, and then the shoots form down over the side, and so make charming cones of foliage and flowers, very pleasing throughout the summer. *R. D.*

Budding Roses.—The suggestion "Wild Rose" puts forth as to the desirability of budding Roses early in the summer, rather than in the autumn, is no new one, as in the early days of the introduction of hybrid perpetuals it was the common practice to bud standards the moment the wood was ready and buds could be obtained. Of course, heads were made the same season, often fair ones, and blooms sometimes resulted in the autumn, and in that respect there was some gain as to time; but, on the other hand, such early budded plant seldom produced very robust growth, such as results when buds remain dormant, and come away with unlimited vigour in the spring. It seems obvious that stocks planted up during the autumn, perhaps winter, cannot well be very strongly rooted by the early summer, especially as no great amount of top-growth so far has been possible, and roots and top-growth generally act in unison. Hence it is obvious that if extra buds are put in early in the summer the plants lack that substantial support from the roots which they undoubtedly find in the following spring, after there has been ample time for these to get well established. Hence, also, it seems certain that in this early budding very little is gained, if, indeed, anything is, for it will doubtless be found that the first year's growth from the dormant bud is as good as the second year's growth from the active summer bud. I think most rosarians will agree that the bud growth from well established stocks is a long way ahead of that seen from recently planted ones. As evidence of that let any one cut back an old head and compel the plant to break low down, and then bud this new growth, and the results will be surprising, as I have often found in the case of old standards, where the old heads were of undesirable kinds. Summer buds also have to make their growth under the trials usually of heat and drought, whilst dormant buds being more perfectly united have the very best and most natural growing season to push them into vigour, and the production of the finest blooms. *A. D.*

Herbaceous Calceolarias at Park Side, Kendal.—The grandest display of these I ever remember having seen is now in bloom at Park Side Gardens, Kendal, the residence of J. S. Openshaw, Esq. The plants, which number about 100 in all, are grown in 9 and 10-inch pots, and vary from 3 to 4½ feet in diameter, and are a perfect mass of bloom. The whole make a display which once seen is not readily forgotten, and one worthy of a long journey to see. The condition of the whole reflects the greatest credit on the painstaking head gardener (Mr. T. Railton), who has made Calceolarias a special study, and with great success. *W. N. Craig.*

Diseased Cucumbers.—I beg to enclose herewith a small box of Cucumber fruits cut from the plants this afternoon. I planted in a lean-to house on April 5 a dozen plants. I may mention that the bottom-heat consists of fermenting material made up of Oak leaves and stable litter; the heat, however, is not more than 60°, the leaves being rather wet when put into the bed. The house is heated by hot-water pipes. The varieties are Telegraph and Duke of Connaught, the vines of which are in a most vigorous state of health, but the fruits as soon as "set" turn yellow, and die off, like the enclosed, with the exception of a very few, as you will perceive. This pit is over 40 feet long, with a dozen of vines planted out, and I have cut only six dozen from the time I commenced cutting on May 14; it will therefore be seen that the greater part are rendered useless by the disease. I may state that I have been a successful grower of Cucumbers for the past twenty years, both for winter as well as summer use, and I never before had any disease of the kind. I have grown them in all kinds of ways, without bottom-heat as well as with it; I invariably attend to the watering, airing, &c., myself. The soil in which the plants are growing I have always used with success; it is two parts fibrous loam, one part peat, and one part old Mushroom dung. I shall be extremely obliged if any of your correspondents could tell me the cause, and give me a remedy for this, to me, most mysterious disease. To save further queries I may mention that I am acquainted with the Cucumber disease called "gumming;" although I never have had the misfortune of having had my own plants affected, I have seen it in a few establishments. *T. Simpson.* [The young fruits decay from the tips downwards. Our correspondent should look to the roots. ED.]

The Hoole Hall Orchids at Chester.—A selection from the collection of Orchids belonging to Arthur Potts, Esq., of Hoole Hall, Chester, has been a chief centre of attraction during the Yeomanry week at Chester. The plants were exhibited by Messrs. F. & A. Dickson] & Sons, the Queen's Seedsmen, Chester, and finer or more carefully grown specimens could hardly be conceived. Mr. Potts is a devoted horticulturist, as is well known, and his well-merited success as an exhibitor of Auriculas at the spring shows is an indication that he spares no pains to have everything of the best—a fact amply sustained by the exhibition of Orchids last week. The arrangement reflected the highest praise on all concerned, and I congratulate Messrs. F. & A. Dickson & Sons on the way in which they carried out their part of the arrangement. I should add that the gardens at Hoole Hall are open to visitors on presentation of card or letter of introduction. *Correspondent.*

Reports of Societies.

ROYAL HORTICULTURAL: June 8.

THE conservatory at the Royal Horticultural Society's gardens was again the scene of an interesting exhibition, comprising in the objects shown some large specimens of choice species and varieties of Orchids, and many of hardy flowers, as Irises, Pæonies, Pyrethrums, and Ixias. In place of the Narcissi of many former meetings, Lilies are commencing to put in an appearance. The bulk of the exhibits, however, were the Orchids shown for prizes by amateurs and nurserymen; and if nothing novel was observed in any class, yet the specimens observed gave proofs of years of careful culture, many of them being of unusual dimensions, and profusely flowered.

Scientific Committee.

A. Grote, Esq., in the chair.

RED-SPOTTED POTATOS.

Dr. Masters observed, with reference to Mr. Plowright's communication made to the last meeting, that although many were found in the experiments at Chiswick in 1884, none whatever occurred in 1885.

APPLES AND PEARS ATTACKED BY ERYSIPHE COMMUNIS.

Mr. G. W. Smith stated that the trees at Dunstable were badly attacked this year by an "Oidum." It had often been noticed before, but it had not previously been identified with E. communis. It attacks the stamens and pistil, destroying the pollen.

CIRCEIA LUTETIANA WITH STIPULES.

Dr. Masters brought plants, and called attention to the fact, previously unobserved, that this species possessed minute gland-like stipules, which disappeared from the older and lower portion of the plants.

FLOWERING SHOOT FROM ROOT.

He also exhibited a flowering shoot of Cratægus Pyracantha springing from a root emerging from the ground at several feet from the stem.

DEUTZIA GRACILIS WITH "BLIND FLOWERS."

Dr. Lowe brought specimens showing that these produced no fruit, but often bore isolated flowers with perfect organs.

SENECIO SPATULIFOLIUS.

He also exhibited fine specimens of this plant growing in the open. It is a native of Holyhead, and said to have been found in Yorkshire by Backhouse. Mr. Boscawen observed that the Groundsels are all best raised from green seed, which come up quicker and better than when dried. It is the same with Lilies. Dr. Lowe also exhibited plants of Erigeron aurantiacus, originally received from the late Mr. Joad.

POTATO WITH PHYCOMYCES SPLENDENS.

A specimen was sent by Mr. Wills with a curious fungus, consisting of shining threads with a metallic lustre, growing over the surface of a Potato. Mr. W. G. Smith remarked that this was identical with the lustrous mycelium exhibited by him on May 11, growing upon Cocoa-nut fibre (see p. 630). Mr. Smith believed that the fungus would prove to be the finest of all the Mucors and one hitherto unrecorded as British, viz., Phycomyces splendens.

Ascomyces Alni.

A specimen of Alder root covered with excrescences due to this fungus was sent by Mr. Bunyard, of Maidstone.

Anthericum Liliastrum and Delphinium.

He also sent isolated blossoms of these plants springing from the base of the plants in anticipation of the usual spikes.

Method of Lighting with the Interposition of Water.

Mr. T. C. March (of the Board of Green Cloth, Buckingham Palace) was invited to give some account of his invention, which consists of introducing a shallow glass tank over the plants. This stops the heat rays, but allows the light to penetrate freely. Mr. Stirling, the Queen's gardener, is experimenting with it, and finds Fuchsias, Ferns, &c., grow extremely well under it. It was suggested that it might be useful to adopt some form of the arrangement in tropical countries with advantage.

Floral Committee.

Present: J. O'Brien, Esq., in the chair; and Messrs. H. Turner, Major Lendy, H. M. Pollett, Amos Perry, G. Paul, Shirley Hibberd, H. Herbst, W. H. Lowe, W. Wilks, J. Walker, W. Bealby, H. Bennett, H. Cannell, W. B. Kellock, E. Hill, W. Holmes, J. Dominy.

Twelve Orchids, distinct amateurs.—Mr. Salter, gr. to J. Southgate, Esq., Selborne, Streatham, took the 1st prize, with a lot of well flowered large healthy specimens, consisting of a Cattleya gigas, with ten flowers; C. Warneri, with eight; Aërides Fieldingi, bearing nine long perfect racemes; Masdevallia Harryana, full of flower; Dendrobium suavissimum, a grand piece with eleven racemes; Cypripedium Dominianum, with thirteen blooms open; Odontoglossum vexillarium picturatum, a plant with numerous flowers, having a pale blush-coloured labellum; other plants were Oncidium macranthum, Anguloa Ruckerianum, and Cypripedium Lawrenceanum. Mr. F. Hill, gr. to H. Little, Esq., The Barrons, Twickenham, took 2d prize, with a dozen, which included several choice varieties of Cattleya, viz., C. intricata, supposed to have originated between C. amethystina and Lælia elegans, a curious and beautiful flower, partaking in its colour of those of its supposed parents; C. Mendelii, C. Mossiæ, Lælia purpurata, and a few others of lesser merit.

Twelve Orchids, distinct, nurserymen.—In this class Mr. J. Cypher, Cheltenham, was 1st, showing excellent specimens of Epidendrum vitellinum with at least fifty spikes; a massive and symmetrical plant of Dendrobium thyrsiflorum, Cattleya Mendelii grandiflorum, C. Mossiæ grandis, a fine spike, three blooms; a Lælia purpurata, with twelve flowers; Anguloa Cloweesii, Vanda suavis, &c. Mr. H. James, Castle Nurseries, Lower Norwood, was 2d, noteworthy specimens in this group being Cattleya Mossiæ, Dendrobium Bensonæ, Odontoglossum Pescatorei.

Six Orchids, distinct, amateurs.—Mr. Cooke, gr. to De B. Crawshay, Esq., Rosefield, Sevenoaks, was awarded 1st prize, with excellent plants of Vanda suavis, a pale coloured Cattleya Mendelii, very well bloomed; a very large flowered C. Warneri, with a light coloured lip; a bright Odontoglossum vexillarium, Dendrobium Jamesianum, and Epidendrum vitellinum. Mr. J. Salter, Selborne, Streatham, took the 2d prize with small plants of Cattleya Warneri, C. gigas, C. Mendelii, the curious Maxillaria Turneri, &c.

Six Orchids, distinct, nurserymen.—Here again the 1st prize fell to Mr. J. Cypher, his finest plants being Cattleya Mossiæ Rothschildiana, with petals and sepals broad, of a deep mauve, with well defined colour on the lip; Lælia purpurata alba, bearing eleven flowers; and an Odontoglossum citrosmum, with ten racemes of fresh looking flowers—a capital plant.

Mr. H. James, Lower Norwood, took the 2d prize, with a well finished group of plants, comprising among his best Masdevallia Harryana, Dendrobium thyrsiflorum, and Cattleya Warneri.

Mr. James took also the 1st and only prize for a collection of Odontoglossums, amongst which were noted O. Kienastianum, O. cordatum, O. c. aureum, a distinct and pale yellow form; O. nævum majus, and O. nævum majus.

Six Cattleyas or Lælias open.—Mr. J. Cypher was again in the 1st place, with C. Mossiæ grandis, C. labiata, bearing of its rich coloured flowers; C. Mendelii grandiflora, a very fine large bloom; and L. purpurta Brysiana, a plant with twenty-four blooms, fresh and bright. Mr. S. Cooke, Rosefield, had several good plants, as C. Mendelii, C. Warneri, and L. purpurata.

Miscellaneous.

Messrs. Hugh Low & Co. received a Bronze Medal for a group of Odontoglossum crispum and Cattleya Mossiæ—handsome forms.

Messrs. Vervaene & Co., Ghent, showed two plants of the pale yellow-flowered Odontoglossum Vuylstekeanum, one of the plants shown having a well-grown spike.

W. Cobb, Esq. (gr., Mr. A. G. Catt), Silverdale Lodge, Sydenham, showed an Odontoglossum Alexandræ, with flowers of perfect form and substance, and of the purest white with the exception of the crest.

Sydney Courtauld, Esq., Bocking Place, Braintree (gr., Mr. A. Wright), received a well-deserved Cultural Commendation for a plant of Masdevallia rosea.

The New Plant and Bulb Company, Colchester, showed species of Cattleyas, including C. Mossiæ Wyattiana, having white sepals and petals, an orange-coloured throat, and pale-coloured lip; C. leucoglossa, of much the same kind of markings and colour; C. Mossiæ var. Colchester, a splendid flower, with very rich colours; C. m. var. Sunset, also of rich colour.

Mr. J. Cypher showed Lælia purpurata pallida rosea.

G. Nevile Wyatt, Esq. (gr., Mr. T. Simcoe), showed cut blooms of fine species of Cattleya Mossiæ, C. Mendelii, Lælia, &c.

C. Dorman, Esq. (gr., Mr. H. White), The Firs, Lawrie Park, Sydenham, showed Maxillaria Sanderiana, with a few of its curious creamy-white and dark brown flowers; Cattleya Reineckiana, Epidendrum vitellinum majus, Odontoglossum Miss Dorman, a large spike of prettily spotted blooms, &c.

Admiral Fairfax, Ravenswood, Melrose, N.B., showed Cattleya speciosissima var. Fairfax, a flower with a mauve-ground colour, profusely veined over with crimson, as is also the rich velvety-purple lip; the throat being orange coloured.

Mr. Barron, Royal Horticultural Society's gardens, Chiswick, likewise sent a few well flowered specimens of Orchids, consisting of Lælia purpurata alba, Dendrobium Dalhousieanum, and several Cattleyas, many plants in full bloom of Saxifraga pyramidalis, and of Ivy-leaf Pelargoniums.

F. G. Tautz, Esq., Steedly House, Goldhawk Road, Hammersmith, showed new seedling Pæonies, of which Purity, a semi-double white flower, and Lilacina, a white, having crimson blotches at the base of the inner petals, were certificated.

Mr. G. Burnett, The Grange, Hillingdon, exhibited two seedling Pelargoniums.

Some excellent kinds of Verbenas came from Mr. W. Stacey, nurseryman, Dunmow, who has done hitherto good work with these flowers. Of pleasing and decided tints may be mentioned Purple Queen, Lady C. Beresford, a scarlet with white eye; Cantab, a new shade of violet; and Hamlet, crimson.

Messrs. J. Laing & Co., Forest Hill, showed Begonia Triumph, a good double of a pale salmon colour and erect flower.

Mr. King, Rowsham, Aylesbury, had a bright-looking Coleus in Vesuvius.

Messrs. W. Paul & Son, Waltham Cross, showed a large quantity of cut blooms of Rhododendrons in boxes and baskets, likewise bunches of Austrian and Scotch Roses, to show their usefulness in the way of bouquets. A Bronze Banksian Medal was awarded.

Messrs. Hooper & Co., Covent Garden and Twickenham, exhibited a collection of herbaceous Pæonies in the cut state.

Messrs. Kelway & Son, Langport, Somerset, showed an extensive and comprehensive collection of hardy flowering plants in season, such as Pæonies, Pyrethrums, Irises, Lupines, &c.

Three Pyrethrums were deemed as being worthy of recognition, viz., P. Ormonde, a regularly formed double flower of a crimson colour with a centre somewhat paler; P. Princess of Wales, single, of a rosy-red; and P. Celia, double, rose-coloured, flattish in form, and a very full flower. A Silver Banksian Medal was awarded for the fine collection.

Messrs. E. H. Krelage & Son, Haarlem, showed a collection of thirty varieties of Iris.

The permanent exhibition of Messrs. Barr & Sons was rich with Ixias, Poppies, Ranunculuses, Pæonies, Irises, Pyrethrums, and a large number of hardy flowering plants. A Silver-gilt Banksian Medal was awarded.

Mr. T. Ware's similar collection showed hardy plants in even greater variety, the colours of the many Pyrethrums lending increased brilliancy to the whole; P. Mrs. Bateman Brown, a vivid crimson, single flowered variety; and P. Festiva maxima, a semi-double white, with crimson blotches, were singled out for distinction.

Uncommon plants were observed in Heuchera sanguinea, a slender-stalked light red flower, and dense, low-growing green foliage; Lewisia rediviva, a pink-coloured Mesembryanthemum-like flowered plant. A Silver-gilt Banksian Medal was awarded.

Messrs. H. Cannell & Sons, Swanley, showed some plants of a superior strain of Gloxinias with erect flowers, G. Ormonde, a rich velvety-crimson flower, being deemed the best of the five varieties shown.

Fruit Committee.

Present: T. Francis Rivers, Esq., in the chair; and Messrs. G. T. Miles, G. Norman, J. Burnett, J. E. Lane, J. Woodbridge, W. Warner, W. Denning, T. B. Haywood, H. J. Veitch.

A few specimens of South Australian fruit, cooked for the purpose of ascertaining its quality, were shown. Mr. Rivers exhibited Early Favourite Plum and Gladstone Apple of this year's growth in useable condition; also the Wellington Apple of growth 1885.

Some Melons were shown by Mr. Lockie, gr., Oakley Court, Windsor, and by Mr. E. S. Wyles, of Edgecote Park, Banbury, but no awards were made.

First-class Certificates.

To Mr. T. S. Ware, for Pyrethrum Festiva maxima and P. Mrs. B. Brown.

To Mr. F. G. Tautz, for Pæony Lilacina and P. Purity.

To Messrs. Kelway & Son, for Pyrethrum Celia, P. Ormonde, and P. Princess of Wales.

To Messrs. Kelway & Son, for Pæony Eclaire.

To Messrs. Kelway & Son, for Iris Victorine.

To Mr. W. Stacey, for Verbena Lady C. Beresford.

To Admiral Fairfax, for Cattleya speciosissima var. Fairfax.

To Messrs. Cannell & Sons, for Gloxinia Ormonde.

ROYAL BOTANIC: June 9.

Favoured by delightful weather, the second summer exhibition of this Society was well attended, and presented a very pleasing appearance. The effect of the exhibition—always good—was greatly enhanced by the fine miscellaneous collections of plants from the trade, and the splendid banks of Orchids; indeed, the show of these was one of the finest seen at the Park for many seasons. Mr. Douglas had in the gigantic vexillarium in his collection a show in itself: it was the premier plant of the exhibition.

Orchids.

Beginning with Orchids, for which there were several classes, Mr. James Douglas gr. to W. F. Whitbourne, Esq., Great Gearies, Ilford, was well 1st, with twelve fine specimens. His Odontoglossum above referred to was some 3 feet through, having forty-seven spikes and about 290 blooms expanded. The collection also included a fine piece of Odontoglossum crispum, a large Dendrobium nobile, good Cypripedium caudatum roseum, with very long caudal appendages; good Masdevallia Harryana, and other varieties. Mr. J. Salter, gr. to J. Southgate, Esq., Streatham, came next having fine Cattleya gigas, Cypripedium Lawrencianum, Dendrobium suavissimum, and Aërides Fieldingi, &c. Mr. F. Hill, gr. to H. Little, Esq., Twickenham, was 3d, his lot including good Cattleya Mossiæ and C. Mendelii, and Odontoglossum Pescatorei.

Of trade collections Mr. J. Cypher, of Cheltenham, was strong with examples of Epidendrum vitellinum, covered with spikes of scarlet flowers; Odontoglossum citrosmum, Dendrobium thyrsiflorum, and Cattleya Mossiæ; Mr. James, of Lower Norwood, following, and Messrs. Jackson & Son, Kingston, 3d.

With single specimens, or, as mentioned, one plant in a pot, Mr. Cypher was again 1st, with the best twelve, all superbly bloomed, including Lælia purpurata Ingrami, Vanda suavis, Cattleya Mossiæ and C. Rothschildiana, &c. Mr. James came next, having Cattleya gigas and C. Warneri, in fine flower. Messrs. Jackson & Son, Kingston-on-Thames, were 3d.

In the amateurs' class for single plants Mr. Douglas was a good 1st, again having a very fine piece of Odontoglossum vexillarium with twenty spikes, Cypripedium Lawrencianum, Lælia purpurata, &c.; Mr. Cooke, gr. to De B. Crawshay, Esq., Rosefield, Sevenoaks, was 2d; and Mr. Salter 3d.

Stove and Greenhouse Plants.

Here Mr. Cypher was in strong force, and a long way ahead of opponents. His twelve included a fine Ixora Williamsi in profuse bloom, large Erica Cavendishi and E. depressa, a gigantic Pimelea Hendersoni, and a fine Darwinia tulipifera. Mr. James was placed 2d, having in his collection a huge Anthurium Scherzerianum; and Mr. Mould, of Pewsey, Wilts, was 3d: he had a fine Gloriosa superba in his lot.

With six plants of the same kind Mr. Cypher was again invincible with a huge Darwinia tulipifera, some fine Ericas, a good scarlet Anthurium, Clerodendron Balfourii, and Dracophyllum gracile. Mr. Rann, Handcross Park, Crawley, Sussex, who came next, had some good Azaleas, Pimelea decussata, pretty Aphelexis macrantha, Erica depressa, and Bougainvillea glabra.

Palms, &c.

The finest of these came from Mr. Butter, gr. to H. H. Gibbs, Esq., St. Dunstan's Lodge, Regent's Park, having good clean specimens of Kentia Canterburyana, Chamærops humilis, and C. excelsa, Corypha australis, &c.; Mr. James was 2d, his lot including a very fine Cycas revoluta. The best fine-foliage plants came from Mr. Cypher, and included some good Palms, Dasylirion acrotrichum, and a fine Croton Queen Victoria. Ferns were fairly good, but call for no special notice.

Pelargoniums

gave welcome colour to the show, and were in good form, Mr. C. Turner, Slough, as usual, having the best in the nurserymen's class of both large flowered and fancy kinds. Of the former his best were Prince of Prussia, Rosetta, Kingston Beauty, Prince Leopold, and Sister of Mercy; and of the latter Ellen Beck, Princess Teck, East Lynne, and Delicatum. Mr. Cypher came 2d, with show plants—admirable examples, and well bloomed. In the amateurs' classes Mr. Phillips, gr. to D. Mann, Esq., Langley Broom, was a good 1st in both classes, his fancies especially, though of moderate size, were superbly flowered and shows that he is a grower of the first order: The Shah, Pilgrimage, Delicatum, and Roi des Fontaines, were admirable. Mr. Hill took 2d place, as also with large flowered kinds. The best were Martial, Prince Leopold, and Jeanette.

Fuchsias.

These were not first-class, the best six, being trade plants, were from Mr. Wheeler, gr. to Louisa, Lady Goldsmid, Regent's Park, and comprised Mrs. Mar-

shall and Queen of Hanover (whites), and Mrs. Russell and Daniel Lambert (reds). Mr. Easton, gr. to R. Noakes, Esq., Highgate, had fine pyramids.

The only six zonal Pelargoniums came from Mr. Weston, gr. to D. Martineau, Esq., Clapham Park, flattish, well bloomed plants, of fairly good kinds.

BEGONIAS.

The only dozen plants shown were from Mr. Laing, Forest Hill, and were fine specimens in his best style. Queen Victoria, white, shading to red; Stanstead Surprise, large scarlet; Primrose Queen, Ball of Fire, and New Colour, a pleasing apricot, were the most striking. All the flowers were exceedingly fine.

MISCELLANEOUS GROUPS.

In these the show was peculiarly rich, having also the most prominent positions. Mr. B. S. Williams, Holloway, showed a fine group of decorative plants, faced by numerous beautiful Orchids, in great variety.

Messrs. John Laing & Co. had a grand group of foliage plants, lit up with many grandly flowered Begonias, making a most attractive collection.

Messrs. Hooper & Co., Twickenham, had a beautiful arrangement of various decorative plants lit up with Gloxinias of the finest form and exceeding beauty.

Messrs. E. G. Henderson & Co., Pine-apple Nursery, Edgware Road, had a beautiful group, in which Caladiums of rich hues and fine leafage predominated, and presented a most interesting feature.

Messrs. W. Cutbush & Sons, Highgate, had a group of plants that comprised numerous Ericas in varied hues and finely grown, also greenhouse plants in great variety.

From Hugh Low & Co., of Clapton, was staged a striking group of Orchids, mainly Cattleyas, also a big box of Odontoglossum Alexandræ varieties, &c.

Mr. Wiggins, gr. to W. Clay, Esq., Kingston, had a gay group of seedling large-flowered Pelargoniums; and Mr. Phillips staged a group of surplus plants of the same, finely bloomed.

Messrs. Veitch & Sons, Chelsea, sent various new plants, and boxes of rich-coloured hardy flowers, that were greatly admired for their intense hues and fine forms.

Messrs. Cannell & Sons, Swanley, had some of their admirable Gloxinias.

CUT FLOWERS.

Hardy herbaceous flowers were finely shown by Mr. T. S. Ware, whose group of twenty-four bunches comprised many fine things, and were admirably arranged. Messrs. Paul & Sons, Cheshunt, were placed 2d, with a pretty lot of flowers.

Stove and Greenhouse Flowers were only exhibited by Mr. Gibson, gr. to F. F. Burnaby, Esq., Sevenoaks, a very beautiful lot, but far too crowded. Mr. C. Turner had the best lot of show Pelargoniums, and Mr. Phillips was 2d with bunches less effectively displayed.

Cut Orchids were very finely shown by Mr. Douglas, whose dozen bunches set up with Maidenhair Ferns were really a beautiful picture. All the best forms were represented. Mr. Salter had the 2d best collection, and Mr. James was 3d.

Roses were fairly good, a capital box of Teas, in twelve kinds, came from Mr. Hollingworth, Maidstone, who had all flowers in trebles and of good kinds. The same exhibitor had in Cheshunt Hybrid the best twelve flowers of any one colour, and Niphetos was the 2d best. Mr. Tranter, of Henley, had the best twelve yellows of Maréchal Niel, all good blooms.

From Mr. Forbes, Hawick, N.B., came some six dozen beautiful Pansies, fine flowers, fresh, rich, and of good substance. Large collections of Irises were shown by Mr. Ware, who was placed 1st; Messrs. Paul & Sons, 2d; and Messrs. Barr & Sons, 3d. The former exhibitor also showed a big group of Pæonies, and Messrs. James Carter & Co. a very charming one of Ixias. It was to be deplored that these cut flowers were relegated to the remote tent, which is far removed from the central exhibition, and is much overlooked by the general visitors.

FRUIT.

The good prizes offered by the Fruiterers' Company for unlimited collections of fruit brought only one lot, and this was from Mr. Robins, gr. to E. D. Lee, Esq., Hartnell House, Aylesbury, who had three kinds of Grapes of moderate quality, a dozen of Melons of divers kinds, two very good dishes of Strawberries, fine dishes of Peaches, &c.

Mr. G. H. Richards, Somerley Gardens, Ringwood, had the only Pine—a good well-finished Queen. Hero of Lockinge and McIndoe's green-flesh were the best Melons, and President and La Gros Sucrée the best Strawberries.

Good baskets of Grapes were shown, the best, Black Hamburghs, coming from Mr. Osman, gr. to W. L. Baker, Esq., Chertsey; and the 2d lot from Mr. Brush, gr. to Lady Hume Campbell, Pinner, whose berries were the largest, but lacked finish.

The only basket of white Grapes were Buckland Sweetwater, from Mr. Mowbray, gr. to the Earl of Leven, Fulmer, Slough.

Mr. Osman had three good bunches of Black Hamburghs, Mr. Brush having the second best.

Mr. Mowbray had good bunches of Black Prince, and Mr. Feist, Bishopsgate, Windsor, the best Muscat of Alexandria. Foster's Seedling and Buckland Sweetwater were also shown.

There were seven fair dishes of Peaches, Barrington, Alexander, Gros Mignonne, Early Albert, and Royal George, being the best.

The best Nectarines were Elruge and Lord Napier, finely coloured.

In most of the classes the competition for fruit was poor.

BOTANICAL CERTIFICATES.

These were awarded as follows:—

To Messrs. Veitch & Sons, for Nephrolepis rubescens tripinnatifida, a truly novel and beautiful Fern, that must be seen to be appreciated; Gymnogramma schizophylla gloriosa, an elegant kind, not quite new; Todea grandipinnula, and Asparagus verticillatus,

To Messrs. Sander & Co., St. Albans, for Oncidium superbiens, a fine form.

To Messrs. B. S. Williams, for Lissochilus lutescens, a somewhat diminutive Orchid.

To Messrs. B. S. Williams, for Oncidium Krameri majus, a good form.

To Messrs. Hugh Low & Co., for Cattleya Wagneri, pure white.

To Messrs. Hugh Low & Co., for Cattleya Reineckiana, white with purple-veined lip.

FLORAL CERTIFICATES.

To Messrs. E. G. Henderson & Co., for Dracæna noblissima, a dark broad-leaved variety of good general character.

To Messrs. Veitch & Sons, for Rhododendron Mundi.

To Messrs. Veitch & Sons, for Imantophyllum Distinction.

To Messrs. Veitch & Sons, for Gloxinia Ivanhoe, purple with white edge.

To Messrs. J. Laing & Co., for Begonia Charmer.

To Messrs. J. Laing & Co., for Begonia Miss Amy Adcock.

To Mr. T. S. Ware, for Anthericum liliastrum major.

To Mr. T. S. Ware, for Pæony Festiva maxima.

ROYAL NATIONAL TULIP: June 5.

ON this occasion there was a much larger number of flowers staged than might have been expected, from the backward character of the season, and yet there has been something like unevenness in the time of blooming; the few dull, cold days previous to the 5th enabled the Rev. F. D. Horner, though in North Yorkshire, to keep a few excellent blooms just long enough for him to exhibit at Manchester in such form as to gain for him the chief honours of the day, but at Stakehill Mr. Barlow's flowers were so late as to be only beginning to colour, and he found difficulty in making up a few pans. The bulk of the Northern growers were able to show numerously, but the blooms were undersized, though many, and not a few, bore traces of the cold and retarding weather. As usual the exhibition took place in the Botanical Gardens at Old Trafford, and the big show-house being cleared for the Whitsun exhibition, there was ample space for staging the Tulips. The day was beautifully fine, and the warmth soon told upon some of the more advanced blooms.

Eight stands competed in the class for twelve dissimilar blooms, two feathered and two flamed of each class. The Rev. F. D. Horner, Lowfells, Kirby Lonsdale, was an easy 1st, with some very fine blooms in the company of a few of mediocre quality, the varieties being:—Bizarres: feathered, Dr. Dalton and Commander; flamed, Orion, very good and showy, and Sir J. Paxton. Roses: feathered, Nancy Gibson and Annie McGregor; flamed, Annie McGregor and Mabel; byblœmens: Talisman and Mrs. Cooper; and flamed, Duchess of Sutherland (Walker), and Talisman. It will thus be seen that the same variety was in a few instances shown flamed, and also in its feathered form only. 2d, Mr. James Thurstan, Springfield, Wolverhampton, with bizarre: flamed, Dr. Hardy and Sir J. Paxton; feathered, Asclepias, broken by Mr. Thurstan from a grand buff seedling breeder, and with a feathering almost scarlet and sulphur. Roses: feathered, Nancy Gibson and Annie McGregor; flamed, Annie McGregor and Mabel.

In the class for six dissimilar blooms, one feathered and one flamed of each class, the Rev. F. D. Horner was again 1st, with bizarre, feathered, Masterpiece; flamed, Orion; rose, feathered, Modesty; flamed, Mabel; byblœmen, feathered, Mrs. Cooper; flamed, Walker's Duchess of Sutherland. 2d, Mr. D. Woolley, with bizarre, feathered, Sir J. Paxton; flamed, the same variety; rose, feathered, Julia Farnese, a heavy plated feathered rose—"plated" meaning that it is very heavy and solid in the marginal colour—very pretty and striking, raised by Mr. W. Dymock, of Stockport; and flamed, Mabel; byblœmen, feathered, seedling; and flamed, Adonis.

The next class was for six Tulips, similar to the foregoing, but for half-guinea subscribers only. Here Mr. H. Housley, of Stockport, was 1st with a good half-dozen consisting of—Bizarre: feathered, Royal Sovereign; flamed, Sir J. Paxton. roses: feathered, Leah; flamed, Triomphe Royale; byblœmen: feathered, Violet Aimable; flamed, Lord Denman; 2d, Mr. R. Wolfenden, Royton.

In the class for three feathered Tulips there were fourteen competitors. Here the Rev. F. D. Horner was 1st with—Bizarre, Dr. Dalton; rose, Industry; byblœmen, Mrs. Cooper. 2d, Mr. D. Woolley, with bizarre, Mr. Miller; rose, Mrs. Lea; byblœmen, seedling.

In the class for three flamed flowers there were eleven competitors, Mr. J. Thurstan being 1st with bizarre, Mr. J. Paxton; rose, Mabel; byblœmen, Adonis. 2d, Mr. H. Housley, with bizarre, Sir J. Paxton.

Then followed a class for two Tulips, one feathered and one flamed, for maiden growers only: Mr. Barlow adding a collection of valuable Tulip bulbs to each person entering. But two competitors appeared, Mr. Thos. Wood being 1st with bizarre, flamed, Dr. Hardy, and byblœmen, feathered, Maid of Orleans; 2d, Mr. T. Holden, with two flowers unnamed. Then followed a similar class, but open to all, and it brought fifteen competitors—the Rev. F. D. Horner being 1st with bizarre, flamed, Orion, and byblœmen, feathered, Mrs. Cooper; 2d, Mr. H. Housley, with bizarre, flamed, Sir J. Paxton, and bizarre feathered, Royal Sovereign.

A very large number of blooms were shown in the various classes, averaging from 100 to 200 in each; ten prizes were awarded in each. The awards were as follows:—Bizarres, feathered: 1st, Mr. S. Barlow, with Geo. Hayward; 2d, Mr. W. Prescott, with Lord Lilford.

Mr. Boydell had the best flamed bizarre, showing Bargate (Sir J. Paxton); 2d, Mr. Thurstan, with Dr. Hardy.

Feathered roses.—Mr. D. Woolley, 1st, with Heroine; 2d, Mr. S. Barlow, with a lovely flower, marked unknown, a refined and extremely pleasing bloom, and which ought to have been placed 1st.

Flamed roses.—1st, Mr. Housley, with Triomphe Royale; 2d, Mr. S. Barlow, with Mabel; 3d, the same with Lady C. Gordon.

Feathered byblœmens.—1st, Mr. D. Woolley, with seedling; 2d, Mr. Knowles, with Adonis.

Flamed byblœmens.—1st, Mr. S. Barlow, with Adonis; 2d, Mr. D. Woolley, with Lord Denman.

The premier feathered Tulip was bizarre George Haward, shown by Mr. S. Barlow; the premier flamed flower Orion, shown by the Rev. F. D. Horner.

Breeder Tulips were also largely shown, and by reason of their charming self colours and beautiful form found many admirers. The Rev. F. D. Horner had the best six, staging bizarres, Dr. Hardy and, Sir J. Paxton; roses, Thomas Parker, and Miss Burdett Coutts; byblœmens, Glory of Stakehill and Alice Grey; 2d, Mr. J. Wood, with bizarres: Excelsior and Sir J. Paxton; roses, Industry and Mabel; byblœmens Surpasse Grand and Alice Grey.

Six stands competed in the class for three breeders, one of each class. There were thirteen competitors, Mr. S. Barlow being 1st, with bizarre, Horatio; rose, Annie McGregor; and byblœmen, Glory of Stakehill. 2d, Mr. J. Thurstan, with bizarre, Horatio; rose, Annie McGregor; and byblœmen, unnamed.

The best bizarre breeder was Sir J. Paxton, from Mr. S. Barlow; 2d, Mr. Kitchen, with the same.

The best rose breeder was Olivia, from Mr. Thurstan; 2d, Mr. Wolfenden, with one unknown.

The best byblœmen breeder was Beauty of Whitchurch, from the Rev. F. D. Horner; and he was 2d, with Glory of Stakehill.

The premier breeder Tulip was Sir J. Paxton, shown by Mr. S. Barlow.

A First-class Certificate was awarded to feathered bizarre Lord Randolph, broken by Mr. W. Dymock, Stockport. It is said to have been raised from Adonis × Maid of Orleans, and was very ugly in the breeder state, but broke into a fine feather—pure and rich in colour. It is worthy of remark that ugly breeders will almost invariably throw fine rectified flowers, while breeders of great beauty will often break into flowers of a worthless character.

ROOT-WORMS IN THE SUGARCANE.—M. Treub, the excellent Director of the Buitenzorg Botanic Garden, has published an account of a third species, Heterodera javanica, which affects the roots of Sugarcane in the same manner as the two other species, H. Schachtii (found on numerous plants, especially in Beetroot), and H. radicola, also found in numerous plants.

COLONIAL NOTES.

AUTUMN IN NATAL.

OUR April corresponds to the European October. Just now (April 7) the thermometer hung under an Orange tree in a well-sheltered and shaded situation stands at 60° 6 A.M., 75° noon, 67° 6 P.M. Generally but little rain falls this month—about 2 inches; but we have had it unusually wet hitherto, and it promises more. Subject to the above-noted temperature, Oranges and Guavas ripen rapidly, the Tea plant is in flower, and all the Loquats are weighted with bloom which gives out a honey sweet scent, well liked by the bees. Long before sunrise, whilst it is yet dark, I have heard their loud hum whilst flying round the tops of the Loquat trees, for they know the days are shortening fast, and every minute is precious.

The winds are very changeful, they are now rushing across the country at a headlong pace, now hushed and still, from early dawn to evening. Outside but little is seen in bloom. In moist places Tritoma Uvaria is just over, as also is Osbeckia Umblasiana, a fine showy Melastomad, which has just been a mass of magenta flowers. In the bush Dombeya natalensis is noticeable—snowy-white, like a Cherry tree in flower; also Polygala virgata, rich purple-laden sprays. On dry banks and hillsides Leonotis leonurus puts out a flower or two preparatory to its winter display. Clematis brachiata is abundant and very free to flower. Has any one seen Clematis Stanleyi in cultivation? It is a native of the Transvaal and Zululand, is a stout shrub bearing panicles of flowers 1½ inch in diameter, purple or blue in colour. Harvey calls it a noble species. I have never seen it. No doubt it is one of our many plants really worth cultivation, but which hitherto has been overlooked. The grassy hillsides take on a browner tint, the long grass rises and falls under the fast running wind—it is our land ocean—for often I have noted the likeness between the waves of the grass and of the sea.

"There is nothing in this colony throughout its length and breadth that is alien to me—the very natural features of the country, the shores on which the Indian Ocean ever breaks with a melancholy sound, the jagged peaks of the Drakensberg, the hills, the kloofs, the open veldt, with all its wealth of splendour in the grass, and the glory of the flowers have all had their charms for me." Thus truthfully and feelingly did the late Governor of Natal say farewell after a residence here of many years. *R. W. Adlam, Maritzburg, Natal.*

TAMARIND OIL.

The subject of the seed of the Tamarind-yielding oil has recently been brought under the notice of the Agricultural Society of India. It is stated in the report of the Society's meeting on December 30 last, that the only recorded instance of oil being expressed from the seeds of the Tamarind appeared in the Society's *Journal* for 1856. A sample of oil was sent to the Society in that year by Captain Thomas Davies from Booldana, who mentioned that he discovered the seeds would yield an oil, much to his own surprise and that of all the natives. He described the oil to be of a fine amber colour, free of smell, and sweet to the taste, and, in his opinion, suitable for culinary purposes. The Society's subcommittee reported favourably on the oil, and suggested that it might be found useful in the preparation of varnishes and paints, as well as for burning in lamps. A member of the committee remarked that the Tamarind seed in Bengal is mostly thrown away; in times of scarcity it is eaten fried, to a limited extent, by the poor, and a varnish for painting idols and finishing *kinpa* cloth and *tulat* paper is also prepared from it; the bulk of the seeds is, however, thrown a way.

POLYANTHUS ENORMITIES. — MR. BURBIDGE sends us from Dublin a handsome seedling Polyanthus with dark brown, almost black, flowers, with a yellow eye. The most remarkable feature, however, consists in the development of a series of trumpet-like outgrowths from around the mouth of the corolla, just outside the ring of little tubercles one ordinarily sees in this situation. These outgrowths have nothing to do with the stamens, which are normal, but are purely outgrowth from the corolla, and have the same coloration. We have seen similar formations in the Chinese Primrose.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JUNE 9, 1886.

Month and Day.	Barometer. Mean Reading Reduced to 32° Fahr.	Barometer. Departure from Average of 15 years.	Temperature of the Air. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	Wind. Average Direction.	Rainfall.
June	In.	In.	°	°	°	°	°				In.
3	29.96	+0.16	54.5	48.5	6.0	50.7	— 6.2	46.2	85	E. : N. N.E.	0.00
4	30.01	+0.21	61.5	40.5	21.0	50.6	— 6.5	43.0	76	E. : E. N.E.	0.08
5	29.92	+0.12	62.5	39.8	22.7	50.5	— 6.8	42.1	73	E.	0.03
6	29.78	—0.02	69.0	43.5	25.5	56.5	— 1.0	43.0	60	N.	0.03
7	29.72	—0.08	71.5	45.0	26.5	58.0	+ 1.3	46.3	63	N. NW.	0.00
8	29.72	—0.07	69.7	47.5	22.2	57.7	— 0.0	48.3	76	E.	0.00
9	29.66	—0.14	67.8	52.0	15.8	57.7	— 0.2	49.8	73	E.	0.00
Mean	29.82	+0.03	65.2	45.3	19.9	54.7	— 2.8	45.5	82	E.	0.02

June 3.—Dull day.
— 4.—Very fine bright day.
— 5.—Very fine day.
— 6.—Very fine day.
— 7.—Very fine.
— 8.—Very fine.
— 9.—Very fine day.

LONDON: *Atmospheric Pressure.*—During the week ending June 5, the reading of the barometer at the level of the sea increased from 29.91 inches at the beginning of the week to 30.05 inches by 9 A.M. on May 31, decreased to 39.81 inches by 5 P.M. on June 1, increased to 29.95 inches by 9 A.M. on June 2, decreased to 29.92 inches by 5 P.M. on the same day, increased to 30.23 inches by 1 P.M. on the 4th, and was 30.06 inches by the end of the week.

The mean reading of the barometer for the week was 30.04 inches, being 0.23 inch higher than last week, and 0.06 inch above the average of the week.

Temperature.—The highest temperature in the shade in the week was 75°.5, on June 2; on the 3d the highest was 54°.5 The mean of the seven high day temperatures was 64°.9.

The lowest temperature was 39°.8, on June 5; on the 1st the lowest was 53°.8. The mean of the seven low night temperatures was 47°.

The greatest range of temperature in one day was 26°, on June 2; the smallest, on the 3d, was 6°. The mean of the seven daily ranges was 17°.9.

The mean temperatures were, on May 30, 54°; on the 31st, 54°.4; on June 1, 60°.7; on the 2d, 60°.7; on the 3d, 50°.7; on the 4th, 50°.6; and on the 5th, 50°.5; of these June 1 and 2 were above their averages by 4°.2 and 4° respectively; the rest were below by 2°, 1°.9, 6°.2, 6°.5, and 6°.8 respectively.

The mean temperature of the week, 54°.5, being 2°.2 higher than last week, and 2°.2 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 131°.5, on June 2. The mean of the seven readings was 117°.4.

The lowest reading of a minimum thermometer placed on grass was 28°.6, on the 5th. The mean of the seven readings was 38°.6.

Rain.—Rain fell on two days to the amount of 0.14 inch.

ENGLAND: *Temperature.*—During the week ending June 5, the highest temperatures were 75°.5 at Blackheath, 74°.9 at Cambridge, 71° at Brighton; the highest at Liverpool was 62°.4, at Wolverhampton 62°.5, at Plymouth 62°.9. The general mean was 66°.4.

The lowest temperatures were 33°, at Cambridge, 35° at Hull, 37°.6 at Wolverhampton; the lowest at Plymouth was 45°.4, at Brighton and Liverpool 43°.8, The general mean was 40°.1.

The greatest ranges were 41°.9 at Cambridge, 35°.7 at Blackheath, 29° at Hull; the least ranges were 17°.5 at Plymouth, 18°.6 at Liverpool, 21° at Preston. The general mean was 26°.3.

The mean of the seven high day temperatures was highest at Cambridge, 66°.6, at Brighton 65°, at Blackheath 64°.9; and was lowest at Newcastle, 54°.3, at Hull 56°.1, at Bradford 56°.3. The general mean was 60°.7.

The mean of the seven low night temperatures was highest at Plymouth, 50°, at Truro 48°.9, at Brighton 48°.2; and was lowest at Cambridge and Hull, 40°.4, at Sheffield 41°.8. The general mean was 44°.7.

The mean daily range was greatest at Cambridge 26°.2, at Wolverhampton 19°.8, at Blackheath, 17°.9; and was lowest at Plymouth, 11°.3, at Newcastle 11°.6, at Liverpool 12°.7. The general mean was 16°.

The mean temperature was highest at Truro, 55°, at Brighton, 54°.8, at Blackheath 54°.5; and was lowest at Hull, 46°.6, at Newcastle 46°.7, at Bradford 48°. The general mean was 51°.

Rain.—The largest fall was 1.14 inch at Bristol, 1.08 inch at Newcastle, 0.96 inch at Sheffield; the smallest falls were 0.03 inch at Cambridge, 0.14 inch at Blackheath, and 0.36 inch at Hull. The general mean fall was 0.62 inch.

SCOTLAND: *Temperature.*—During the week ending June 5, the highest temperature was 70°.7, at Dundee; at Greenock the highest was 64°.2. The general mean was 67°.6.

The lowest temperature in the week was 35°, at Glasgow; at Greenock the lowest temperature was 41°.7. The general mean was 37°.2.

The mean temperature was highest at Paisley, 57°.7, and lowest at Leith, 48°.5. The general mean was 49°.3.

Rain.—The largest fall was 1.02 inch at Edinburgh, and the smallest fall was 0.23 inch at Greenock. The general mean fall was 0.55 inch.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, June 7, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* was rainy at the commencement of the period, with thunder and lightning in many parts of England, but subsequently became finer than it has been for some time past. In Ireland, however, it remained very dull, though but little rain fell.

Temperature has equalled the mean value in "England, S." and "England, S.W.," but in the other districts it has continued below, the deficit ranging between 1° and 3°. The highest of the maxima, which were recorded on different dates in the various localities, ranged from 63° in "Scotland, N." to 74° in "England, S.," and 75° in "England, E." During the early days of the period the maxima in some parts of England were very low for the season; at Shields on the 1st the thermometer only reached 46°, and on the following day 49°, while on the 3d the temperature at most of the central and eastern stations did not exceed 53°. The lowest of the minima, which were generally registered between the 3d and 5th, varied from 33° in "England, E.," and 34° in "Scotland, E.," and "England, N.W.," to 38° in "England, S.," 45° in "Ireland, S.," and 47° in the "Channel Islands." At Ingatestone the thermometer on the grass during the early morning of the 4th, and again on the 5th, fell to 31°.8.

The *rainfall* has been rather more than the mean in "England, N.E.," the "Midland Counties," and "England, N.W.," but less elsewhere.

Bright sunshine shows a decrease in Ireland and the extreme western parts of England, but an increase in most other districts; the percentages of the possible amount of duration ranged from 14 or 15 in Ireland to 32 in "England, S.W.," 45 in "Scotland, E.," and 56 in "England, E."

Depressions observed.—With the exception of some shallow disturbances which travelled slowly in a north-easterly direction over our islands at the commencement of the period, no depressions appeared in our immediate neighbourhood. During the latter part of the week the distribution of pressure was anticyclonic, and the which had previously been light or moderate from the eastward, became more variable in the south, while at our northern stations they shifted to the westward.

Answers to Correspondents.

*** OUR TELEGRAPHIC ADDRESS.—*Our correspondents are requested to bear in mind that our Registered Telegraphic Address is* "GARDCHRON, LONDON." *Telegrams (but not letters) thus addressed will reach the Editor or the Publisher without other address being needed.*

BOOKS: *H. J. C.* You do not say for what precise purpose you want it. The last edition of Henfrey's *Elementary Course of Botany* (Van Voorst) is the most complete and recent.

CATTLEYA BLOOM: *Jas. Morgan.* The blooms were fine examples of C. Mendelii, the labellum being considerably more frilled than is usually observed even in this variety.

COLD-WATER CURE: *K.* There is nothing new or unusual in this. It is excellent in certain cases, but it is unsafe in unskilled hands. What you call rheumatism may be something quite different. It is mischievous to recommend remedies in the absence of exact knowledge, such alone as a medical practitioner can be expected to possess.

CORRECTION.—In our report of Andrews *v.* G. E. Ry. Co., p. 697, col. B, line 20 from top. For Mr. R. Moser Hiscock, read Mr. R. Moser Hiscocks.

ERIGERON AURANTIACUS: *T. W. B.* should address his query to the Editor, not to the Publisher. We do not know such a variety.

LIMES: *W. F.* We can only repeat what we said before, that the leaves and buds are being destroyed by the caterpillar of a moth, probably a Tortrix. We fear there is no remedy that will prove wholly satisfactory, but next year the plague may be staid.

NAMES OF PLANTS: *F. A. W.* Akebia quinata.—*G. D.* Saxifraga sphonhemica; Ornithogalum umbellatum.—*A. H.* 1, Papaver bracteatum; 2, P. orientalis.—*E. G. H.* Pavia flava, Fagus sylvatica var. cristata—the crested Beech, a singular malformation.—*H. J. C.* 1, Bromus mollis; 2, Festuca ovina; 3, Poa trivialis, but specimen insufficient; 4, Festuca pratensis, 5, Poa pratensis; 6, Aira cæspitosa.—*G. C.* Vanda teres Aurora.—*P. Stocks.* One of the smaller Oncidium, of no value.—*W. M.* Your plant is the curious Cytisus Adami, concerning which so much has been written. Some say it is a hybrid by way of seed, others that it is a graft hybrid, obtained by budding Cytisus purpureus on the common Laburnum. Though every one expresses astonishment at this plant, and all tree-nurserymen keep it, no one, so far as we know, has taken the trouble to perform the experiment and prove or disprove its alleged origin. This is a little experiment that the Royal Horticultural Society might have made years ago and covered itself with glory!—*Sir C. W. Strickland.* Hyacinthus amethystinus, L., *Bot. Mag.*, t. 2425, blue type and white flowered variety.—*A. D.* Adenanthera pavonina, a tropical Bean. For the purpose you mention, many seeds will answer, such as Cress, Festuca ovina, spores of Ferns, Selaginellas, &c.

PEACH AMSDEN JUNE: *G. Woodgate.* Very good for early fruiting, but there are better flavoured ones. It has the merit of ripening early in an unheated house.

PEACHES: *J. H.* should address the Editor, not the Publisher. The fruits present the appearance of arrested growth from root-action, having received a sudden check from the application of cold water to the border. Salt in small quantities, such as you mention, would not cause any such injury.

ROSES IN A COLLECTION OF CUT STOVE AND GREENHOUSE PLANTS: *C. R.* These should certainly disqualify the exhibitor showing them, as they are really hardy flowers brought forward by forcing.

SCARLET PELARGONIUMS GROWING RED AND WHITE FLOWERS: *E. V. B.* It is not an unusual occurrence.

SLUGS: *L.* A friend recommends bran soaked in vinegar as an excellent bait for these pests. They may be surprised at supper and demolished.

VINE LEAVES: *A. O. Z.* The leaves you sent are evidently burnt by the sun; bad glass is doubtless the cause. Perhaps you have glass of a better quality over your other Vines, or they may be at a greater distance from it. Your ventilation should be looked to as that may have something to do with the injury. Ammonia would not cause the appearance.

VIOLA: *A. McL.* We do not know if it is in the trade. Our specimens came from the College Botanic Garden, Dublin. Mr. Burbidge might be able to oblige you.

INSECTS: *J. van W., Belgium.* The mole-cricket (*taupe-grillon*, fig. 172) causes great injury to crops, &c., by cutting off the roots of plants by its two forelegs whenever it happens to come in contact with them during its underground journeying. It is doubtful whether the insects live on vegetables, although they eat them when no other food in the shape of insects is to be found, and even then they will devour each other, which fact may be of some consolation to gardeners who are troubled with this pest. The following are some of the plans which have been proposed for getting rid of these insects:—1. By searching for the nests, which can be done in small gardens. These nests are built about June or July, about 20 to 25 centimetres below the surface of the ground. 2. By pouring boiling oil or tar into their holes, which also can only be done on a small scale. 3. By sinking pots half-full of water 1 or 2 centimetres below the ground. The insects fall in when crawling about during the night. 4. By digging holes in the ground at the end of autumn and filling them up with horse-dung. The insects will collect in this material for warmth during the cold of winter, at the end of which season they may be found in large numbers in this trap. They should then be killed. An entomological description of the mole-cricket, Gryllotalpa vulgaris, appeared in our columns December 29, 1849, p. 821. The underground runs of the mole-cricket resemble those of the common mole, but are of course much smaller, and are indicated in the same manner by the partial upheaval of the surface of the soil. These passages are doubtless made for the same purpose as those of the mole. By tracing their ramifications the nests in summertime can generally be discovered. On the Continent the insects commit great depredations among Melons, Cucumbers, and cuttings inserted in sand or soil in hotbeds, these beds usually abounding in insects of many kinds, which the mole-cricket pursues underground, upheaving and cutting through roots, &c., that impede its progress. Melons and Cucumber plants are usually planted in shallow, soup-plate-like Willow baskets, to prevent the main roots from being

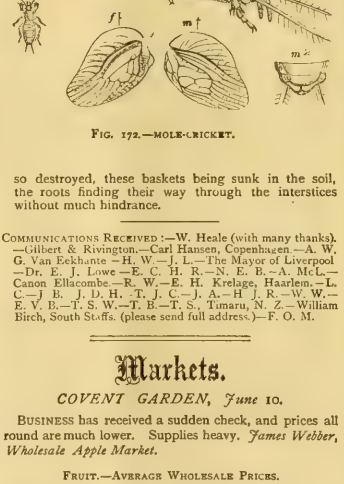


FIG. 172.—MOLE-CRICKET.

so destroyed, these baskets being sunk in the soil, the roots finding their way through the interstices without much hindrance.

COMMUNICATIONS RECEIVED:—W. Heale (with many thanks).—Gilbert & Rivington.—Carl Hansen, Copenhagen.—A. W. G. Van Eekhante.—H. W.—J. L.—The Mayor of Liverpool.—Dr. E. J. Lowe.—E. C. H. R.—N. E. B.—A. McL.—Canon Ellacombe.—R. W.—E. H. Krelage, Haarlem.—L. C.—J. B. J. D.—H. T. J. C.—J. A.—H. J. R.—W. W.—E. V. B.—T. S. W.—T. B.—T. S., Timaru, N. Z.—William Birch, South Staffs. (please send full address).—F. O. M.

Markets.

COVENT GARDEN, June 10.

BUSINESS has received a sudden check, and prices all round are much lower. Supplies heavy. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, Canadian, per barrel	8	0–21 0	Melons, each	1	0– 3 6
Figs, per dozen	3	0– 6 0	Peaches, per dozen	3	0–12 0
Grapes, per lb.	2	0– 4 0	Pine-apples, Eng., lb.	2	0– 3 0
Kent Cobs, 100 lb.	40	0– ..	— St. Michael, each	2	6– 8 0
Lemons, per case	8	0–10 0	Strawberries, per lb.	1	0– 3 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4	0– ..	Mint, green, bunch	0	4– ..
Asparagus, Eng., 100	2	0– 5 0	Mushrooms, punnet	1	0– 1 6
— French, bundle	1	6– 6 0	Mustard and Cress, do.	0	4– ..
Beans, Kidney, lb.	1	0– ..	Onions, per bushel	3	0– ..
Beet, red, per dozen	1	0– 2 0	Parsley, dozen bunch	2	0– 3 0
Carrots, per bunch	0	6– ..	Potatos, per cwt.	4	0– 5 0
Cauliflowers, per doz.	3	0– 9 0	,, kidney, per cwt	4	0– 5 0
Celery, per bundle	1	6– 2 0	Shallots, per pound	0	3– 0 9
Coleworts, doz. bunch	8	0– ..	Spinach, per bushel	2	0– ..
Cucumbers, each	0	6– 1 0	Sprue Asparagus, per bundle	1	0– ..
Endive, per dozen	1	0– 2 0	Tomatos, per lb.	0	6– ..
Herbs, per bunch	0	4– ..	Turnips, bunch	0	9– ..
Leeks, per bunch	0	6– ..			
Lettuce, per dozen	1	0– 1 6			

POTATOS:—Old: About the same as last week. New: Jersey Kidneys, 2½*d.* to 3*d.* lb.; Rounds, 10*s.* to 12*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18 0	Ferns, in var., dozen	4	0–18 0
Bedding Plants, various, per dozen	1	0– 2 0	Foliage Plants, various, each	2	0–10 0
Begonias, per dozen	6	0–12 0	Fuchsias, dozen	6	0–12 0
Bouvardias, doz	12	0–18 0	Hydrangeas, doz.	9	0–18 0
Calceolarias, per doz.	5	0– 8 0	Lobelias, per dozen	4	0– 6 0
Cyperus, per dozen	4	0–12 0	Marguerite Daisy, per dozen	8	0–12 0
Dracæna terminalis, per dozen	30	0–60 0	Mignonette, per doz.	4	0– 8 0
— viridis, per doz.	12	0–24 0	Myrtles, per dozen	6	0–12 0
Ericas, various, per dozen	12	0–24 0	Nasturtiums, dozen	3	0– 6 0
Euonymus, in var., per dozen	6	0–18 0	Palms in var., each	2	6–21 0
Evergreens, in var., per dozen	6	0–24 0	Pelargoniums, per dozen	6	0–18 0
Ficus elastica, each	1	6– 7 0	— scarlet, per doz.	3	0– 6 0
			Petunias, dozen	3	0– 8 0
			Spiræas, per dozen	6	0–12 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Arum Lilies, 12 blms.	4	0– 6 0	Pansies, 12 bunches	1	0– 3 0
Azaleas, 12 sprays	0	6– 1 0	Pæonies, 12 bunches	6	0–18 0
Bouvardias, per bun.	0	6– 1 0	Pelargoniums, per 12 trusses	0	9– 1 0
Carnations, 12 blms.	1	0– 3 0	— scarlet, 12 trusses	0	4– 0 6
Eucharis, per dozen	4	0– 6 0	Primulas, double, per bunch	0	6– 1 0
Forget-me-Not, or Myosotis, 12 bun.	2	0– 4 0	Pyrethrums, 12 bun.	2	0– 6 0
Gardenias, 12 blooms	2	0– 4 0	Ranunculus, 12 blms.	2	0– 4 0
Iris, various, 12 bl.	1	0– 3 0	Rhododen., 12 bun.	3	0– 6 0
Lapageria, red, 12 blooms	1	0– 2 0	Roses, Tea, per doz.	0	9– 2 0
Lilac, French, bunch	5	0– 7 0	— red, per dozen	2	0– 4 0
Lilium longiflorum, 12 blooms	4	0– 6 0	Spiræas, 12 bunches	6	0– 9 0
Marguerites, 12 bun.	3	0– 6 0	Stephanotis, 12 sprs.	1	6– 3 0
Mignonette, 12 bun.	3	0– 9 0	Tropæolums, 12 bun.	1	0– 2 0
Narcissus, 12 bun.	0	12–18 0	Tuberoses, 12 blms.	0	6– 1 6

SEEDS.

LONDON: *June* 9.—Messrs. John Shaw & Sons, seed merchants, of 37, Mark Lane, London, E.C., report to-day's market thinly attended, with very few transactions passing. All varieties of Clover seeds, as usual during June, are neglected. Prices for new French Trifolium are too high to admit of business, and the article is being left alone for the present. White Mustard and sowing Rape seed continue steady. Hemp and Canary seed remain unchanged. Fine blue Peas meet a fair inquiry at last week's currencies. The trade for feeding Linseed keeps firm. Other articles at this quiet season call for no remark.

CORN.

MARK LANE: *June* 7.—With an extremely slack trade, Wheat prices were fully 6*d.* lower for the week. To effect sales, in some cases even a larger concession would have to be made. Flour was reduced 6*d.*, as compared with Monday last. Oats on like comparison were 3*d.* to 6*d.* lower. Beans, Peas, and Lentils were very quiet, at last Monday's rates. Black Sea Barley, with a limited demand, was the turn cheaper.

June 9.—Trade was dull, and the tone depressed. Wheats were not forced off at any tangibly lower prices: only a merely retail trade was passing, however, and quotations nominal. For spring corn there was very little inquiry, but prices may be quoted steady, except for Oats, which in consequence of liberal arrivals were rather easier.

Average prices of corn for the week ending June 5:—Wheat, 32*s.* 2*d.*; Barley, 24*s.* 5*d.*; Oats, 20*s.* 4*d.* For the corresponding period last year:—Wheat, 34*s.* 6*d.*; Barley, 27*s.* 6*d.*; Oats, 22*s.* 3*d.*

FRUITS AND VEGETABLES.

COLUMBIA: *June* 9.—Average supply of fruit and vegetables, buyers numerous, and trade good at fair prices. Quotations:—Gooseberies, 3*s.* to 3*s.* 6*d.* per half-sieve; Cucumbers, 4*s.* to 5*s.* per dozen; Cabbages, 5*s.* to 8*s.* per tally; bunch Greens, 4*s.* to 6*s.* per dozen bunches; Onions, 5*s.* to 7*s.* per cwt.

STRATFORD: *June* 8.—Supplies have been good during the past week, as also the attendance of buyers, consequently a fair trade has been done at the undermentioned prices:—Cabbages, 5*s.* to 7*s.* per tally; Greens, 3*s.* to 4*s.* per dozen; Mangels, 14*s.* to 18*s.* per ton; Onions, 4*s.* 6*d.* to 6*s.* per dozen bunches; Strawberries, 1*s.* 3*d.* to 1*s.* 6*d.* per box; Radishes, 2*s.* 6*d.* per tally; Lettuces, 1*s.* to 1*s.* 6*d.* per tally; Watercress, 6*d.* per dozen.

POTATOS.

BOROUGH AND SPITALFIELDS: *June* 8.—Old Potatos were not much in demand, but good qualities uphold their value. Inferior sorts neglected. New Potatos continue to arrive scantily, and were dear.

COLUMBIA: *June* 9.—Quotations:—Jersey kidneys, 16*s.* to 20*s.*; St. Malo rounds, 13*s.* to 15*s.* per cwt.; York and Lincoln Magnums, 8*os.* to 85*s.*; do. Champions, 55*s.* to 65*s.*; Cambridgeshire Magnum Bonums, 65*s.* to 80*s.*; do. Champions, 50*s.* to 60*s.*; Scotch Regents, 65*s.* to 80*s.*; do Champions, 50*s.* to 60*s.* per ton.

STRATFORD: *June* 8.—Quotations:—Best Magnums, 75*s.* to 85*s.*; do. seconds, 60*s.* to 75*s.*; Readings, 70*s.* to 80*s.*; do. Champions, 50*s.* to 60*s.* per ton; Jersey kidneys, 15*s.* to 16*s.*; do. rounds, 11*s.* to 13*s.*; St. Malo kidneys, 11*s.*; do. rounds, 13*s.* per cwt.

Imports.—The imports into London last week consisted of 751 packages from Malta, 2 baskets Rotterdam, 2550 bags Hamburg, 162 Harlingen, 1132 packages, 14⁰3 half-boxes Lisbon, 276 cases from St. Nazaire, and 6266 bags from Stettin.

HAY.

WHITECHAPEL: *June* 8.—There were large supplies, with a dull trade, and prices barely maintained, though quotations cannot be altered. Quotations:—Clover, prime, 90*s.* to 107*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 92*s.*; inferior, 50*s.* to 65*s.*; and straw, 27*s.* to 36*s.* per load.

June 10.—A fair supply was offered. There was a very dull trade at previous rates.

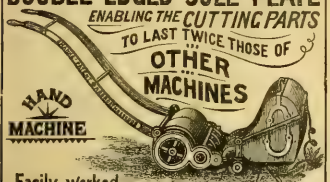
STRATFORD: *June* 8.—Hay, 80*s.* to 90*s.*; Clover, 95*s.* to 100*s.*; and straw, 29*s.* to 32*s.* per load.

Government Stock.—Consols closed on Monday, Tuesday, Wednesday, and Thursday, at 100⅛ to 100⅜ for delivery, and 100⅜ to 100⅛ for the account. The above quotations are ex div.

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TO CUT 14 INCHES WIDE,	5 10 0	TO CUT 24 INCHES WIDE.	9 0 0
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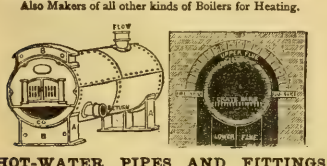
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The G. C. G. Co. will be pleased to furnish on application the names of Coal Merchants from whom their Coal can be obtained, as inferior Anthracite is often sold as theirs to new buyers. References permitted to some of the first Horticulturists in the country.

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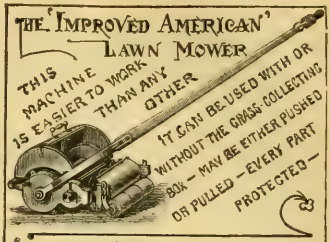
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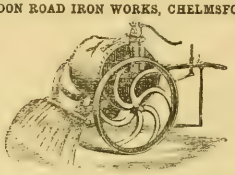
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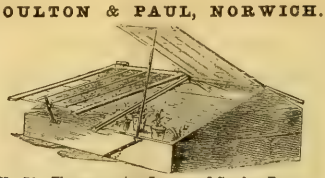
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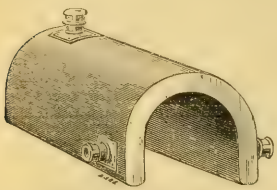
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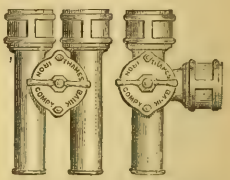


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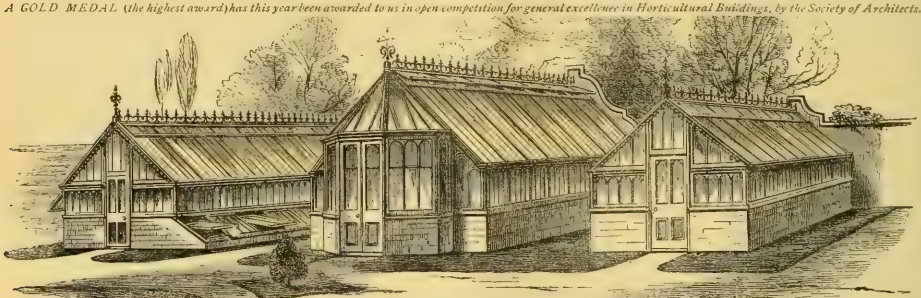
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G. C.
June 12. 1886.

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THE

GARDENERS' CHRONICLE.

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GARDENERS' CHRONICLE PRIZES
FOR YOUNG GARDENERS.

The Awards (£10, £5, and £2) will be made known at the meeting of the Royal Horticultural Society, at Liverpool.

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SALES BY AUCTION.

Thursday Next.—(Sale No. 7178.)

IMPORTED and ESTABLISHED ORCHIDS, &c.

MR. J. C. STEVENS will include in his SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, June 24, a fine lot of CATTLEYAS, LÆLIAS, ONCIDIUMS, SOPHRONITES, &c., received direct from Brazil: ESTABLISHED ORCHIDS, few specimen TREE FERNS, several hundred plants of a new Double White PYRETHRUM, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7178.)

CATTLEYA MENDELII.
ANGRÆCUM LEONII.
LÆLIA ELEGANS.
LÆLIA PURPURATA.
ODONTOGLOSSUM PHALÆNOPSIS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., by order of Mr. F. Sander, on THURSDAY NEXT, June 24, at half-past 12 o'Clock precisely, a splendid Importation of CATTLEYA MENDELII, in large and fine masses, and eyes at perfect rest; also a healthy lot of the beautiful ANGRÆCUM LEONII, ODONTOGLOSSUM PHALÆNOPSIS, in splendid masses and extra condition; ONCIDIUM CUCULLATUM (large pieces), VANILLA HUMBOLDTII, CATTLEYA species, ORCHIDS in variety, from Madagascar—the whole in the best possible condition; together with a very fine lot of ODONTOGLOSSUM PESCATOREI, in large bulbed and distinct looking pieces; ONCIDIUM AMPLIATUM MAJUS, O. JONESIANUM, and many other ORCHIDS.

On view morning of Sale, and Catalogues had.

Johnson Hall, Eccleshall, Staffordshire.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, on the Premises as above, on TUESDAY, June 29, at half-past 12 o'Clock precisely, the COLLECTION of ESTABLISHED ORCHIDS formed by C. E. Lyon, Esq., comprising fine plants of Cattleya superba splendens, Cattleya Eldorado, Odontoglossums and Masdevallias, including some splendid varieties), Cypripediums, Oncidiums, STOVE and other PLANTS in variety, &c.

On view day prior and morning of Sale, and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

The entire Collection of Orchids

Formed by J. T. Barber, Esq., of Spondon, near Derby.

MR. J. C. STEVENS has received instructions from J. T. Barber, Esq. (in consequence of his lease having expired), to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY July 1, at half-past 12 o'Clock precisely, his entire COLLECTION of ORCHIDS, including fine plants of many rare and valuable species. Nothing will be sold privately, but every plant included in the Sale.

Further particulars in next advertisement.

Friday Next.

ONCIDIUM JONESIANUM (True).

MESSRS. PROTHEROE AND MORRIS beg to announce that they have received instructions to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, June 25, at half past 12 o'Clock precisely, a splendid consignment of the true ONCIDIUM JONESIANUM, collected by Mons. Louis de St. Leger (the original collector of this plant), all true to name, and such as will flower this year, having been gathered at the proper season.

On view morning of Sale, and Catalogues had.

Friday Next.

SPECIMEN ORCHIDS, PALMS, &c., for SALE, without reserve, from a well-known Private Collection on the Continent.

MESSRS. PROTHEROE AND MORRIS will include in their SALE by AUCTION, at their Central Sale Rooms, on FRIDAY NEXT, June 25, two plants of SOBRALIA MACRANTHA NANA, 3 feet through; VANDA CATHCARTI (thirty-three leaves), V. BATEMANI (twelve leaves), CATTLEYA MACKURA, M. BULL'S BLOOD variety, ONCIDIUM INCURVUM ALBUM, SEAFORTHIA ELEGANS, 10 feet; two PANDANUS VEITCHII, 5 feet, &c.

On view morning of Sale, and Catalogues had.

Friday Next.

A NEW CATTLEYA and other ORCHIDS, by order of the New Plant and Bulb Company.

MESSRS. PROTHEROE AND MORRIS are instructed to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, June 25, at half-past 12 o'Clock precisely, a grand importation of ODONTOGLOSSUM PESCATOREI, in enormous masses; O. TRIUMPHANS, O. PHALÆNOPSIS, O. BLANDUM, O. HASTILABIUM, CYPRIPEDIUM SCHLIMII, UROPEDIUM LINDENII, ADA AURANTIACA, ONCIDIUM SUPERBIENS, ANGULOA CLOWESII, from Oceana, in fine pieces; a grand consignment of ODONTOGLOSSUM ALEXANDRÆ, from a new mountain in the Pacho district, collected under Mr. Edward Wallace's supervision. Also a few Plants of a new CATTLEYA, quite distinct, very floriferous and sweet-scented. Sent over three months since, and breaking strongly. Collected in quite a new district by Mr. Edward Wallace.

On view morning of Sale, and Catalogues had.

Orchids in Flower. Special Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that their next SPECIAL SALE of ORCHIDS in FLOWER will take place on TUESDAY, June 29, for which they will be glad to receive notice of entries in due course.

THE LIVERPOOL HORTICULTURAL COMPANY (JOHN COWAN), Limited, have still on hand a Large Stock of ORCHIDS from the celebrated "Percival" collection, particulars of which will be sent on application.

The Company have just received a Large Importation of MEXICAN ORCHIDS, consisting of Laelia anceps, L. albida, L. majalis, L. autumnalis atrorubens, Cattleya citrina, Epidendrum vitellinum majus, &c. Particulars on application.

The Company have also just received a Large Importation of EAST INDIAN ORCHIDS in good condition. Particulars on application.

The Vineyard, Garston, Liverpool.

Heathrow, in the Parish of Harmondsworth, in the County of Middlesex. About 14 miles from London, and a short distance from G.W. and S.W. Railways.

IMPORTANT SALE of valuable FREEHOLD ESTATES, all Tithe Free.

MR. E. P. NEWMAN is instructed by the Trustees under the Will of the late Samuel Hunt, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on TUESDAY, June 22, at 1 for 2 o'Clock, an exceedingly valuable property known as the HEATHROW FARM, with comfortable Farmhouse and numerous Buildings, forming 2 Homesteads, 16 Cottages, Orchards, and Gardens thereon; the whole comprising about 135 acres, and calculated to produce about £650 per annum. The land, which is well drained, is principally arable, has been highly farmed, and comprises a good depth of rich Loam; it is in a very clean state, and well adapted for Market Gardening, Seed Growing, or Nursery purposes, and the whole Property will be divided in 9 Lots. There are very extensive Building Frontages to good roads, and there is Brick Earth on a considerable portion of the estate. Possession on completion of the purchase.

May be viewed 7 days prior to the Sale, and particulars with Conditions and Plans can be obtained at the Auction Mart, London, E.C.; Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; and of the Auctioneer and Estate Agent, 42, High Street, Uxbridge, Middlesex.

Oak Gate, Augustus Road, Edgbaston, Birmingham.

IMPORTANT UNRESERVED SALE of a VALUABLE COLLECTION of STOVE and GREENHOUSE PLANTS, including Azaleas, Camellias, Ericas, Lapagerias, Allamandas, Dipladenias, Ixoras, Orchids, Ferns, Palms, &c.

MESSRS. THOMAS AND BETTRIDGE are instructed by C. E. Mathews, Esq. (who is ceasing to exhibit), to SELL by AUCTION, at the above Residence, on THURSDAY, June 24, commencing punctually at 1 o'Clock, his very valuable COLLECTION of SHOW PLANTS, all in first-class condition, which have taken many 1st prizes during the last twelve years. On view from 9 o'Clock on the morning of Sale, but at no other time. A tent will be provided on the lawn.

Catalogues may be obtained at the Offices of the Auctioneers, 12, Temple Row, Birmingham; or of Mr. WALTER JONES, Gardener, at the House.

Surrey.

FOR DISPOSAL, the Lease and Stock of a NURSERY, situate within 8 miles of Covent Garden. The Nursery comprises 2 acres of Ground, containing extensive Glass Erections, well fitted with every convenience, together with Cottage Residence, Shop, and Stabling, and held for an unexpired term of 16 years at a very low rental.

Apply, N. M., *Gardeners' Chronicle* Office, 41, Wellington Street, Strand, W.C.

FOR SALE.

NURSERY AND SEED BUSINESS.

THE OLD-ESTABLISHED NURSERY and SEED BUSINESS, so long successfully carried on by THOMAS IMRIE AND SONS, Ayr, will be offered for Sale.

The Nursery Grounds, extending to about 45 acres, adjoin the Railway Station, and are well stocked with saleable Trees and Shrubs, and there are commodious premises for carrying on the Seed Business. The Business may be Sold either as one, or Nursery and Seed separately; and is being disposed of solely on account of Mr. Imrie's delicate state of health.

Further particulars on application to THOMAS IMRIE AND SONS, Ayr, N.B.—June 11, 1886.

To Florists and Nurserymen.

FREEHOLD HOUSE, and 51 Acres of FREEHOLD LAND, within half a mile of a Railway Station, and 8 miles North of London. Price £250 per acre. The Land is divided into 11 enclosures of various sizes, from 2 to 9 acres each, with good hedges. A large portion of the purchase-money can remain at a low rate of interest if desired.

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JOHN EMBLETON, Suffolk House, New Hampton.

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A NURSERY,

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Good Dwelling House, Greenhouse, Frames, &c.

For particulars, apply to J. FLOOD, 57, Albert Street, Mornington Crescent, London, N.W.

TO LET, a Semi-detached COTTAGE, with large Garden front and back. Range of Greenhouses, 80 by 12 feet, fitted with Boiler and Pipes complete. Grand crop of Cucumbers coming on. Ground well stocked for Cut Flowers; ready sale. Suit Jobbing Gardener. Can have a lease. Rent 10s. per week. £100 cover all. Apply, Mr. BIRD, Newsagent, 115, Hamilton Road, West Norwood.

PROTHEROE AND MORRIS, HORTICULTURAL MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 67 and 68, Cheapside, London, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared. 115, Listria Park, Stamford Hill, N.

IMPATIENS HAWKERII.—This magnificent new plant, the most handsome of the genus, is now in Flower at Mr. WILLIAM BULL'S Establishment, 536, King's Road, Chelsea, London, S.W.

ROYAL HORTICULTURAL SOCIETY South Kensington, S.W.

NOTICE:—COMMITTEE MEETINGS, Fruit and Floral, at 11 A.M., in the Conservatory; Scientific at 1 P.M., in the Lindley Library, on TUESDAY NEXT, June 22.

SHOW OF PELARGONIUMS, &c.

N.B. Open to Fellows at 12 o'Clock, and the Public at 1 o'Clock.

CRYSTAL PALACE.

GREAT ROSE SHOW OF THE SEASON, SATURDAY, July 3. For Schedules, containing Forms, &c., apply to

Mr. W. W. G. HEAD, Garden Superintendent. Crystal Palace, S.E.

TWICKENHAM HORTICULTURAL and COTTAGE GARDEN SOCIETY, under the distinguished patronage of H.R.H. the Princess Christian, H.R.H. the Princess Frederica, the Lady Adelizа Manners, the Lady Alice Peel, Eliza Lady Freake. President—O. E. COOPE, Esq., M.P.

The ANNUAL SUMMER SHOW of the Society will be held on TUESDAY, June 29, at 2 P.M. (by kind permission of Mrs. Meek), in the Grounds of Poulett Lodge. The Band of the 7th Hussars will attend, under the direction of C. Zoeller, Bandmaster (by kind permission of Colonel F. M. Drew and Officers).

Admission:—Subscribers by Ticket, between 2 and 8 P.M.; by Payment at the Gate from 2 to 3 P.M., 2s. 6d.; from 3 to 6 P.M., 1s.; from 6 to 8 P.M., 6d. Children half-price.

MARTIN ADLE C. WARD, M.D., Hon. Treasurer.
J. J. G. PUGH, Hon. Secretary.

ROYAL HORTICULTURAL SOCIETY. GREAT PROVINCIAL SHOW at LIVERPOOL, JUNE 29 to JULY 5, 1886.

GREAT EXHIBITION of PLANTS, FLOWERS, FRUIT, VEGETABLES, &c., in the BOTANIC GARDENS and WAVERTREE PARK.

Schedules and full particulars as to space, &c., may be had on application to the Superintendent, Mr. A. F. BARRON, Royal Horticultural Society, Chiswick, London; or to Mr. J. RICHARDSON, Botanic Gardens, Liverpool.

NOTICE.—Entries close JUNE 21.

GRAND ROSE SHOW, BATH, THURSDAY, July 8.

1st Prizes:—Nurserymen, seventy-two varieties, £8 8s.; thirty-six varieties, £4. Amateurs:—Thirty-six varieties, £5; twenty-four varieties, £3. The 2d and 3d Prizes in proportion. Several other Classes for Roses, Bouquets, Strawberries, and Plants—thirty-one Classes in all. Entries close July 3. For Prize Schedules apply to

BENJAMIN PEARSON, Sec.
14, Milsom Street, Bath.

GRAND ROSE SHOW, Norwich, TUESDAY and WEDNESDAY, July 13 and 14 (during visit of Royal Agricultural Society). ONE HUNDRED and FIFTY POUNDS offered in PRIZES, including Roses, 72 vars., £10; 48 vars., £5 5s.; 36 vars. (amateurs), £5 5s.—83 classes in all. Entries close July 8.

ARTHUR W. PRESTON, Hon. Secretary.
Bank Plain, Norwich.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.

A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of

PHILIP MAC MAHON, Curator,
Hull Botanic Gardens.

The following, amongst other valuable Prizes, will be awarded:—Group of Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

BEDFORDSHIRE AGRICULTURAL SOCIETY'S SHOW at Luton, on WEDNESDAY, July 21.

A GRAND SHOW of FLOWERS and FRUITS, open to the United Kingdom, will be held in connection with the above, when the following VALUABLE PRIZES, amongst others, will be offered:—

10 ORCHIDS, 1st, £10; 2d, £6; 3d, £4.
6 „ 1st, £6; 2d, £4; 3d, £2.
12 STOVE and GREENHOUSE PLANTS, 1st, £15; 2d, £10; 3d, £5.
6 „ 1st, £7; 2d, £5; 3d, £3.

Also for ROSES, FRUITS, &c. For Schedules and particulars apply to Mr. S. C. OLIVER, Hon. Sec.
Park Square, Luton.

SALTERHEBBLE and DISTRICT ROSE SOCIETY.

The ANNUAL EXHIBITION of ROSES will be held on THURSDAY, July 22. Entries close July 20. Schedules on application to ARTHUR M. BEECROFT, Sec.
Heath Lane, Halifax.

HULL and EAST RIDING CHRYSANTHEMUM SOCIETY.

PRIZES to the value of ONE HUNDRED and SEVENTY POUNDS. Four Silver Cups. Schedules now ready, and may be had on application to

R. FALCONER JAMESON, and WM. HAWKSWORTH, } Hon. Secs.
Queen's Dock, Hull.

To the Trade.

RAPE-SEED and WHITE MUSTARD.

HAND F. SHARPE have fine Samples of the above-named Seeds, extra cleaned for seed purposes, and will be pleased to submit them with lowest prices on application.

Seed Growing Establishment, Wisbech.

DAHLIAS.—New Cactus, Pompon, and Single Dahlias, by parcel post or rail. Plants sent gratis for carriage. [each.

NEW CACTUS DAHLIA, MRS. TAIT, 4s. per dozen, 6d.
„ „ PICTA FORMOSISSIMA, 4s. per dozen, 6d. each.
„ „ COCHINEAL, GENERAL GORDON, LORD LYNDHURST, PRINCE IMPERIAL, 6d. each.
DAHLIA CONSTANCE, White Cactus, 3s. dozen, 4d. each.
„ JUAREZI, Scarlet Cactus, 3s. per dozen, 4d. each.
„ PARROT, Scarlet Cactus, 3s. per dozen, 4d. each.
„ Pompon, the finest new varieties, } 3s. per dozen.
„ Single, superb, the finest varieties, } 4d. each.

Terms cash with order.

JAMES HUNT, Nurseryman and Florist, Great Yarmouth.

Borough of Poole.

To LANDSCAPE GARDENERS and OTHERS.

THE COUNCIL of the BOROUGH of POOLE are desirous of obtaining DESIGNS, with Estimates of the probable cost of a Scheme for Laying Out as a People's Park and Recreation Grounds a piece of land situate at Parkstone, in the said Borough, containing about 35 acres.

The Council therefore invite competition for the above, and a Premium of £20 will be paid to the competitor whose design shall be considered by the Council to be the best, and £5 to the competitor whose design shall be considered to be the next best, and such designs and estimates shall thereupon become the property of the Council.

Competitors may also Tender for the Works, Planting, &c.

Plans, endorsed "People's Park and Recreation Grounds Competitive Designs and Estimates," are to be sent in on or before the 30th day of July next, to the Office of the Borough Surveyor, Mr. John Elford, in Poole, from whom a Plan of the Land and conditions to be observed may be obtained, on payment of 10s. 6d., which sum will be returned if a *bond fide* design is sent in. The Council do not bind themselves to accept the lowest or any Tender.

H. W. DICKINSON, Town Clerk.

Town Clerk's Office, Poole, May 28, 1886.

BEDDING PLANTS, &c., of A1 Quality and Strength.

GOLDEN FEATHER, 6*d.* per doz., 2s. 6*d.* per 100, 20s. 1000.

COLEUS Verschaffeltii, 1s. per doz., 6s. per 100, 50s. per 1000.

IRESINE Lindeni, 1s per dozen, 6s. per 100, 50s. per 1000.

Herbsti, 1s. per dozen, 6os. per 100, 50s. per 1000.

AGERATUM, Cannell's Dwarf, 5s. per 100, 40s. per 1000.

CERASTIUM TOMENTOSUM, 1s. per dozen, 6s. per 100, 50s. per 1000.

ALTERNANTHERA amœna, A. spectabilis, A. latifolia, A. spathulata, A. paronychioides, A. major, A. aurea, A. amabilis and A. magnifica, 1s. per dozen, 6s. per 100, 50s. per 1000.

DAHLIAS, Single, Double, and Pompons, 2s. 6*d.* per dozen, 16s. per 100

" Cactus, 3s. 6*d.* per dozen. [tisement.

PANSIES, 2s. 6*d.* per dozen, 16s. per 100. See separate adver-

PYRETHRUMS, very choicest varieties, 4s. per dozen.

PHLOX, very choicest varieties, 4s. per dozen.

VERBENAS, in variety, 6s. and 8s. per 100, 1s. 2*d.* and 1s. 6*d.* per dozen. See separate advertisement.

CARNATIONS and PICOTEES, very best named varieties, 4s. per dozen, 30s. per 100.

PINKS and SCARLET CLOVES, named, 2s. 6*d.* per dozen, 16s. per 100.

PRIMULAS, Double, Rose and White, in 60-size pots, very good, 6s. per dozen, 45s. per 100.

The above plants are not only of A1 quality, but being nearly all from single pots have good roots and are ready for immediate effect. Package free. Cash with all orders.

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CUTTINGS of Choicest New FLORISTS' FLOWERS (1885) very cheap. Per dozen varieties:—Fuchsias and Pentstemons, 2s.; Zonal Pelargoniums, single and double, Ivy-leaf, &c., 3s.; Chrysanthemums, 1s. 6*d.* Or to include new of last three or four years—Chrysanthemums, 5o for 3s.; Fuchsias, 50 for 3s.; Zonal Pelargoniums, double and single, Ivy, &c., 100 for 8s. Plants also supplied very cheap. All free by parcel post. A quantity of choice single Dahlias, fine plants, 2s. per dozen.

CATALOGUES free on application.

RICHARD PANNETT, The Nursery, Chailey, Sussex.

CARNATION "PRIDE of PENSHURST."—The most beautiful yellow (First-class Certificate Royal Horticultural Society). Vigorous grower, perpetual bloomer, suitable for either pot culture or borders, perfectly hardy, forces well. Healthy, well rooted plants, established in pots, of this lovely variety, 12s. per dozen; sample plant post-free for fifteen penny stamps

F. WEBBER, Quarry Hill Nursery, Tonbridge, Kent

FOR SALE, MYATT'S EARLY OFFENHAM CABBAGE SEED, saved from stems carefully selected. This splendid strain is unequalled as an early Cabbage. New Seed of good growth, 5s. per lb. Special quotations for large quantities. Apply to

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100 Herbaceous and Alpine Plants for 25s

RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.

RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

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ADIANTUM FRAGRANTISSIMA (First-class Certificate).—In introducing for the first time this lovely Fern, which was raised in their establishment, E. G. H. & Son have no hesitation in saying that never since the introduction of A. Farleyense has anything approaching such a charming variety been introduced; in habit it is all that can be desired as a decorative plant, the fronds rising well from the crown, terminating into a graceful curve, forming quite a plume-like frond, while the pinnæ, which is of moderate size, is beautifully cut, as in the way of A. Farleyense alcicorne, and in a young state; the centre of the same is of a golden-green, verging off into a paler shade, and changing to a deeper green as it approaches maturity; and in addition, when growing, it is deliciously fragrant, a few plants filling the house with a sweet perfume. Either as a valuable addition to a collection, or for exhibition or decoration, this remarkable novelty is certain to become the most popular Adiantum in cultivation. The fronds when cut last a length of time; some which were cut as an experiment remained in perfection more than a week in a warm room. Being of a vigorous constitution, and of such surpassing elegance, it will quickly supersede the old favourite, A. cuneatum, for all purposes.

Healthy plants, in 4-inch pots, each, 5s. and 7s. 6*d.*; 6 for 21s. and 30s

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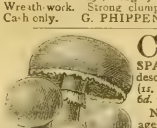
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Catalogues free to Buyers

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Norwegian Fish Potash Manure.

Apply to all Nurserymen, or to

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ORCHID PEAT.

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Fish Manure is composed of flesh and bone—the best of all fertilising materials, and in combination with pure Salts of Potash and Magnesia forms a perfect fertiliser, as it contains the important ingredients of Ammonia, Phosphates and Potash in their most concentrated and available form. It is equally valuable for Farm Use, for Fruits, Flowers, and Vegetables, and produces wonderful growth, especially with Vines.

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Per Cent.		Per Cent.
7.0	Ammonia	8.30
20.0	Phosphates	9.0
15.0	Potash	15.0
10.0	Magnesia	10.0

Or, in other words, a ton of COD FISH and POTASH is composed, approximately, of—

10 Cwt. of Dried Fish Flesh—Organic Matter.
4 ,, of Dried Fish Bone—Phosphates.
3 ,, Sulphate of Potash.
2 ,, Sulphate of Magnesia.
1 ,, of Moisture, and ingredients not of manurial value.
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The Prices are **£10** per Ton (bags included) for the **COD**, and **£9** for the **HERRING**, on Rails in the Docks, subject to Discount for prompt Cash.

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IN TINS.—2 lb. for 1s.; *and*
IN BAGS, 7 lb., 2s.; 14 lb., 4s.; 28 lb., 6s. 6*d.*; 56 lb., 10s. 6*d.*; 1¾ cwt., 20s.; 2 cwt., 30s. Bags free.

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SILVER SAND, coarse, 1s. 6d. per bush., 14s. half ton, 24s. ton.
RAFFIA FIBRE, best only .. .. .. 1s. per lb.
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MUSHROOM SPAWN, finest Militrack .. 5s. per bushel.
SPHAGNUM MOSS, all selected, 2s. per bush., 6s. per sack.
CHUBB'S "PERFECT" FERTILISER, the Best Food for all kinds of Plants, Flowers Fruits, Vegetables, &c. Tins, 1s. 6d.
Bags—7 lb., 2s.; 14 lb., 3s.; 28 lb., 5s.; 56 lb., 14s.; 1 cwt., 22s.
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The Original and Only Genuine.



A True Gardener's Friend.

Effectually Destroys Weeds, Moss, Dandelions, &c., on Garden Walks, Carriage Drives, Stable Yards, &c.

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GISHURST COMPOUND, used by leading Gardeners since 1859 against Red Spider, Mildew, Thrips, Green Fly, and other Blight. 1 to 2 ounces to the gallon of soft water ; 4 to 16 ounces as winter dressing for Vines and Orchard-house Trees ; and in lather from the cake against American Blight. Has outlived many preparations intended to supersede it. Boxes, 1s., 2s., and 10s. 6d.

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JOHN SHAW AND CO., 30 and 31, Oxford Street, Manchester.

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Apply to the Sole Proprietors and Makers, The STANDARD MANUFACTURING COMPANY, Strand Arcade, Derby ; or of the principal Ironmongers and Seedsmen.

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THE GENERAL WOOD COMPANY, Swedish Wharf, High Street, Peckham, London, S.E., supply all descriptions of WOOD, at Wholesale Prices for Greenhouse FRAMES, Manufactured DOORS, FLOORING, MOULDINGS, SASH-BARS, KICK and SCAFFOLD POLES, SCANTLINGS, and BOARDS. Manufactured to exact sizes, and prepared ready for fixing.
Apply for quotations as above.

PURE WOOD CHARCOAL FOR VINE BORDERS, FRUIT TREES, STRAWBERRIES, ROSES, FLOWER BEDS, POTTING PURPOSES, AND GENERAL HORTICULTURAL PURPOSES.
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The *Gardeners' Magazine* says :—"We must give these the palm before all other plant labels, as the very first in merit."
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Propagating and Cucumber Glasses, and all Miscellaneous Glass Articles, can be obtained from

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Stock List and Prices on application. Quote *Chronicle.*

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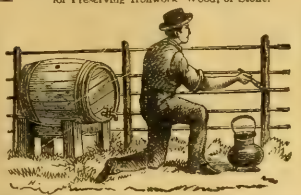
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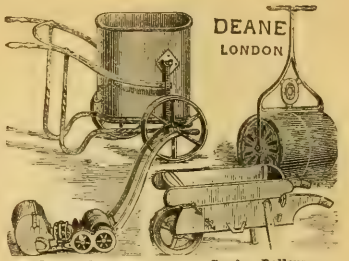
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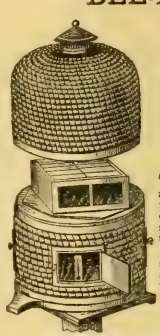
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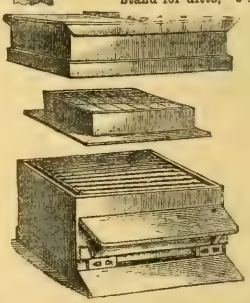
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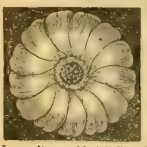
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SATURDAY, JUNE 19, 1886.

ASHBURNHAM PLACE.

THE family, whose head is the Earl of Ashburnham, appear to have taken its name from the Ashbourne, a streamlet running through the parish. They are a Saxon family, of great antiquity, holding high place at the Conquest. When William of Normandy won the battle of Hastings, and appeared as King of England before the strong fortress of Dover, Bertram de Ashburnham, High Sheriff of Sussex and Surrey, held the important post of Constable of that great stronghold. He refused to obey King William's summons; and, although the exasperated Norman brought him to the block on the spot after capturing the Castle, he probably admired his fidelity, for he left the family in possession of their estate. They held fast to it during sixteen generations, and handed on the line through heirs male till 1620, when Sir John Ashburnham sold the domain in consequence of having committed the enormous crime, as it is generally considered—stainless though the conduct be—of being poor. A genealogist might say, "Even this is not so heinous as the important ending of a line in daughters." Poverty seems rather a disease than a crime, and it seems it may be sometimes cured, for this ancient family were soon again in possession, and they have remained so, planting their heraldic Ash tree in a coronet which is now worn by the fifth earl.

Quaint old Fuller well described the Ashburnhams as a family of "stupendous antiquity"—wherein "the eminence hath equalled the antiquity." In Lower's *Worthies of Sussex*, they fill a prominent position as zealous magistrates who for hundreds of years held posts of great usefulness and honour, establishing a name for patriotism which became hereditary, showing itself century after century in times of difficulty and danger. In one of the thirty coffins of the heads of the house deposited beneath the chancel of the church close to the Hall, is that of the friend and servant of Charles I. to whom he handed his watch when standing on the scaffold, and this relic is still preserved with some of the King's garments stained with blood, and other sad memorials. William III., a good judge of merit, created the first Baron of this family, whose son married, first, the daughter of a duke, and secondly, the daughter of an earl, when he was himself advanced to that rank. Several houses have followed each other on the site of the present extensive dwelling which was built in the seventeenth century, and repeatedly improved during the next 150 years, till the late earl, inheriting a picturesque house of red brick with four irregular fronts, left it cased with dark red brick of very durable appearance, three storeys high—a house of great size, and a very comfortable as well as

handsome interior. The reader may imagine it with a terrace on the east front, and an unbroken and wide-reaching view of the park and its fine woods. On the west front are flower borders edged with Box, a large conservatory, some beds of low shrubs, and a fountain throwing its jet from an exceedingly handsome granite bowl. The pathway through this garden leading to the door of the billiard-room has on the right a row of evergreen Oaks, which secure for this delicious retreat its air of privacy without closing the view, as they stand sufficiently wide apart for a prospect which, in June, I thought could hardly be excelled as a woodland scene close at hand. The Cupressus macrocarpa is here too, with the Cupressus Lawsonii, bearing the promise of a heavy crop of seed, and the red Thorn in great beauty, as well as the bright-leaved green and variegated Euonymus japonica. These and the other shrubs are not uncommon, and you meet with the first-named tree, the Cupressus, in hundreds of gardens on the seaboard of Sussex, but such large and handsome specimens as these are rarely seen. Strolling among the shrubs, little unexpected roseries and arbours and pleasant nooks where creepers trail, remind you that the pleasure of a shrubbery depends less on the sorts of plants than on their arrangement and the touches of good taste which the presiding genius has displayed.

Description is so inadequate, that I would fain avoid it, but the south front is the most extensive, and its windows command a view which arrests the steps, especially in June, and makes one pause to admire it. Two terraces lead by their flights of steps to the park. You do not see the whole of the 850 acres from this point; but there is a long stretch of green turf, and a long view of the lake up the valley which was formed a hundred years ago, and from the curved outline of water the wood rises in endless lines of green and its higher ground closes the view. The park, no doubt, formed part of the ancient Forest of Dallington which Lord Ashburnham owns, and which, like St. Leonard's Forest and other remnants, form part of the once impenetrable Wealden. It has the great merit of an exceedingly undulating surface, besides the advantage of a soil which produces every kind of timber tree, including Oaks of great spread and beauty; but the "Hastings sands" do not encourage depth of root or length of bole in the Oaks. The Beeches are magnificent, the Sweet Chestnuts very fine, the Ilex a weed of the place which has required thinning, and a Walnut grove is a feature here as well as the Hollies, Portugal Laurels, and Rhododendrons, wherever these have been planted in the salient positions, or on the margin of the many miles of dry and well-kept walks, which open up the home woods. Stately Elms, too, are grown here, and one of the noblest flanks the flight of steps on the south front, a gigantic Cedar of Lebanon standing opposite. The C. atlantica and the Silver Fir are very fine. In short, the soil is of the same character as that at Normanhurst, which I described last year, with water added, and with some better land in proportion to the greater space. Every kind of Conifer thrives immensely on these sandy loams and rubbles; but above all the rest at Ashburnham the Pinus insignis is the most remarkable.

I entered the park with Mr. Holmes, the gardener, at the corner nearest the sea, which is about 8 miles distant, and in full view of Pevensey Marsh, a green level of rich grazing land spotted with sheep and cattle, and bounded by the undulating line of the South Downs. On such a site, so high and near the sea, though somewhat sheltered from the worst aspect, the west, several score of Pinus insignis, thirty years planted, have flourished and grown to a great size. Three or four score of these tender and handsome Conifers stand here, all as green as grass with dense foliage covering large trunks furnished with many boughs. Near the house there is a larger number of still finer specimens of this Pine lining a long walk in which the wind whistles just as it might do in a common wood of Scotch Fir. Yet this is a tree which is rare in some parts of England, tender almost everywhere, and which Mr. Douglas named "remarkable," from its singular beauty. These fine specimens measure from 45 to 50 feet high, and from 8 to 9 feet in the circumference of the trunk. On the lower terrace of the south front I observed the Pomegranate and Myrtle flourishing against the low wall dividing it from the terrace above, and these are statistics bearing on climate which gardeners will appreciate.

Among notable objects near the house are an Ilex hedge 8 feet high and 6 feet thick; some thick hedges of clipped Yew, banks of Rhododendrons and Portugal Laurel, topped and formal for the sake of the view; a seedling Eucalyptus, twelve years old, and 30 feet high; and the Yews and evergreens of the winter garden by the water side. You may pass from this part of the shrubberies into the adjacent woods, which are opened up by well gravelled walks leading to many a Primrose bank, where that very fashionable flower may be gathered in various aspects during ten months in the year.

The kitchen gardens, which, with the pleasure grounds, employ sixteen gardeners, include 5½ acres within the walls, and a goodly garden with fruits and filberts, and famous Cranberry beds outside. Among the novelties are two houses of Sultana Grapes, and another devoted to the Abelmoschus esculentus, which is used entirely for soups, and is cultivated for that purpose here, and at Mentmore, I believe, though not to be often met with elsewhere.

The Cranberries are grown here in several tanks fed from the lake. Wooden frames are covered with peat in which the Cranberries are planted, and the water filling the tank below rises to the surface and flows away by the outlets provided for that purpose. It is kept constantly flowing from March till July, during five months, and the peat is then allowed to dry as it would do in a natural Cranberry bog during the hot season, while the fruit ripens by bushels.

I have omitted to mention the French Walk by the waterside, whose high and trimmed hedges of Portugal Laurel and Yew on either side form an alley in the French style, in short curves instead of being straight. It is a charming lovers' alley, such as time and much training could alone produce. Time is a grand gardener when duly taken by the forelock and guided in the right direction, and these evergreen walls, which occur as though by chance here and there about the grounds, are quite in keeping with the great antiquity of a park that must have been fenced from the primeval forest, and of a family that preceded the Conquest.

The house with its libraries of rare books and manuscripts, and its cabinets and pictures of great and, I may say, romantic value, cannot be described here; but I must notice the numerous Oaks which now embellish many of the rooms in the form of wainscot or flooring. Great Oaks are magnificent when living, and not less so sometimes after they have been converted into boards. Many of the best rooms, which are uniformly well proportioned, owe most substantial ornament to the Oaks which had grown in the park from acorns planted by Ashburnhams, for the sake of their successors, six or eight centuries ago. The entrance hall on the south front of the house, a noble apartment, 50 feet in length by 28 feet wide, is floored by the boards of a single tree. The doors of the house are sometimes of Mahogany 3 inches thick, if I am not mistaken; but Oak, the native and the best and handsomest timber of England and the Weald, prevails. In the principal library for printed books the walls of the spacious room are covered with wainscot made entirely of pollard Oak, free from polish or varnish, and nothing of the kind could be more beautiful. Substantial ornament prevails here, and seems befitting in a race whose family tree has stood so long. *H. E.*

ROUND LIVERPOOL.

(*Continued from p.* 754.)

LISCARD HALL, BIRKENHEAD, THE RESIDENCE OF HAROLD LITTLEDALE, ESQ. — This place is situated on the Cheshire side of the Mersey, one mile from Seacombe Ferry, from which trains at short intervals pass the gates. Liverpool has been long celebrated for the exceptionally fine fruit grown in the surrounding locality, especially Grapes. Liscard Hall has done its full share in contributing to the reputation which the district has thus gained. The names of Mr. Littledale with that of his then gardener, Mr. Meredith, were familiar as household words amongst admirers of fine fruit, if we mistake not, forty years ago; and there is little doubt that the magnificent Grapes and other fruit that annually used to appear from this garden on the exhibition stages at the Liverpool shows have had an influence in arousing a spirit of emulation, the result of which is seen in the number of growers that have since appeared in the district who have shown their ability to produce fruit in its finest form. The cultivation of outdoor fruits both on the walls and in the open is in no way behind that grown under glass, and is one of the leading features of Liscard though the immense extent of building that has taken place on this side of the river within the last quarter of a century has much interfered with the bearing of the tenderer kinds, such as Apricots and Peaches. The western gales that sweep from the Channel over places so near the coast on this side of the kingdom, with their forces so far little checked and unexpended, are such that those who live further inland have little conception of. Ordinary standard Apples or Pears would probably in four seasons out of five have three-fourths of their crop blown off before it had come to maturity. To meet this a system of training the trees of these fruits has been adopted as shown in our illustration (fig. 173). A considerable portion of a good sized fruit garden is filled with these trees; the stems vary from 2 to 5 feet in height, the branches, as shown, being trained out horizontally, and ultimately, as they extended, brought down with their extremities to within a foot of the surface, at which point each is secured to a stake driven into the ground. The trees vary much in size, the largest being as much as 15 feet in diameter, with thick, aged-looking stems. The whole are models of skilful cultivation, and, we understand, continue to bear well. This year they were literally sheets of bloom from end to end. On the sides of some of the walks are low trellises covered with Pears. There is a large extent of wall, every foot of which—and all the available buildings, roofs as well as walls in some cases—are occupied by a grand lot of trees, mostly Pears, which keep on bearing abundantly.

Turning to the indoor department, there are now only two houses devoted to Vines, the others having been filled with Roses and other things. These two vineries are large, and have recently been replanted, the first with Black and Golden Hamburghs, the adjoining one with mixed kinds; the Vines are in good condition, and coming into a bearing state. A long house or corridor is planted with Figs on the back wall, all Brown Turkey, carrying a good crop. Peaches are grown extensively, three large houses being occupied by them; the trees are in good order, bearing abundantly. One tree of Royal George, forty years old, is still in good condition, and Mr. Smith may be congratulated on his ability to keep old Peach trees in a healthy state. In the conservatory are some very fine Camellias. Several other houses are devoted to plants of various kinds.

CLEVELEY, ALLERTON, THE RESIDENCE OF T. M. TIMMIS, ESQ.,

Is reached by train from Lime Street to Allerton Station. This is a comparatively new place, with

the grounds well laid out. The style of planting in masses has been principally adopted, and now that the shrubs are large enough to show their true character the advantage in general effect of this system over the old course of dotting in the plants of the various kinds used singly shows itself in a way that cannot be misunderstood. Almost all kinds, both deciduous and evergreen, appear to luxuriate, thriving at a rate that will at once necessitate some being thinned out, or the knife being used to an objectionable extent.

The houses are nearly all new, extremely well built, and sightly. The principal lot are connected with a corridor 110 or 120 feet long. This sort of arrangement has many advantages when, as here, the precaution has been taken to leave enough space between the houses to prevent their shutting out the light from each other. As a matter of course, they are principally span-roofed. One of the houses is filled with a good collection of Dahlias, which, at the time we saw them, were blooming well. Considerable numbers of greenhouse Rhododendrons were associated with them. Another house is occupied mainly by Camellias—fine plants in good condition. Overhead are grown good specimens of the red and the white Lapagerias. In the stove are handsome examples of Allamandas, Anthuriums, Stephanotis, Nepenthes, Crotons, Palms, and others of like character. Dispersed through several houses there is a good selection of Orchids, amongst which may be named beautiful plants of Phalænopsis amabilis, P. Schilleriana, and others. The Cattleyas and other species are also very well done.

There are three or four vineries, planted last year, containing Hamburghs, Muscats, and late kinds. One house is to be confined to Madresfield Court alone. The last house on the southern side of the block is a lean-to, with Ferns and similar things planted out in rockwork; Lycopodiums, Ferns, &c., cover the back wall.

The gardener, Mr. Cromwell, deserves a word of praise; for the condition of the place, both inside and out, is such as to make it a pleasure to look on.

The Botanic Garden, Liverpool.

The Liverpool Botanic Garden, in which the great show is to be held, is situated in Edge Lane, on the eastern outskirts of the town, adjoining the Wavertree Park, which abuts on the garden on the southern side, and is connected with it, the public having access to both. The garden is easily reached from the town by rail from Lime Street Station to Edge Hill, which is near at hand, or by the trams, which run at short intervals from the centre of the town past the entrance gate to Wavertree Park, through which the garden is reached in a few minutes. The present garden was made in 1831, and for a time was kept up by subscription, a charge being made for admission to non-subscribers. In 1846 it was purchased by the Corporation, and opened to the public. Liverpool was in possession of a botanic garden before the present one came into existence; the original establishment was laid out at the beginning of the present century, and was situated in Oxford Street East. This gives some idea of the extent to which the great shipping centre has increased during the time, as the site of the old garden is now not far from being the centre of the town, which, by the way, threatens to repeat a like engulphing process with the present garden. The long lines of bricks and mortar have already reached right up to its walls, the ever attendant smoke from which, coupled with the fierce blasts that sweep over the land hereabouts, are alike trying and disheartening to those who have to do with the cultivation of trees and shrubs, as well as other outdoor plants, which are grown here under difficulties such as few have to contend against. The garden is enclosed with high walls, on which are grown numbers of plants of various kinds that will thrive in the open ground in some parts of the kingdom, but will not do here without the protection of a wall. Amongst these may be named Magnolia conspicua, M. purpurea, M. grandiflora, Garrya elliptica, Buddleia globosa, Cercis siliquastrum, Lonicera Ledebourii, Salisburia adiantifolia, Lomatia latifolia, Lycium barbarum, various Ampelopsis, Maclura aurantiaca, Cydonia japonica, Styrax officinale, Euonymus obovatus, and a nice selection of Ivies. A specimen of Wistaria sinensis shows the result of the encroachment of the town; it originally covered a length of wall over 250 feet from end to end of its branches; it still lives, but is not in the condition it was. In a garden circumstanced as this is it becomes necessary to fall in with the tastes of the public, consequent on which summer bedding to a considerable extent is carried out, and as known to those who are in the habit of seeing the display in the season when it is in condition it is well and effectively done. The plants chosen are such as are found to thrive best in the place; spring flowering subjects such as Violas and early Pansies, are freely used, and with good effect. But the leading

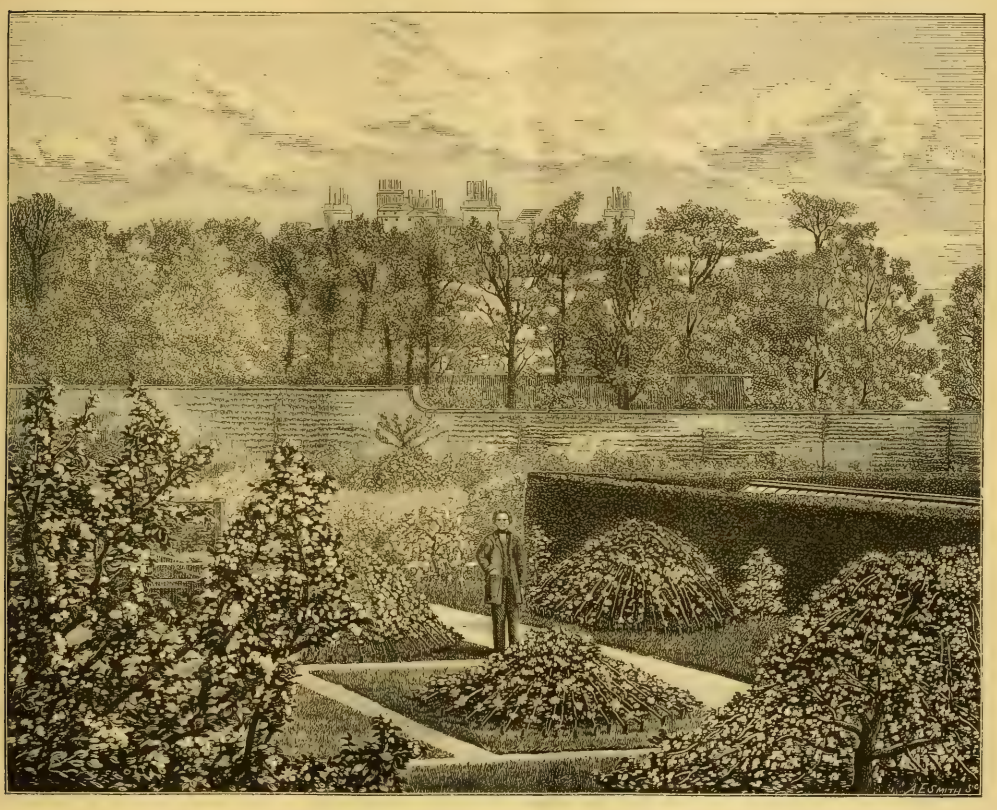


Fig. 173.—Fruit Garden at Liscard, near Liverpool. (see p. 784.)

feature in the outdoor department is the extensive collection of hardy herbaceous plants, which are carefully arranged and labelled in their natural orders; they include most of the leading free-growing kinds, which thrive well, the moist climate evidently suiting them. But in their case it is requisite to provide shelter, otherwise they would be literally blown out of the ground by the western gales. To meet this hedges are provided: these run from north to south, sufficiently together across the ground occupied to break the force of the wind in the exposed places; in others the shelter afforded by trees is taken advantage of, whilst rockwork is provided for the growth of such things as require it, and that will succeed in the neighbourhood.

Of evergreen shrubs the selection is confined principally to the best hardy free-growing sorts. Some of the hardy Ericas do much better than might be expected, and Rhododendrons succeed well, as they do in most parts of Lancashire, the moist cool nature of the soil suiting them. A selection of good hybrid varieties, planted two years since, have made satisfactory progress; but here, as in various other places on this part of the coast, the past winter has gone to confirm the superiority of those with Catawbiense blood in them over the ponticum hybrid, or even the common ponticum, as it has suffered to an extent that in many cases has left the plants all but dead. Of the smaller growing trees are several kinds of Pyrus, noticeable amongst which P. salicifolia thrives as well as could be desired—this spring the trees were literally smothered with flowers. Common Thorns and others of the Cratægus likewise do well.

In a situation like this, where even plants that are exceptionally accommodating have a hard fight to maintain a decent appearance out-of-doors, it is natural that more should be done in the way of cultivation under glass. The principal range of houses has been built within the last dozen years; it consists of a central house 50 feet by 50 feet, and 50 feet in height, principally devoted to Palms. A fine example of the Arenga Palm is planted out in the bed which occupies the centre of the house; a nice specimen of Bamboo also has a place in the bed, whilst the four corners each contain a good specimen of Latania borbonica. The side stages are occupied by various Palms, the Sugar-cane, the Coffee plant, and others of like description that are interesting to the general public.

Two span-roofed houses, each 68 feet long by 30 feet wide and 20 feet in height, flank the Palm-house on the eastern side, and two, similar in size, on the western side. Commencing at the eastern end, the first is mostly devoted to Ferns, which include grand examples of the leading tree kinds, grown in large slate boxes, the largest of which stand in line down the centre of the bed; of these there are a pair of Dicksonia antarctica, 20 feet high, with thick stems 10 feet to the lowest fronds; Alsophila pinnata, A. australis, Cyathea princeps, C. medullaris, C. dealbata, and C. excelsa, fine plants, in very good condition. In the outer rows of the bed are Dicksonia squarrosa, D. antarctica, and others, associated with good examples of Gleichenia speluncæ, G. dichotoma, Lomaria Dalgairnsiæ, L. Baueriana, L. nuda, and Polystichum capense, with many others that succeed in a like temperature. A portion of the roof is occupied by Lapageria alba, L. rosea, Habrothamnus Newellii, Hibbertia dentata, and others, which are kept sufficiently thin so as not to shade the plants underneath too much.

The next house contains Camellias and other plants that thrive in a like temperature; here again the arrangement consists of a centre bed, running the entire length with a path round it, and a stage along the front. The Camellias are planted out in three rows from end to end of the bed; they are large plants in good order. The rest of the available space is devoted to New Holland plants of various kinds. The roof climbers which give the requisite shade to the Camellias consist of Abelia quinata, Trachelospermum jasminoides, the variegated form of Cobea scandens, and others.

The first of the two houses on the opposite side of the Palm-house, already described, is occupied principally by Ferns that require warmer treatment than those located in the first division of the range. Amongst an extensive collection may be named Angiopteris evecta, Marattia Thwaitesii; Cibotium regale, C. Barometz, Stenochlæna scandens, Microlepia platyphylla, &c. On the stages are quantities of Davallias, Gymnogrammas, Adiantums, Polypodiums, Acrostichums, and others. The back wall is covered with silvery-leaved Begonias of the Rex type, intermixed with Nephrolepis, which elegant habited Ferns associate well with the massive foliage of the Begonias. This wall is one of the most successful arrangements of the kind that I have met with, being well furnished even thus early in the season, before the plants have had to make much growth.

The next house, which is the last of the range, contains stove plants that require a high temperature, and amongst quantities of interesting kinds suitable for an establishment of this description there are many that are not often seen; of these may be mentioned a couple of plants of Garcinia mangostana, G. Livistonensis, some 10 or 12 feet in height; Pimenta vulgaris (the Indian Pepper tree), Eugenia malacensis, Hura crepitans, Elæodendron glaucum, Bixa Orellana, Gilibertia palmata, &c., mostly in the shape of large healthy specimens. Amongst the occupants of the side stages were various Dracænas, including a fine pair of D. Draco, Aralias, Maranta arundinacea, Crotons, Pandanus, Cinnamomum verum, Urania speciosa, and Papyrus antiquorum. A selection of climbing plants occupy the roof, consisting of such things as Combretum purpureum, Quisqualis pubescens, Stigmaphyllum ciliatum, Thunbergia Harrisii, Clerodendron Balfourii, Stephanotis floribunda, and various Passifloras. The beautiful Mackaya bella was flowering in this house. It is worthy of a place wherever there is a suitable structure available. The houses composing this fine range are substantial and well built, most of the materials used being of a non-perishable nature.

At the back of this range are situated the various houses devoted to the cultivation of Orchids and other plants, including the large quantity of bedding plants annually required. These also are large, roomy, and well constructed, and stand ends north and south well away from trees or other objects calculated to diminish the light, consequently the plants are enabled to grow in a way that all the skill and attention possible could not secure in structures where this all-essential element is deficient. The house containing the East Indian Orchids is 60 feet long by 20 wide; the plants look well, with the leaves short and stout, and of the peculiar bronzy tint that is indicative of health. Amongst a few that may be mentioned are Aërides crassifolium, A. Fieldingii, A. Lobbii, A. quinquevulnerum, A. crispum, A. odoratum, and A. virens. Of Vandas V. tricolor was in flower, as also was V. suavis, V. Hookerii, and V. teres are growing nicely. There are nice plants of Saccolabium guttatum, S. Blumei, and S. ampullaceum. In a thriving lot of Cypripediums, C. Lawrenceanum, C. niveum, C. Hookeri, C. lævigatum, and others, are doing very well; Cœlogyne pandurata was nicely in bloom, and likewise the singular looking Uropedium Lindeni as well as Phalænopsis Stuartiana and P. Schilleriana.

Next we come to a house similar in length to the last, containing a mixed collection of stove plants, with a number of Dendrobiums hung near the roof, and a nice lot of Nepenthes of various kinds. In this house there is a tank wherein are grown various aquatics, including Nymphæa cœrulea, which was in bloom; the Lattice plant, Ouvirandra fenestralis, doing well; with Ceratopteris thalictroides, and others. Here are Cinchona, Cephælis, Psilotum triquetrum, and a number of variegated and fine-leaved plants.

Near this is the Mexican Orchid-house, in which are grown Cattleyas, comprising many kinds; Lælias, Cœlogynes, Cypripediums, and such of the Odontoglots as require a moderate amount of heat like O. citrosmum and O. vexillarium.

Two smaller houses contain Odontoglossums, such as O. crispum, O. cirrosum, O. Hallii, O. cordatum, O. odoratum, and others alike in character, which collectively are doing well. In one of these cool-houses there is a good collection of Sarracenias in nice condition, and with them Darlingtonia californica, Cephalotus follicularis, Drosophyllum lusitanicum, Droseras, and Dionæa Muscipula, all in a thriving state.

In another house there is a number of Amaryllis, many of which are seedlings from A. aulica and others.

One of the most interesting houses is a lean-to over 100 feet long, in which hardy Ferns are planted out in rockwork; of these there is a good collection, which, from the way they are starting into growth, evidently like the treatment they receive.

In addition to the various structures already noticed there is a lofty span-roofed house, about 70 feet long by 25 wide, in which are wintered pyramid and standard Bay trees, of which there are a large number; many of the pyramids are from 10 to 12 feet high With them is a specimen of Clethra arborea quite 10 feet in height. This fine plant is not grown nearly so much as it deserves to be.

The general keeping of the garden in the outside, as well as the indoor department, reflects great credit on the able Curator, Mr. Richardson, who has uphill work in contending against the natural difficulties present, and the smoke-laden atmosphere inseparable from the near proximity of the town. There is a good botanical library and herbarium attached to the Curator's house.

RAMONDIA PYRENAICA VAR. ALBA.

A BEAUTIFUL albino of Ramondia pyrenaica is now flowering in the gardens at Lachine, Chislehurst, the seat of T. Hodges, Esq., under the care of Mr. Barrell. The plant bears a number of trusses, one of which was shown to me the other day, and the size of the flowers shows it to be in robust health. This white variety is, I believe, very rare in cultivation; but as so beautiful a plant will be much sought after it is to be hoped that Mr. Barrell will endeavour to raise a batch of seedlings for distribution, and so increase the stock, for, like many other albinos, it will probably come true from seed. If planted in company with the typical violet-coloured form a lovely contrast will be the result. Speaking of the typical form, what a beautiful plant it is for massing on the shady side of some rather steep rockwork. In such a position a clump of about two dozen plants now forms one of the most effective patches on the rockwork at Kew, and serves as an indication on a small scale of what it must be in its Pyrenean home. It is a somewhat remarkable fact that the plant should be limited to the Pyrenees, while the other two species of the genus occupy other equally restricted areas in the East of Europe; R. Heldreichii being found only on Mount Olympus in Thessaly, and R. serbica occurring in a single spot in Servia. The allied genus Haberlea occurs about 300 miles east of this last-named locality, being confined to a single valley in Thrace, on the southern declivity of the Balkan range, where it abounds on schistose rocks, and during the flowering season forms a most beautiful feature in the landscape. Of this genus only a single species is known. No other members of the family Gesneraceæ are found in Europe, and some 2000 miles must be traversed before two others are met with in the north-west Himalaya, belonging, of course, to different genera. Still further eastward they become abundant. That the Gesneraceæ should have extended their migrations so far in this direction, and settled down each in a different locality, is a very interesting fact, and points to very different climatic conditions at the time when such migration took place. *R. A.*

TROPICAL GARDENING.

HUMAN nature, as a rule, exhibits a craving for things hard to be obtained. Setting the fashion of the period on one side, nothing shows this more plainly than the popular taste or longing for plants which are natives of a different clime to the one in which we reside. In a temperate clime tropical plants are considered essential, while if we are residing in a tropical one, then how beautiful to our ideas is the vegetation of the temperate region.

Residents in Jamaica are no exception to the general rule. The native trees, the almost endless list of herbs and flowers, beautiful in their formation, their variation, their numerous hues and colours, are by the majority of residents totally disregarded, and satisfaction is sought in the introduction of the flora of other countries often no better, seldom as good, as those of native growth were their beauties fully appreciated.

The attempt to cultivate these introductions often results—as might be expected—in complete failure, seeing that most of them are natives of temperate climes.

The question is often asked here, "Why is it I

cannot get such a plant to grow?—why do my Dahlias and Gladiolus so rapidly degenerate?" which, though apparently a very simple question in itself, involves a description of the principles of vegetable physiology, which is generally for the most part quite unintelligible jargon to the querist, and therefore if given falls flat, with the result of leaving the hearer still unconvinced, and with the determination in his mind to "have another try."

Flower gardening in Jamaica, especially among the European residents, consists in the main of a series of attempts at the cultivation of that class of plants usually to be found in the well-kept gardens of residents in a temperate clime. In the mountains, at high altitudes, where the climate is favourable, these trials are attended with a fair proportion of success, but on the plains the same exertions result, as a rule, in disappointment. Some may say, "But tropical plants flourish in a temperate climate." So they do, but then the means taken to enable them to do so are adequate to their requirements. There every protection is afforded them; houses are built, a costly system of providing them with the proper temperature is followed; soil is brought (sometimes for hundreds of miles) suitable to their requirements, and the knowledge and experience brought to bear upon the cultivation of plants render it a much easier task to the cultivator there than to the cultivator in Jamaica, where the means of instruction in these matters are not so easily obtained.

Who would think of building a house, to be permanently kept at a much lower temperature than the open air, in the Liguanea plains or other similarly situated place? Yet this is no more absurd than to apply heat for raising the temperature, for it would be done with the same object—viz., that of maintaining a suitable temperature.

It is a well-known fact that many plants belonging to the warmer European and Asiatic countries grow well in Jamaica with a little care, and give a fair return for the labour expended upon them; but in nearly all of these the close observer will detect a degeneracy, a falling off from the original type, so gradual, yet so complete, that in course of time they become changed in such a manner as to be scarcely recognisable.

An incident in the life of the great botanist, Linnæus, plainly indicates that temperature is one of the first points to be studied in connection with the cultivation of plants.

A person had a favourite plant; he supplied it with heat and moisture, and, indeed, with everything he considered it to require; the result being that it grew "small by degrees, and beautifully less." Linnæus, then a young man, but a student, requested that he might be intrusted with its treatment. After attentively studying the plant, he withdrew it from its previous situation and pampered treatment, and placed it in a corner where the cold, the wind, the rain, and the frosts of winter, could exert their influence with impunity. He had placed it in its element, in its proper temperature, and under natural conditions, and was rewarded by seeing it grow and flourish.

Such are the lessons to be learned by those who are fond of cultivation; nothing but a watchful eye on every requirement can conduce to success. If we see a plant flourishing, find out its family, and then subject its congeners to the same treatment, and in many cases success will ensue.

In Jamaica there exists an enormous amount of material for experiment and improvement; pretty wayside flowers, which if developed with half the amount of skill expended upon similar things in Europe, would repay the labourer a hundredfold.

It should be remembered, however, that it is no use to attempt to control Nature; that is beyond the art of man; but by a careful study of the various forms she assumes to attain her ends, he may assist her in all her efforts, and thus add much to the beauties of the vegetable kingdom.

It is not to be thought for a moment that the writer deprecates the enjoyment by those who wish to do so of their taste for the growth of plants not indigenous to the country, but he wishes to indicate to them that they cannot reasonably expect "great things" from such cultivation.

The writer's ideal of a tropical garden is that it should consist of a collection of the many handsome native trees, shrubs, Ferns, and Palms, and such other things as are indigenous to the climate, or can be obtained from countries enjoying a similar one. By grouping the most striking species in prominent localities, noting their time of flowering, and also the time when their foliage is in its fullest glory, for the sake of giving them proper arrangement; by filling secluded nooks protected from the sun's rays, and where the wind cannot ruffle their delicate textures, with the finer species of Ferns, of which no country, for its size, in the world possesses a greater variety than Jamaica, we should have something upon which the eye could rest with enjoyment at every season, and the garden would never be without some feature of interest to the true lover of Nature.

Have you a dry spot where nothing appears willing to grow? Then assemble together the different species of the Cactus tribe. The succulent Euphorbias, and other allied genera, and what was formerly nothing but "Macca"* will, by its various and curious habit of growth, become of interest to its possessor, and will enlighten the visitor as to the many strange forms of vegetable life to be found in the island.

Old trees which cannot be conveniently removed can, by putting in a plant of Bougainvillea or other climber at their base, be formed in a year or two into a magnificent spectacle.

Growing fences should be planted around the boundaries; bushy trees for wind-breaks, and small flowering plants and shrubs for foregrounds, suitable plants for which can easily be obtained at the local gardens supported by the Government.

An avenue of Palms, a woody retreat surrounded by groves of the Orange, the Citron, or the Jasmine, a corner in which bulbous and other plants of low stature find congenial home, borders well protected for plants noted for their beautiful leaves, and others for their flowers, are things which should be sought for, found, and admired in every tropical garden. *J. H. Hart, Jamaica.*

New Garden Plants.

TRICHOMANES (HEMIPHLEBIUM) PINNATINERVA, *Jenman, n. sp.*

ROOTSTOCK thread-like, dark tomentose; fronds scattered, 2—3½ lines long, 1—1½ or 2 lines wide, generally ovate, with rounded apex and base, or some more oblong, with the base more or less cordate, on dark tomentose slender stipites ¼—1 line long. Substance firm but thin, and very pellucid, finely reticulated; clear bright green; naked, or rib and veins at the base of the frond beneath rusty tomentose, and the margin, which is entire, set with a few short curved simple hairs, chiefly along the upper part of the fronds. Midrib continuous to the apex. Veins pinnate, rather open, erecto-spreading, simple, or the lower ones occasionally forked from the base, sometimes not reaching the margin, no pseudo-veins. A single sorus to each frond, terminal on the midrib. Involucre pellucid like the rest of the frond, immersed to the rather large expanded pellucid lips.—British Guiana, on trees, region of Mount Russell.

This is a very interesting little species, as it presents characters of a distinct feature from its neighbours. From the other members of Hemiphlebium it differs by the simple instead of stellated marginal hairs, the simple distant veins, with no obscure or false venules, the very pellucid involucres, the rounded lips of which are quite devoid of any dark edge. The involucre and lips are relatively rather large. The fronds vary less in shape than in most of its allies, are mostly rounded at both ends, but many show a tendency to broaden at the base, and are then cordate. The receptacles are included, and are sometimes very short, as seen through the translucent substance of the involucre. As in setiferum, the fructification is uniformly single. Locally it comes next labiatum (*Gardeners' Chronicle*, vol. xxiv., p. 7), which is distinguished by its different shaped fronds, radial venation, duplicated sori, and free involucres. *G. S. Jenman.*

CYRTOMIUM CARYOTIDEUM VAR. ATTENUATUM, *n. var.*

Fronds having the general characters of the type, but differing in the pinnæ being attenuately caudate.

This is a very pleasing form of a well-known evergreen Indian Fern, adapted for greenhouse cultivation. It was brought from India by a correspondent of Messrs. W. & J. Birkenhead, of Sale, near Manchester, by whom fronds were sent to us. In its elegantly caudate pinnæ the plant presents a feature which places it considerably in advance of the type form as a decorative Fern. The Messrs. Birkenhead inform us that, as compared with C. caryotideum itself, the form now under consideration is much more free in its growth, and not being so rigid in habit the plant assumes a more elegant contour. As a handsome free-growing evergreen greenhouse Fern, of medium size, this novel variety may be commended to the notice of Fern-growers. *T. Moore.*

* West Indian term for any thorny plant.

PTERIS TREMULA VAR. FOLIOSA, *n. var.*

Fronds decompoundly pinnate, as in P. tremula, but much larger, broader, and wavy, and having a much more leafy character than in the type.

Though belonging to a class of Ferns which can scarcely be said to rank amongst the most attractive of their race, yet P. tremula itself is a free growing elegant Fern, growing well in a temperate-house, and is really useful when fresh greenery is required to back up some more artistic effect produced by choicer materials. It has this further recommendation, that its culture is so easy that it may be successfully managed by any one who has the very slightest accommodation for the growth of Ferns. The present variety is one of a much bolder character, and may be a foliose sport, as we suppose, or it may be due to the influence of an allied species, such as P. flabellata, these curious supposed intermediates being now rather common visitors in our collections. It grows from 4 to 5 feet high, and produces freely its wide-spread pentangular fronds, which from the size and breadth of their ultimate pinnules assume a much more leafy character than the older form. It, therefore becomes very useful where plants of ample growth are required for any special purpose. The somewhat undulated character of the leafy pinnules and the drooping character of the branches of the frond together produce an effect which is pleasing, and give to it at once the status of an ornamental Fern of the useful decorative class. There are some positions where bold-growing Ferns of elegant character are invaluable, and this plant will be found perfectly well adapted for such positions as these. The variety is, we believe, in Messrs. Veitch's hands, and we have to thank them for the opportunity of seeing it, and thus being able briefly to record its merits. *T. Moore.*

EARLY HISTORY OF THE HEARTSEASE OR PANSY.

MANY years ago Lord Gambier brought me a few roots of the common yellow and white Heartsease, which he had gathered in the grounds at Iver, and requested that I would cultivate them. Always eager to please my ever-to-be-lamented master, I did so, saved the seed and found that they improved far beyond my most sanguine expectation. In consequence thereof, I collected all the varieties that could be obtained. From Brown of Slough I had the blue, and from some other person, whose name I do not recollect, a darker sort, said then to have been imported from Russia. These additions wonderfully improved my breeders; but still, though the varieties I soon obtained were multitudinous, their size was almost as diminutive as the originals. Nevertheless, his lordship was pleased, and thus I was amply rewarded. Up to this period, which was about four years after my commencement, I began imperceptibly to grow pleased with the pursuit, for all who saw my collection declared themselves delighted therewith. I then began to think that some of my sorts were worthy of propagation, and this circumstance led me to give one which took his lordship's fancy a name. This was entitled Lady Gambier, and as I struck cuttings of it they were given as presents by my employers to their numerous friends and acquaintances. The character of this flower was so very similar to that which was afterwards spread about under the name of George IV., that I have no doubt but that variety was a seedling therefrom. Who raised it I could never ascertain. This, though, in comparison with the worst flower now grown, and many even of the named varieties are still bad enough, would even beside them be reckoned little better than a weed. Still, Lady Gambier was the beauty of her tribe, and won golden opinions from every beholder. It was, indeed, in shape, little more symmetrical than a child's windmill, but looked in size among the sisterhood

like a giant surrounded by dwarfs. But the giant of those days would be a pigmy now, as Lady Gambier herself appeared in comparison with another flower, which I soon after raised, and which, on account of what I then considered its monstrous proportions, I christened Ajax. This I then thought never could be surpassed, and yet in shape it was as lengthy as a horse's head. Still I had worked wonders, and I resolved to persevere. I did so, and was at length rewarded by producing rich colouring, large size, and fine shape. The first large and good shaped flower that I raised was named Thompson's King. Still, up to this period, a dark eye, which is now considered one of the chief requisites in a first-rate flower, had never been seen. Indeed, such a feature had never entered my imagination, nor can I take any merit to myself for originating this peculiar property, for it was entirely the offspring of chance. In looking one morning over a collection of Heaths, which had been some time neglected, I was struck, to use a vulgar expression, all of a heap, by seeing what appeared to me a miniature impression of a cat's face steadfastly gazing at me. It was the flower of a Heartsease, self sown, and hitherto left "to waste its beauty far from mortal's eye. I immediately took it up,and gave it "a local habitation and a name." This first child of the tribe I called Madora, and from her bosom came the seed which after various generations produced Victoria, who in her turn has become the mother of many even more beautiful than herself. Hitherto, in the way of colour, nothing new had been introduced; white, yellow, and blue in their numerous shades, seemed to be the only colour the Heartsease was capable of throwing out till about four years since, when I discovered in my seedling bed a dark bronze flower, which I immediately marked and baptised Flamium; from this have sprung Tartan, Vivid, and King of Beauties, which has only bloomed this spring, and is decidedly the best flower of its kind that has ever been submitted to public inspection.

I have before me plates of Iver Beauty and Royal Crimson, and after a lapse of fifty years they are pretty and very interesting to me, recalling pleasant associations of my early days. *North Norfolk.*

THE HIMALAYAN SILVER FIR
(ABIES WEBBIANA).

THE accompanying (fig. 175, p. 789) is a sketch of a medium-sized and of a very large old example of the Silver Fir of the Himalaya as seen in Sikkim, where it attains a height of upwards of 150 feet, with a girth of 35 at 5 feet above the ground, and a bole 40 feet in length from the ground to the lowest branches. It is the Dunshing of the Sikkim Bhoteas, and occurs at elevations of 10,000—13,000 feet, forming dense black forests along the slopes and crests of innumerable ranges of that elevation that branch off from the great snowy axis of the chain towards the plains of India. In longitude it extends from 68° E. in the Safed Koh of Affghanistan, to 92° E. in Bhotan, and probably much further east in the same direction; but of this there is no evidence, the Himalaya not having been explored to the altitude it would affect in any portion of the chain which lies east of Bhotan. This gives it an extension in longitude of 1600 miles (following the curvature of the Himalaya), along which it gradually ascends in proceeding in the direction indicated, having its lower level at 5500 in the west, and 10,000 in the east. On the other hand the breadth of the belt over which it extends probably nowhere exceeds 40 miles. In Sikkim it attains a much greater stature in the interior valleys than in those towards the plains, where the trees are stunted, rarely exceeding 60 feet, and the number of dead individuals is great; this latter, however, is owing to preventable causes, of which the chief are fires, and the practice of removing the bark in large flakes to make cattle troughs, in which salt is put, by the Bhoteas and Nepalese graziers. In the north-west Himalaya, also, it is of much smaller stature than in the east, 17 feet being considered a large girth for the trunk, though 32 feet is attained in Kumaon.

The wood splits easily, and is used as timber in Sikkim, but sparingly, for far better wood is abundant in the lower forests where alone are human habitations. In the Western Himalaya it is described by Dr. Stewart (Conservator of Punjab Forests), and other authors, as having a soft white cross-grained wood, with the fibres often twisted, and as rotting so readily where there is much moisture, that it is considered as one of the least valued of Himalayan Conifers. On the other hand, in the drier regions of the North-west, as from Kunawur to Murree, the timber is a good deal used, and has been said to last as long as Deodar timber for indoor use or under shelter; and even as shingles it lasts eight to ten years. With regard to other uses of A. Webbiana the chief are that of the twigs and leaves for fodder in the basin of the Jhelum River; of the white resin it yields as a medicine vaunted by the natives as a cure for headache and neuralgia, and of the cones as a dyeing material. As to the latter use further information is much wanted. The cones, which often become 6 inches in length, are of a lovely violet-blue, and I was assured in Sikkim, as other travellers have been in Nepal and probably in other parts of the Himalaya, that a dye is extracted from them, but I failed in procuring any specimens of the dye or of articles dyed with it, or any definite further information. This

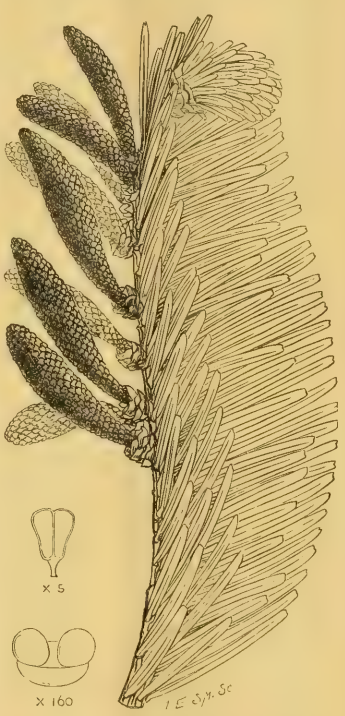


FIG. 174.—MALE CATKINS OF ABIES WEBBIANA: CULTIVATED SPECIMEN.

property of the cones is commemorated in the trivial MS. name proposed for the tree by Wallich of Pinus tinctoria, proving that their reputed use as a dye was known to the Nepalese.

Dr. Watt, in his most valuable *Dictionary of the Economic Products of India*, has discussed other real or supposed medicinal purposes to which A. Webbiana is put, and especially its identity with the famous Tálispatra of the Hindoo (a word of Sanskrit origin). Unfortunately there are several rivals for that name, especially Flacourtia Cataphracta, Taxus baccata, and Cinnamomum Tamala, one or other of which is used as a family medicine, as an antiperiodic in fevers, in children's ailments, and as a tonic after parturition.

The above notes on A. Webbiana apply wholly or in part also to A. Pindrow, for no botanical distinction is drawn between them by later Indian writers; and it remains a question whether these are two species, or whether they are varieties of one. In a late number of the *Gardeners' Chronicle* (p. 648, May 29), P. Pindrow is stated to occur in Kumaon and Bhotan, that is, in both the eastern and western divisions of the Himalayan chain, and yet at the beginning of the same article the two trees (Webbiana and Pindrow) are said to "occupy different districts of the Himalaya." Now, the Pindrow certainly does not occur in Sikkim, neither Wallich nor I found it in Nepal, and it is extremely unlikely that it inhabits Bhotan. On the other hand, both species inhabit Kumaon. Gamble, in his able work on *Indian Woods*, regards Pindrow as a synonym of Webbiana; and Brandis, in his *Forest Flora*, is disposed to regard them as varieties.

The only critical comparison between Pindrow and Webbiana that is entitled to any value is Major Madden's "Observations on the Himalayan Coniferæ," in the *Journal of the Agri-Horticultural Society of India*, vol. vii. That acute observer states that the two are generally confounded by the natives in the north-west Himalaya; that Pindrow grows at a lower elevation than the other, forming a forest of unusual gloom in the Kumaon Alps, at elevations of 7500 to 9000 feet, ascending to the east of Mussooree to from 8000—9500 feet; that it flowers in April and May, the young cones attaining 3 inches in the latter month; and that the trunk branches close to the ground. Its botanical character he describes as consisting in the oval not cylindric cones, the more prominently eared ovate obtuse eroded and emarginate bracteoles, with a mucro of the same length as the border of the sinus. In Webbiana the bracteoles are more rounded, scarcely emarginate, and have a thicker and longer mucro. He considers Kunawer (the Sutlej River) to be the western limit of Webbiana, but he does not give the range of Pindrow, either eastward or westward. He says he has examined the supposed Pindrow of Bhotan, and proved it to be Webbiana.

Lastly, referring to the herbarium, I find that all the specimens named Pindrow by Indian botanists have more slender branches and much longer and more slender leaves, though there are some specimens that it is impossible to refer better to one than the other. Wallich has both in his great herbarium—one, P. Pindrow, with long slender leaves, and very slender branchlets, is his No. 6056, under the name of Taxus? Lambertiana, collected in Kumaon by Webb and Govan; the other, his Pinus Webbiana, No. 6058 (with synonym P. tinctoria), was procured by his own collectors on Gosain-than (Central Nepal), and has stout branchlets and short thick leaves. From this it would appear that the names Webbiana and Pindrow should be transposed, if it is intended to commemorate by the latter the name and labours of the discoverer of the latter (Captain Webb), and the two be kept specifically distinct. The plants grown at Kew (both now dead, but raised from Himalayan seeds under the two names) accorded with the above characters of a long slender-leaved and a short stout-leaved plant. The spring frosts and soil of Kew were, however, fatal to many attempts to grow either of the Himalayan Silver Firs.

With regard to the Affghanistan plants, without cones it is not possible to identify them absolutely; Griffiths has sent what in foliage is the true Pindrow, from the Safed Koh, together with what more resembles Webbiana. Dr. Aitchison's specimens from the Kurrum valley also more resemble Webbiana. It is curious to note that the further west the specimens come from, the whiter is the bark of the branchlets.

It remains to add, that the figure of A. Webbiana in the *Gardeners' Chronicle*, vol. xxii., 1884, p. 467, is excellent, as are the notes appended; but that those just published of both species in vol. xxv., 1886, pp. 688, 689, are totally unlike either, and should be suppressed; they do not represent either species as known to me, and I doubt either being rightly named. *J. D. Hooker.* [By an unfortunate misplacement of labels the male flowers of Picea Menziesii were figured under the name of Abies Webbiana at p. 688. The error was corrected in the next number. Fig. 154 represents A. Pindrow as cultivated in Wales, and was labelled as such at pp. 689 and 691. ED.]

SILVER-LEAF DISEASE.—There is a condition of things in stone-fruit trees, such as Plums, Peaches, Almonds, Apricots, and also in Portugal Laurels, which, for want of a better name, we have called silver-leaf. We have repeatedly examined such leaves, but never found any further injury than a separation of the upper skin from the substance of the leaf — whence the peculiar colour. It appears that in France the affection is called "plomb" (lead), and it has recently been studied by M. PRILLIEUX, who, however, does not seem to have been more successful than his predecessors in ascertaining the causes of this malady. The disease is a serious matter in Plum orchards, as it generally causes the death of the tree.

THE COLONIAL EXHIBITION.

No. IV.

STRAITS SETTLEMENTS.—This collection is a very large and varied one, and occupies a considerable space in the east arcade, near the Hong Kong court. The exhibits are largely drawn from the vegetable kingdom, articles in native woods and Bamboo largely prevailing. The following are a few of the most remarkable exhibits from the point of view in which we are specially interested. Several varieties of Gum Damar are shown, which, though called gums, are really resins exuded mostly by Dipterocarpeous trees. These resins are sometimes used for varnish making, but they appear to be used by the natives also for giving light, for here are exhibited implements called Damar-holders, which are described as being used as candlesticks, indicating that the Damar is burnt as an illuminant; the smoke given off must, however, be abundant and stifling.

The fibrous husk of the Betel-nut (Areca catechu) is shown as a paper material, and as a waste product is said to be produced in almost unlimited quantities. Considering the very general practice of Betel chewing by the natives of the East, and the abundance of fruits produced, as well as the thickness of the fibrous husk, the adaptation of this hitherto useless material would seem to be a very probable benefit for the countries where the Betel-nut Palm is common.

The fruits of Coix lachryma, better known, perhaps, as Job's Tears, are, as is well known, frequently used for necklaces, bracelets, and similar articles of personal adornment, but specimens are shown here of a dark-coloured elongated form, which are stated to be grown in small quantities by the Malays, and eaten in the same way as Rice, or made into a sort of bread. Another food-product of very much more importance is sago, from the trunk of Metroxylon sagu, which is cultivated extensively about Singapore for commercial purposes. Pearl sago is known in trade in different sizes, classified as small, medium, and large, but samples are here shown the "pearls" of which are as large as marbles.

The young leaves of Nipa fruticans are, it seems, used in the Straits for making cigarette papers, not that paper is made from the leaves, but that strips of the leaves themselves are used for holding the Tobacco. Regarding Tobacco itself there are many samples of very creditable appearance, and some cigars of very curious shape, being short and pointed at the ends, and thick and flattened in the middle. They are exhibited by the Deli and Langkat Cigar and Cigarette Company, and are called by the euphonious name of "Little Devils," the trade mark of which is a black devil rampant.



FIG. 175.—ABIES WEBBIANA. (SEE P. 788.)

(From a drawing made in Sikkim by Sir Joseph Hooker.)

BRITISH NORTH BORNEO.

In this collection Tobacco also forms an important exhibit; there are some fine brands, but the Tobacco is mostly of a dark colour; the cut Tobaccos are in long thin threads so common to Siamese and other Eastern sorts. A report on this Tobacco from experts in Amsterdam, dated so recently as April last, says, "The quality is beautiful, soft, and strong, and has that elasticity which is so liked for cigar purposes. The burning is sufficient, although the ash is not quite white, but our brokers say that this will improve by further fermentation. In general the opinion is in every respect favourable, and valuation above the average of Sumatra Tobacco. . . . We further have to observe that we did not mention to our brokers where it came from, and they therefore thought it was Sumatra Tobacco."

Special attention is also drawn in this court to the woods of the country, many of which are described as being both useful and ornamental. Unfortunately, however, the forest trees of Borneo are but little known botanically, and two or three only have other than native names. The whole of them, however, are good specimens of large size, well seasoned, and carefully smoothed or polished. In some notes on these timbers and their uses it is stated that some of them are valuable for world-wide uses, and exist in such quantities as render the use of them available in those countries where wood is scarce. In consequence of the figure and colour of some of these woods resembling certain well-known commercial kinds they have been named in trade Borneo Mahogany, Walnut, Cedar, Ironwood, and so on. Under the Malay name of Mirabou, the wood of Afzelia palembanica is shown. It is described as being plentiful in some parts of Borneo, and valuable for furniture, as it does not warp; is very durable, has a fine figure, and takes a good polish. It is proof against the attacks of ants, and can be obtained in logs 30 feet long and 2½ feet in diameter. Three different woods, known respectively as Rassak Banaar, Rassak Diaim, and Rassak Bungah, and said to be species of Vatica, are highly valued for their hardness and durability for house building, planks, piles, &c., all of them being proof against the attacks of insects.

A wood called in Malay Salangau, Seriah, or Majon, and in English Borneo Cedar, appears to be one of the very valuable woods of the country. It is described as a tall handsome tree, probably belonging to the order Dipterocarpeæ, and found formerly in abundance in the Malay Archipelago, and still obtainable in large quantities in British North Borneo. Several varieties of this wood are known, all of a more or less reddish colour, and all suitable for furniture. Although easily worked it is strong and tough, and takes a good polish. It can be supplied in any quantity in logs 40 feet long by 5 feet diameter. Perhaps one of the most striking woods shown in the collection is that of the Kayn Kapor (Dryobalanops aromatica); it is the source of the well known Sumatra camphor, which is found crystallised in interstices in the wood, sometimes in large masses. It is not so volatile as ordinary camphor, and is harder and more brittle; it is bought in quantities by the Chinese, who value it for its many supposed properties. The tree also yields by incision a fragrant aromatic oil. The wood, it seems, is very durable, easily worked, and is much used for house building, planks, &c. A very fine plank of this wood is shown. Some interesting samples of "Tankawang" fat or vegetable tallow are shown in this collection; the fat is poured into the hollows of big Bamboo stems some 2 feet or more long, and labelled as of two qualities, one being made from large berries, and one from small. The fat is used for frying fish, making cakes, and lubricating machinery. The source of the vegetable tallow is not accurately known, but it has been attributed on

the one hand to a Dipterocarpeous tree, and probably a species of Hopea, and on the other to a Sapotaceous tree, and perhaps to a Bassia. See *Pharmaceutical Journal*, Nov. 24, 1883, p. 401; December 15, 1883, p. 462; and December 22, 1883, p. 481. *John R. Jackson, Museum, Kew.*

Orchid Notes and Gleanings.

CYPRIPEDIUM OCCIDENTALE.

SOME persons no doubt would prefer C. spectabile to the species under notice, and probably they are right; but no one who has seen both and wanted to cultivate the most distinct forms, would rest satisfied with either one or the other. They are so abundantly distinct that neither could substitute the other, if both were obtainable. C. occidentale is a native of the Rocky Mountains and quite hardy, although it well repays the protection of a frame or cool house. The upright leafy stems are 15 to 18 inches high, and two or three flowered. The sepals are deep brown, especially the upper one, while the petals are of the same colour but lanceolate linear, much twisted, 2½ to 3 inches long, and hang down gracefully. The labellum is rather small, but pure white with purple lines internally, which in bright light, seem to shine through. A wonderful contrast in colour is exhibited by the bright yellow staminode spotted with brown at the tip and partly closing the orifice of the slipper. The flowers are delicately fragrant, showy, and the plant altogether worthy of extended cultivation. The upper part of the stem with leaves and inflorescence is figured in the *Gardeners' Chronicle*, n.s., vii., p. 725, fig. 117. It is closely allied to C. calceolus, which has, however, one or two flowers to a stem, with shorter less twisted petals and a pale yellow labellum. Another similarity lies in the delicate Primrose-like odour pervading C. calceolus, C. pubescens, and C. occidentale. The latter is flowering in the cool Orchid-house at Kew, together with C. parviflorum, C. pubescens, and C. spectabile. *J. F.*

ODONTOGLOSSUM ASTRANTHUM.

Two plants of this rare Odontoglossum are now flowering at Kew. It is not one of the most handsome species, though its peculiar colours and markings render it by no means unattractive. The ground colour of the flower is a pale pea-green, each of the sepals having a broad line, and the petals three narrow lines of olive-green from the base to the centre of each segment. The lip and column are also pale green, the former having a broad white margin, and the latter two small orange-coloured wings near the base. The tip of the rostellum is of a shining chestnut-brown. One of the plants has a panicle of numerous flowers, and established plants would probably prove to be very free-flowering like other species of the Myanthum set to which it belongs.

PLEUROTHALLIS RUBENS.

This is a very graceful and pretty species of a rather unattractive genus, the habit reminding one of Platyclinis glumacea (formerly called Dendrochilum), except that the racemes are erect. The specific name seems at first very misleading, for the flowers are pale yellowish-green, but the case is explainable by the fact that they become red in drying, and it was from a dried specimen that Lindley described the species. The change in colour may possibly result from not being dried very quickly; but in any case a specimen collected by Burchell well shows the change, the field note describing the flowers as greenish-yellow, while on the dried specimen they appear red. It is a native of Brazil.

DORITIS TÆNIALE AND VAR. ALBA.

This pretty little Orchid has exactly the habit and appearance of Phalænopsis, to which genus it is placed next in the systematic arrangement. It produces a dense mass of thick, flattened, warty, greyish-green roots, from 4 inches to a foot long. The leaves are lanceolate-oblong, and the flowers borne in short racemes. The sepals and petals are rosy-lilac, and the lip rosy-carmine, with a little yellow at the base of the side lobes. On the foot of the column is a pair of small fleshy teeth, pointing upwards, and at the base of the central lobe of the lip a deeply bifid callus pointing backwards, so that the four teeth cross each other just inside the spur of the lip. It is the Aërides tæniale of Lindley, who, however, remarked that it would ultimately have to be removed from the genus; and Bentham has pointed out its really belonging to Doritis, a genus hitherto, I believe, not in cultivation. It is a native of the Khasia hills in India. A good plant may now be seen at Kew, and also a plant of the variety alba on the same block. The colour of this latter is pure white, except that the yellow on the lip is retained; even the anther-cap, which in the species is carmine, is white in the variety. Another singular feature of the Kew plant is that two of the flowers have each a well-developed root at the base of the floral bract. *R. A. Rolfe.*

HARDY ORCHIDS.

Amongst these few can at present compare, in point of floriferousness at least, with the North American Cypripedium parviflorum. To see a mass of it with sixteen fully opened flowers swaying with the breeze, and contrasting the bright yellow labellum with the brownish-purple sepals and petals, does one good, even though it is apt to increase the desire for more of such a good thing. No terrestrial Orchid, either native or foreign, has given less trouble in the way of establishing than this delicate gem, for single crowns planted five years ago in pure leaf-mould and sand are now increased to fully a couple of dozen.

Our native C. calceolus is likewise now in all its grandeur, and we have never seen it finer, the clear yellow lip and chocolate-coloured sepals and petals being unusually large and full of substance. It revels in two positions here—one behind a huge block of stone and facing the east, with nothing but ordinary loam; the other in briny rubbish and carpeted with the mountain Cudweed (Antennaria dioica), and where it always receives abundance of moisture. It is a very interesting and rare native plant that we always brand with a sort of non-commital air—perhaps scarcity does this, for one cannot but feel intruding when in its presence.

Orchis Cupani (?) sent by my kind friend Mr. Dammann, is a sweet little treasure, and does well from year to year. It is now in full bloom.

The brown Man Orchis (O. fusca) rivets the attention of the passer-by, for its quaint brown hood and dark spotted lip are curious combinations. It grows and flowers as well as does our common O. mascula, clumps of which are now at their best. I wish people could be tempted to cultivate these interesting and lovely plants; if they would they will certainly not be disappointmend with the results. *A. D. W.*

The Flower Garden.

ALPINE PLANTS.

ALPINE plants in pots require plentiful supplies of water during hot bright weather. They should be watered in the morning or evening before the sun has reached them; they do not require such quantities of water at this season of the year, but frequent sprinklings just to cool the atmosphere around them. It must be borne in mind that many of these are natives of northern latitudes. Do not allow weeds to obtain a good footing in the pots. Save seeds of the rarer sorts, for many of them are liable to die off after they have flowered. Those alpines which are planted on rocks require special care to see that the soil is not washed from the roots by heavy rains, and also that they do not suffer for lack of water in dry weather. Snails require looking after amongst rare Ferns, as they are particularly fond of the young fronds before they develope.

GENERAL WORK.

Pick off seed-pods from Azaleas, Rhododendrons, and other flowering shrubs and trees, excepting the berry bearers. Nothing exhausts plants so much as producing seed in large quantities. Hoe, rake, and mulch shrubs. Most of these are surface-rooters, and they often suffer great injury from drought. See that all newly-planted trees and shrubs are securely fastened. The present season, with a slight exception, has been most favourable to newly planted subjects, and syringing and watering have been almost unnecessary.

ROSES.

Remove all suckers from Roses which are not on their own roots. It is better to follow them up a little distance than to cut them off at the ground. They are certain to throw two or three shoots from each so treated. If fine blooms are wanted only one bud should be allowed to remain on a shoot. The flowering season can be prolonged by judicious management; do not thin them all at a time, but go over the plants at intervals of a few days. They will, thus treated, bloom more satisfactorily in the autumn. The Banksian Roses are best pruned immediately they have done blooming. The yellow one is now loaded with its delicate blooms. Attend to all climbers, and as they grow remove the weaker shoots, and only keep those that are required for next season's furnishing.

Continue staking, tying, and thinning out herbaceous plants; put in cuttings of double Wallflowers, Sweet Williams, Iberises, &c., in shady positions. Borders should be frequently hoed and raked, whether there are weeds in them or not, in order to maintain a neat and tidy appearance. Keep Auriculas, Polyanthuses, and Primroses in damp shady positions during the summer months; as most of these are natives of cold, humid climes.

THE FLOWER BEDS.

In most places the planting of flower beds will now be completed. Carpet bedding has a poor appearance unless the ground be covered with a dense mass of foliage; and the quantity of plants required to produce the effect being so large, precludes many from indulging in this direction. Constant attention will be requisite to keep the lines well defined, for unless this is attended to all previous operations will only be labour in vain. To pinch, peg, and clip must be the order of the day. Stir the surface of beds containing Pelargoniums and other plants, till they have closed up their lines. Nip off all decayed flower trusses as they cease to bloom, and peg down Verbenas, Petunias, &c., to fill up vacant spaces. See that vases containing plants are not allowed to suffer through drought. They are generally in exposed situations, and suffer greatly is allowed to get dry. Dahlias will require to have their side shoots staked, which is better performed before the roots extend far into the ground. The best way is to thin out all the shoots to five: a main leader which was fastened to the centre stake at planting, and the four side shoots, having each a separate stake. Nothing looks worse than to see the plants bunched up like a sheaf of grain. Cut over all herbaceous plants as they go out of flower. Do not cut them off entirely close to the ground but only the flower stems, leaving the foliage to mature next season's crowns. Most of the seeds of these plants are best sown as soon as matured. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

TENDER ANNUALS.

CELOSIA PYRAMIDALIS.—Those who possess a good strain of this elegant plant, and their plants are well managed, know of nothing more beautiful or more lasting either in a cut state or on the plant; the small side shoots are useful for putting in small glasses, and if the plants are grown on to a good height they may be cut off at the base and used intact with other flowers in large glasses, for placing in recesses or corners of rooms, for which they are well adapted. They require a rich compost and frequent waterings with liquid manure when once established in their pots. Plenty of light and air, with frequent syringings to keep down red spider, are very essential conditions of success in growing them. A small quantity of seed should now be sown for late uses.

BALSAMS should be shifted on into their blooming pots, the compost used being of a rich nature, and composed of good loam, dried cow manure, and roughish leaf-mould, not sifted. The plants should be potted rather firmly; after watering stand the plants well apart, for if they are at all crowded they become much drawn in consequence. The bottom and side shoots should be tied out, to form symmetrically shaped plants. Balsams are gross feeders, and require frequent watering with liquid manure.

ACHIMENES AND GLOXINIAS must be regularly potted up for succession from the late sowing. All the established plants of the above, as well as those of Todeas and Gesneras, must be kept well supplied with water. Now is a good time to pot up a number of the double and single Pelargonium, also a quantity of Heliotrope, for the autumn and winter flowering. If these are plunged in beds of ashes or cocoa-nut fibre, for the summer, keeping all the blooms pinched out and then taken to a warm pit the first week in October, the plants will give a supply of bloom throughout the dull months.

Prick off seedlings of Cinerarias and Primulas when large enough. Sow again now for succession seeds of Primula, Cineraria, and Calceolaria. *A. Evans, Lythe Hill.*

Fruits Under Glass.

STRAWBERRIES.

THESE we grow chiefly on a series of shelves suspended from the rafters on either side of the ridge, in a low span-roofed range of Melon-houses, and every morning those plants the fruits on which are approaching maturity are shifted into the houses in which the Melons are ripe and ripening to fill the space vacated by plants from which the crops were taken the previous evening for dessert. The somewhat dry, warm, and airy atmosphere necessary to give flavour and colour to the Melons is alike suitable to Strawberries in this stage of growth, as also is the atmosphere as regards moisture maintained in houses in which the plants are swelling their fruits congenial to the requirements of the Strawberry plants in a like stage of development. These, in order to obtain the best possible results in the shape of large, well flavoured fruits, should be given copious supplies of Beeson's manure at the rate of 3 lb. to 10 gal. of water at the roots until the fruit begins to colour, when clear water only should be given. The plants, too, should be well syringed overhead morning and afternoon when damping the Melon plants, also the surface of the beds in which they are growing (avoiding the stems) the pathways, &c., as much with a view to promoting a genial atmosphere as to keep the plants free from the ravages of red-spider.

MELONS IN FRAMES.

Where properly constructed houses and pits are not provided for the growth of Melons, good crops may be secured from plants planted in pits and frames in which Potatos, Carrots, and bedding-plants have been grown. The soil in which the Potatos, &c., have been grown being removed, the leaves should be turned over, and, if necessary, some fresh ones added thereto to raise the bed to within 18 inches of the glass, allowing a few inches for the subsiding of the leaves, which should be firmly trodden together. This done, a couple of inches of rotten dung should be spread over the leaves, after which a couple of barrowloads of soil, consisting of light sandy loam, to which one-fourth of lime-rubble and horse-droppings may with advantage be added, can be put in the centre of each light to form the hillocks. When this has been in the frame for twelve or fourteen hours so as to have become slightly warmed, it will be be ready to receive the plants, which should be quite moist at the roots before turning them out of the pots, so that the roots will come away freely from the latter. In planting do not bury the stems any deeper in the soil than they were in the pots; press the soil firmly about the roots, and give sufficient water to settle the former about the latter, and shade the plants from bright sunshine for a few days until the roots have taken to the soil. Syringe the plants every bright afternoon at closing time (from half-past 3 to 4 o'clock—earlier, if the aspect be not a good one). Give a little air at from 7.30 to 8 o'clock in the morning, otherwise the leaves, while full of, and covered with moisture, would be likely to get scorched by the sun; and ventilate freely until closing time. As soon as the plants have made fresh growth pinch the tops out at the third rough leaf, to induce them to send out laterals, three or four of which should be trained over the surface of the bed and stopped after they have attained to a length of 18 inches, which stopping will cause the plants to send out fruit-bearing shoots, which should be stopped at one joint beyond the fruit. All superfluous shoots should be kept persistently removed two or three times a week, as anything like overcrowding of the shoots would prevent satisfactory results from being secured.

SETTING THE BLOSSOMS.

When the plants are in full flower the blossoms should be impregnated about mid-day, when the pollen is dry, until a good set of fruit is secured, and with this object in view the syringing of the plants overhead should be discontinued until the fruit is set, when it should be resumed every bright afternoon until the fruit shows signs of ripening, when a dry airy atmosphere—the same as that observed during the time the plants were in flower—should be aimed at. From three to four fruits on each plant will be sufficient for a crop, and these, after they attain to the size of large Magnum Bonum Plums, should be elevated above the foliage of the plants on an inverted flowerpot, so as to expose them to the sun.

PINES.

Healthy fruiting plants should have liberal supplies of tepid liquid manure at the roots when necessary, which, during bright sunny weather, will be about once in the week or every ten days. Put a little air on as soon as the thermometer registers 80° in the morning, afterwards increasing or decreasing the quantity of air given according to the rise and fall of the internal temperature until closing time in the afternoon, about 4 o'clock, when it may be run up to 95°, with sun-heat and plenty of atmospheric moisture in the house or pit at the same time; but in damping the pathways, walls, plunging material, and the plants (slightly) overhead, morning and afternoon, care should be taken not to let the water from the syringe get into the crowns of the individual fruits, as that would cause them to make an unduly large growth.

SUCCESSIONAL PLANTS.

Plants, the fruits of which are in flower, should have fresh air admitted a little earlier than those swelling their fruits, and left on a little longer in the afternoon, as a somewhat drier and more airy atmosphere is necessary at this stage of the plants' growth, so that every "pip" may set and swell, otherwise the fruits will be wanting in finish; but after the fruit is set, the treatment should be the same as that indicated above. Young plants should be subjected to a lower temperature than that recommended for fruiting plants, but in every other respect the treatment should be the same. Light shading, as recommended in my previous calendar, should be put on over plants in every stage of growth from half-past 10 to 3 o'clock in the afternoon during bright and powerful sunshine. *H. W. Ward, Longford Castle Gardens.*

The Kitchen Garden.

SOWINGS.

Peas.—The last sowing of late kinds of these should be made at once, and again about a fortnight later one or two sowings of some early kinds for very late use can be sown on a sheltered warm border, and in either case, if the ground be dry, the drills, before and after sowing, should be well soaked with water, and afterwards mulched for a space of 2 feet on each side of the rows with dung litter. Earth up and stake advancing crops, and where any of the tall varieties are making an excess of haulm before flowering, these should be checked by pinching the leading shoots when they have reached the tops of the sticks.

Broad Beans should also be stopped in a similar manner and under the same conditions, when some of the lowest and earliest flowers on the base of the stems have set and commenced to swell.

French Beans, &c.—Make successional sowings to meet requirements, and earth up earlier ones; Canadian Wonder is a good variety to sow now, being a continuous cropper, and keeping longer in an eatable condition than any other. And where Scarlet Runners have not progressed satisfactorily more may still be sown; during hot dry weather these often fail to set in a satisfactory manner, and where this is observed to be the case a liberal soaking of water at the roots should be given; and afterwards, as advised for Peas, a mulching of rotten dung spread over the surface on each side of the rows will be of great advantage in keeping the ground in a moist condition during hot weather.

TOMATOS.

Those planted outside will be making rapid growth, and will require thinning out and stopping; all suckers and side shoots should be removed from the base of the plants, also any lateral growths that are too thickly placed. One main shoot should be taken up and a sufficient number of laterals encouraged and laid in to cover the space allotted them, the sub-laterals produced from these, will, when they show flower, require stopping and pinching to one joint above; all old leaves should be removed, and also any of the younger ones that are overcrowded and obstruct the sun and light. In dry weather frequent waterings must be given, and after a good crop of fruit is secured, feeding should be resorted to, by applications of liquid manure, or by artificial manure, which should be sprinkled over the surface of the roots and watered in. An occasional good syringing with clean water on warm afternoons will not only greatly benefit and assist the plants, but will also keep them free from red-spider and other insects.

CUCUMBERS,

either in pits or frames, that are bearing fruit will require an abundance of water at the roots, aided by liquid or artificial manure, and where the root space is confined great advantage will be derived by giving the plants a mulching of rotten dung from an old Mushroom bed laid on from 2 to 3 inches thick. An abundance of atmospheric moisture will also be required to keep the foliage in a clean and healthy condition. Maintain this by liberal syringing and damping of an afternoon, at closing time; later in the evening, and during hot weather, a little air should be given and should remain on during the night. Keep the shoots stopped and regulated, removing all surplus ones, likewise all leaves that are becoming discoloured and exhausted, and be careful not to allow overcropping.

MUSHROOMS.

Beds that have been some time in bearing and are becoming exhausted would be benefited by gentle waterings of tepid liquid manure, wherein a little common salt has been dissolved at the rate of 1 oz. to the gallon, and afterwards covered for a time with hay litter from which the seeds have been shaken out. Towards the middle of next month material should be collected for making a bed up in the Mushroom-house for autumn supply.

GENERAL WORK.

Keep the hoe constantly going amongst all growing crops for the purpose of keeping weeds in check, and also for keeping the surface soil in a healthy and sweet condition; this operation is very necessary after heavy rainfalls, and when the surface of the ground in consequence has run together and become baked and hard, and impervious to the action of the sun and air.

Hand-weeding will be necessary amongst seed-beds and in the rows of growing crops, and should be attended to during showery weather and whilst the ground is in a moist condition. Continue to prick out for succession the required quantities of Kale, Broccoli, Cabbage, Leeks, &c. Plant out Snow's and Early Penzance Broccoli, Autumn Giant Cauliflower, and Brussels Sprouts—the latter 3 feet apart. Sow Asparagus, Kale, and Coleworts for succession, also Endive, Lettuce, Radishes, &c., and a large one of Turnips. *John Austen, Witley Court Gardens.*

HORTICULTURAL CLUB.—The last dinner and *conversazione* of the season was held on Tuesday last, under the presidency of Mr. John Lee, the Chairman of the Club. A valuable and interesting paper was read by Mr. C. T. Druery, on "Variation," especially in reference to Ferns. In the after-discussion, in which Messrs. Lee, Pearson, Cousens, &c., took part, many valuable facts were elicited. The Club has thus brought to a successful issue a series of interesting meetings, in which some of our leading botanists and horticulturists have taken part. It was announced that the annual excursion would take place on Thursday, July 29, and would include a visit to Heckfield and Strathfieldsaye.

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY, June 22 { Royal Horticultural Society: Meeting of Fruit and Floral Committee, at 11 A.M.; Scientific Committee, at 1 P.M. Show of Pelargoniums, &c.
WEDNESDAY, June 23 — York Gala (three days).
THURSDAY, June 24 { Sale of Imported Orchids, from Mr. F. Sander, at Stevens' Rooms.
FRIDAY, June 25 { Sale of Imported Orchids, at Protheroe & Morris' Rooms.

THE COLONIAL AND INDIAN EXHIBITION has done much to familiarise the public with the FRUIT-GROWING capabilities of our distant COLONIES. Those of the North American and West Indian Colonies were already pretty well known by the regular supplies which reach our markets; but those of India, Africa, and Australia were not so generally known. Besides the representative models of fruits exhibited, actual specimens in good condition are now beginning to arrive for sale in the Colonial Fruit Market, evidencing the wonderful capabilities of supply, if a demand but arises.

The *Norman* and *Trojan* from Durban have brought lately Pine-apples, Oranges, Bananas, and Limes, from Natal; the *Iberia* last week brought magnificent Apples, Pears, and Quinces, from New South Wales. From Canada and other colonies consignments have also arrived, which have received special prizes at the shows of the Royal Horticultural Society. From New Zealand a week or two ago a first batch of Apples was brought by a passenger, Mr. John Bowman, Auckland, who came home through the Red Sea, and although no special precautions of packing were taken, they arrived in excellent condition, and were much admired in the New Zealand Court. There were twenty different varieties, simply packed in chaff; among these were Claygate Pearmain, Hereford Pearmain, Miniver's Dumpling, Russell's Nonpareil, Takapana Russet, Adam's Pearmain, Fletcher's Crimson, Red Winter Pearmain, Reinette du France, Wheeler's Russet, Golden Russet, and Cox's Redleaf Russet.

The great variety and suitability of the New Zealand climate for fruit production is evidenced by the extensive variety of jams and preserved fruits shown in the New Zealand court, by Holland Bros., of Wellington (380 tins); S. Kirkpatrick & Co., of Nelson; Mrs. Knight, of New Plymouth; F. Gordon, of Oamam; and Holmes & Bell, of Blenheim. These jams and preserves include, besides those of warmer climes, almost the whole range of our European fruits, such as the Blackberry, Raspberry, Gooseberry, Currant, Strawberry, Plum, Cherry, Green Gage, Red Gage, Damson, Peache, Nectarine, and Apricot. The Olives, Lemons, Oranges, Shaddocks, and Citrons, have also been introduced, and thrive in the Auckland district.

By the steamer *Rimutaka*, a large consignment of fresh fruit has come to hand from New Zealand.

By the Orient line steamers, *John Elder*, *Austral*, *Cuzco*, *Liguria*, and *Iberia*, very fine shipments, in good condition, have come to hand of the following kinds of Apples:—From South Australia, Red Dessert, Golden Ball, Golden Reinette, Ribston Pippin, Stone Pippin, Five Crown Pippin, True Knight's Golden Pippin, Strawberry Pippin, London Pippin, Scarlet Nonpareil, Cleopatra, Court of Wick, Dumelow's Seedling, Mobb's Royal, and Reinette du Canada. Of Pears, Chaumontelle, Beurré Napoleon, Marie Louise, Vicar of Winkfield, Glou Morçeau, and various cooking and stewing Pears. Of Grapes, Malaga Muscat, Doradillos, Bilas Blanco, Muscat of Alexandria, Lunt's Seedling, and Lady's Fingers. Besides Oranges, Lemons, fine Chinese Quinces, Water and Sweet Melons, Pomegranates, paper-shell and pic-nic Almonds.

From New South Wales, per *Cuzco*, eleven cases were received of Apples, Quinces, and Grapes, all in prime condition and choice samples, which were much in request.

It can scarcely be expected, coming from so many thousands of miles, and kept in freezing chambers, that these fruits can compare with those of home growth in flavour, however fine in appearance they may be, though some of them more than rival our productions. Still for the colonists themselves this abundant and cheap supply of fruit is a great advantage, and should stimulate our own growers to give increased attention to this industry, and it need not discourage them, as home-grown fruit will come in at a season when colonial fruit cannot be had.

—— ROYAL HORTICULTURAL SOCIETY.—The annual provincial show of this Society, we may remind our readers, will be held in the Botanic Garden and Wavertree Park, Liverpool, from June 29 to July 5, inclusive. The show will be open to Fellows of the Society at 12 noon on June 29, and to the public at 1 P.M., closing at 7 P.M. On other days the hours of opening and closing will be 10 A.M. and 7 P.M. respectively, except on Saturday, July 3, when the hour of closing will be extended to 8 P.M. Numerous varieties of plants, fruits, flowers, vegetables, horticultural implements and appliances, will be exhibited, for which, under various classes, the sum of £1200 will be awarded in prizes. A most novel and interesting exhibition will be that of horticulture on board ship, for which medals will be awarded, according to merit. On Saturday, July 3, and Monday, July 5, there will be a cottagers' and artisans' show. The exhibits of horticultural and botanical literature, science, and art, will be divided into three sections:—A. Home and foreign literature of gardening, embracing instruction (elementary and advanced), models, diagrams, apparatus, &c.; B. Technical art, such as surveying, plan and architectural drawing. C. Botanical and decorative art, such as photographs, and drawings in water-colours and oil, of flowers, fruits, trees, and garden landscapes. An incentive to amateurs is offered in a competition for a hand-painted China or terra-cotta vase, tile, or plate, the subject being flowers, fruit, or foliage. The awards will be Silver-gilt, Silver, and Bronze Medals. Applications for space for implements, garden structures, tools, and appliances, have been numerous, including space for boilers entered for the boiler contest. All modes of heating, ornamenting, and ventilating conservatories, &c., meteorological instruments, wirework, tenting, &c., will be prominently shown. Certificates will be awarded for any special novelty, approved of by the judges, that may be brought under their notice; also one or more Gold Medals for the most meritorious aggregate displays in any or all of the classes. There will be a Conference on the nomenclature of Orchids on Wednesday, June 30, in which some of the most eminent men of the day will participate. The whole exhibition will be one of great interest and value, not only to the general public, but also to scientists and practical gardeners; and persons intending to visit the International Exhibition of Navigation, Travelling, Commerce, and Manufacture should make a point of doing so while the Royal Horticultural Society's show is in operation. The main entrance to the show will be at the junction of Wavertree and Exhibition Roads, while another has been provided for at a point in the Exhibition Road opposite to the main entrance of the "Shiperies," so as to enable visitors to pass freely from one exhibition to the other. Every requisite will be provided in the way of refreshments for the comfort and enjoyment of visitors, and two military bands will perform each day, that of the Scots Guards having been engaged for the opening and succeeding day—viz., June 29 and 30. With the exception of the space occupied by one large tent, which will be filled with Roses, and one or two smaller ones, the whole of the Botanic Gardens, including the lawns, will be available to visitors as a promenade. Intending exhibitors of plants, &c., are reminded that the entries close on Monday next, the 21st inst. It is expected that this will prove one of the largest and most important of the exhibitions ever held by the Society. Great progress is being made in the laying out of the grounds, and many of the hothouses are already erected, the implement exhibition being of great extent. Only fine weather is required to make it a thorough success. Vans will be in readiness at Edge Hill and other railway stations, to convey the plants to the Exhibition, on giving notice to Mr. RICHARDSON, Curator, Botanic Garden, Liverpool, when they may be required, and the several leading railway companies have agreed to carry the plants on the return journey at reduced rates.

—— BOTANIC GARDEN, LIÈGE.—Dr. GRAVIS has been appointed Professor of Botany and Director of the Botanic Garden in place of the lamented Professor MORREN. M. MORREN's library and drawings have been secured by the Belgian Government, and will be deposited in the Botanical Institute of Liège.

—— ACADEMY OF SCIENCES.—M. BORNET has been elected Member of the Academy of Sciences, in place of M. TULASNE.

—— LAMBETH FLOWER SHOW.—On Tuesday, July 27, a show of window plants chiefly will be held in Lambeth Palace grounds, by permission of his Grace the Archbishop of CANTERBURY. Residents in any of the parishes of the Rural Deanery of Lambeth are invited to exhibit.

—— SULPHATE OF COPPER.—The successful results obtained by the use of a solution of this salt employed as a fine spray in the case of the Peronospora of the Vine in France suggests the possibility that some good might arise from its use in the case of the Potato disease, though, as the fungus is mainly internal, the remedy could only be partial.

—— THE DANDELION AS A WINDOW PLANT.—We are glad to see the *Gardeners' Monthly* advocating the claims of this as a window plant. There are few plants more splendid than a well grown Dandelion, which has also the advantage of long succession of bloom. If only it came from the South Sea Islands, required a stove, and was quoted at STEVENS' sales!

—— "THE BOTANICAL MAGAZINE."—The plants figured in the June number are Anthurium splendidum, tab. 6878, the remarkable bullate-leaved Aroid figured in our columns in 1885, p. 381.

Grevillea Hookeriana, tab. 6879.—A pinnate-leaved West Australian greenhouse shrub, with spikes of red flowers.

Sophronitis violacea, LINDLEY, tab. 6880.—An elegant little South Brazilian species, with flowers 1—1½ inch in diameter, segments of perianth oblong-lanceolate acute; lip as long as the segments, rhombic-obovate acute. Column blood-red.

Roydsia suaveolens, tab. 6881.—A Tropical Indian shrubby Capparid, with leaves and inflorescence not unlike those of the common Cherry Laurel. The internal structure of the flowers is of course very different, especially in the absence of petals.

Tillandsia inflata, tab. 6882.—One of the Vriesea section with oblanceolate-cuspidate green leaves, much dilated at the base, and erect spikes 5—6 inches long, of two rows of closely-packed boat-shaped crimson bracts, in whose axils are produced the yellow flowers. The species is a native of South Brazil.

—— "NEW COMMERCIAL PLANTS AND DRUGS."—Mr. T. CHRISTY (155, Fenchurch Street) has published the ninth number of this periodical, containing detailed information concerning Doundakè bark, Sarcocephalus esculentus, a drug used in nervous complaints; Vicia gigantea, and other forage plants; plants yielding essential oils, caoutchouc and other products. Mr. CHRISTY's publication fills a distinct void, as there is no other publication that we know of that quite covers the same ground.

—— "THE ADVERTISERS' GUARDIAN," by LEWIS COLLINS (4, Wine Office Court), seems a pretty good advertisement of the author, and contains some amusing information, which will be of service to other advertisers.

—— "THE METROPOLITAN DAIRYMEN'S DIRECTORY" (71, Dean Street, Soho Square) will be useful to those concerned, not only as containing a list of wholesale and retail dealers about London, but also copies of the Adulteration Act, analyses of manures and feeding-stuffs, including many of the pasture

grasses. We should feel more confidence in these analyses if the authority for them were given.

—— Horticultural Buildings. — Messrs. Swan, Sonnenschein & Co., Paternoster Square, have issued a new edition of Mr. Fawkes' treatise on the construction and heating of glasshouses for horticultural purposes. This is the most useful little work on the subject that we are acquainted with; but, as is generally the case, the author is not to be trusted when he wanders away from his own department, thus he tells us that the red and yellow Pines of North America (Pinus rubra and Pinus mitis) are simply varieties of P. silvestris (the Scotch Fir). This would be of little moment in such a book as this, were it not that it gives rise to feelings of distrust as to other more important matters.

—— Hull and East Riding Chrysanthemum Society.—The great success of the Society's previous shows, and the cordial support then received, has encouraged the Executive Committee to provide this year a schedule of prizes such as is equalled by no other society out of London. The handsome money prizes offered in the open classes, together with the Silver Challenge Vase presented by the Chairman, and the Challenge Cup for groups offered by the Society, will, it is believed, attract exhibits of a very high standard. The ladies' and amateurs' classes have been entirely remodelled and improved, a considerable increase having been made in the prizes offered, which, with the Challenge Plate presented by the Chairman of the Society (George Bohn, Esq.), and the Silver Challenge Cup given by the Hull Amateur Floral and Horticultural Society, will, doubtless, have the effect of greatly increasing the competition and interest in these classes.

—— The "Orchid Album" for April and May contains coloured figures of Phalænopsis casta, t. 229, a supposed natural hybrid between P. Schilleriana and P. amabilis; Lycaste plana, t. 230, with green sepals, white petals, and the front part of the lip richly tinted with crimson; Cattleya Hardyana, t. 231, a magnificent plant, supposed to be a hybrid between C. gigas and C. Dowiana; the bold, wavy lip is of a rich crimson, marked with radiating orange lines. Cypripedium insigne marginatum, t. 232, a fine variety, with a deep white margin; Comparettia speciosa, t. 233, a species with a raceme of orange flowers, each with a long spear and a broad apron-like lip; Lycaste Skinneri alba, t. 234; Lælia callistoglossa ×, t. 235, a cross between L. purpurata and Cattleya gigas; Saccolabium violaceum var. Harrisoniana, t. 236, a white-flowered Saccolabium of great beauty from Mr. Lee's collection.

—— Conifers in Italy.—Signori Rovelli, of Pallanza, inform us that they have at the present time, bearing cones, Abies bracteata, with superb cones; A. cilicica, A. lasiocarpa, A. laxa (pectinata fastigiata), A. Pindrow var. argentea, Fitzroya patagonica, Pinus Sabiniana, P. Coulteri, P. Veitchiana, Larix leptolepis, Pseudo-Larix Kæmpferi, Abies Fortunei, and Araucaria brasiliensis. Happy Messrs. Rovelli!

—— A Pretty Annual.—In the *Gartenflora* for June, t. 1224, is given an illustration of a compact form of Callirhoë pedata, a Malvaceous plant with elegantly cut foliage, and pale flesh-coloured flowers. In this country it would be best sown under glass, but in Naples it appears it is sown in the open ground in February. The flowers appear in May and continue till October.

—— Dianthera bullata.—This is an ornamental foliage plant, having more of the appearance of a Rubiaceous plant than of an Acanthad, as it is stated to be by Mr. N. E. Brown, in the *Illustration Horticole*, t. 589. It is a native of Borneo, with shortly stalked opposite ovate acute leaves, crumpled on the green and glabrous upper surface, slightly hairy on the lower purple surface. The plant has been lately introduced by the Compagnie Continentale. The flowers are inconspicuous.

—— Clintonia borealis.—The plants belonging to this genus are neat and interesting Liliaceous plants suitable for cultivation in a moist and light peaty border, or in shady nooks of the rockery where the conditions as to soil can easily be accorded them. They mostly flower about this period, or from May to July, and have pale yellow, white and rose, or deep rose-coloured flowers. The subject of this notice has been flowering for some time in a cool recess of the rockery at Kew, having an eastern exposure only, so



Fig. 176.—Botanic Garden, Liverpool: the site of the great show. (see p. 785)

that by the time the sun becomes powerful, and all through the afternoon, this recess is cool and shady. The leaves are radical and elliptic, very much resembling those of Allium ursinum, but of a paler green. From the centre of these the peduncle arises, bearing a small umbel of comparatively large pale yellow flowers. The habit reminds one of the Erythroniums, with of course differently disposed perianth segments. The above name is synonymous with that of the plant known as Smilacina borealis, and figured in the *Botanical Magazine*, t. 1403. The plant known in gardens as Clintonia pulchella is properly Downingia pulchella, belonging to the Lobeliads. That belonging to the Liliaceæ, the subject of this note, is the oldest named genus, and consequently has the greater right to the name.

—— MASSACHUSETTS TREE PLANTING.—Professor SARGENT, in a recent report on tree planting to the Massachusetts Board of Agriculture, laments the tendency of American planters to plant European trees, when their own native trees are so much better suited to the country. While, he says, a foreign tree may often possess great value in ornamental plantations, it is the native trees only of a country which can be safely depended upon in that country to make profitable return to the planter.

—— CITRUS TRIFOLIATA.—We are glad to find our contemporary, the *Revue de l'Horticulture Belge* calling attention to this interesting plant, which is far too little known. It is a hardy Orange, with ternate leaves, stout spines, and large white star-shaped flowers. The plant is used for the formation of hedges in Japan. Our Belgian friends graft it on the roots of Maclura japonica.

—— THE TRADE IN JUTE.—Some curious facts in connection with the trade in manufactured goods between Germany and England are brought to light in a report by H. M. Chargé d'Affaires at Dresden "on the effects of the German Customs Tariff Reform of 1879, and on the revision of 1885." The points with which we are more immediately interested are those treated of in chap. 4 under the head of "Jute Manufactures," in which Mr. STRACHEY says:—"Germany began to spin and weave Jute fibre about a quarter of a century ago. In 1874 the spindles were estimated at about 17,000; they are now nearly 60,000. These may seem miserable figures by the side of the 98,000 Indian spindles, to say nothing of the Scotch, but they show the vigour with which the youngest of the textile manufactures has been pursued by the Germans. All the coarse Jute tissues such as granary sacks, baggings, hessians, and tarpaulins, are now made in Saxony, Prussia, Bremen, Gua Elsass, and elsewhere in the empire. "When spun in high numbers the fibre has a fine golden glance, and in its natural shade, or dyed, may be woven into cloths and plushes of great durability and beauty. Jute may also be printed or interwoven with cotton, woollen, and silk, making the cheap and effective furniture stuffs now so largely used in hotels, railway stations, theatres, &c., and in Germany in private houses. It is hardly a secret that the fibre of the Corchorus capsularis is the real component of most of the real Algerian curtains positively imported from Algiers, of the genuine cloths of Smyrna, of the undoubted tapestries of Teheran and Herat. Germany contributes her share to the productions of all these fabrics, whether sold under their proper names, or under the more attractive foreign euphemisms. Chemnitz and Zittau in Saxony, Elberfeld, and some other Prussian wool centres, now compete with the analogous goods of Paris, Amiens, of Tourcoing and Roubaix, and with our own made in Bradford and Huddersfield.

—— MIKANIA GLOMERATA.—There seems no end to the modifications and adaptations which the plants of the vast order of Composites can undergo. They become trees, shrubs, herbaceous plants, climbers, or succulents, just as the climatal conditions and surroundings favour their existence in such forms. The subject of this note is a native of the province of Bahia and other places in that part of South America, where the woods afford it the requisite amount of shade and support. The slender rope-like stems, as they clamber up the pillars and over the rails of the gallery in the Palm-house at Kew, seem endowed with unlimited extension, and hang suspended from the gallery in such a manner as must be familiar to many who visit the gardens. The triangular subcordate leaves are not so finely divided and graceful as that of M. apiifolia, generally grown in gardens under the name of M. pulverulenta; nor could the plant be grown in the same limited space; but if liberally treated in a large conservatory it well repays the little attention needed in its cultivation. The inflorescence is terminal, and consists of dense panicled masses of straw-coloured flower-heads. MARTIUS says they are reddish, and the plant is figured in his *Flora Brasiliensis*, vol. vi., part 2, fig. 67. It has been flowering for weeks in the Palm-house.

—— TACSONIA VOLXEMII.—The May number of the *Illustrirte Monatshefte für die Gesamt Interessen des Gartenbaues* contains a coloured plate of a singular variety of this beautiful climber in which the rosy-crimson sepals and petals were thickly marbled with white spots, producing a singular, but not altogether agreeable impression.

—— HORTICULTURAL EXPERIMENTS.—The Agricultural College of Michigan proposes to undertake experiments according to the following programme:—

Series A.—Acclimatation and adaptation of fruits and vegetables. Fruits and vegetables of acknowledged merit in one or more directions, both exotic and from foreign portions of the United States, will be grown and tested, and their acclimatation will be attempted in some cases.

Series B.—Improvement of native wild fruits.

Series C.—Improvement of fruits and vegetables by crossing and hybridising.

Series D.—Experiments to determine limits of crossing and best methods of manipulation.

Series E.—Mutual relations between stock and scion, and limits within which grafting is possible and profitable.

Series F.—Experiments upon methods and possibilities by all methods of making cuttings, layers, &c. These experiments will have especial reference to the propagation of native wild plants. This subject, and that outlined in Series G, although old, are very imperfectly understood.

Series G.—Germination experiments, concerning behaviour of seeds and germination, especially in wild plants. Experiments to determine the effect of cold upon seeds are now in progress.

Series H.—Improvement of native wild plants for ornamental purposes.

Series I.—Effects of soils, selection and culture, upon variability of plants.

Series J. — Studies upon classification, terminology, and nomenclature of fruits and vegetables.

Series K. Synonymy.—It is a conspicuous fact that many or most of the seedsmen's novelties are old varieties or very slight and unimportant modifications of them under new names. It becomes the business of experimenters to test all varieties of every product side by side, and to determine some standard or measure for each variety. It is impossible to undertake experiments in this line upon more than one kind of vegetable at a time with ordinary facilities. All American varieties of Tomatos are being grown this year.

Series L.—Special observations upon the behaviour of individual plants and varieties.

Series M.—Studies concerning the influence of latitude upon vegetation; also observations for determining minimum and maximum periods of plant activity.

Series N.—Methods and modifications of grafting and budding.

Series O.—Testing commercial varieties of fruits and vegetables.

Series P.—Tools and methods of culture.

—— PHILODENDRON SQUAMIFERUM. — Mr. N. E. BROWN, in the *Illustration Horticole*, t. 590, mentions this as one of the most ornamental of climbing Aroids, with pinnately divided leaves, the lobes lanceolate, the terminal one much the largest. The long leaf-stalks are of a reddish colour, covered with green woolly hairs, which give the plant a remarkable appearance. The species is a native of Brazil.

—— THE APPLE BARK LOUSE. — This too familiar creature may be kept in check, says Mr. COOK, by the application of soft soap applied with a brush. A little carbolic acid may be added.

—— PUBLICATIONS RECEIVED.—*How to Grow Peaches, Nectarines, and Apricots in Very Small Gardens* (ALFRED STEAD).—*Press Opinion*, vol. i., No. 1, 24, Bouverie Street, Fleet Street, E.C.

—— GARDENING APPOINTMENT.—Mr. E. J. FOULD has been appointed as Head Gardener to E. LAWSON, Esq., Rusper Nunnery, Horsham.

THE WOOLLY APHIS AND ITS REPRESSION.

AMONG the many diseases to which the Apple tree is subject none is as persistent and hard to eradicate, and more widespread, than the woolly aphis, Schizoneura lanigera. The home of this pest seems to be obscure. In England it is supposed to have come from America, and there it goes under the name of American Apple-blight. It is found in France and Germany, and wherever met is regarded as one of the most formidable of pests. The Chilian Consul of San Francisco stated several years ago that in Chili it had destroyed whole forests of the wild Apple.

It seems almost unnecessary to describe this pest, unfortunately so common, yet a few words to novices in horticulture will not be out of place. In form the woolly aphis resembles closely the green aphis, so common on Roses and other plants, but its colour is reddish-brown, and when crushed it yields a red juice; hence the German name Blutlaus, or blood-louse. The insects are always surrounded by a whitish woolly substance, hence the name "woolly" aphis. Like all aphides, this species increases with astonishing rapidity, and only a few need be left on a tree to soon spread all over it. While the presence of the woolly aphis makes itself so conspicuous above-ground on the branches, covering them as if with snow, yet the most serious trouble lies out of sight, at the roots, which in our dry climate they inhabit as freely as they do the branches, sapping the vitality of the tree to such an extent that the fruit becomes small and valueless. If allowed to go on unchecked the trees gradually die. To the Apple tree the woolly aphis is what the Phylloxera is to the Grape Vine, sucking and causing swellings and knobs all over the roots, as well as at the root-crown.

A pest as serious as this has naturally been long fought, and many are the remedies suggested for its extermination. When young trees first become infested, and it is discovered in time, a number of remedies may be effectively used.

Rubbing or brushing kerosene on the infested spots, or washing them with lye ½ lb. to the gallon, or with strong solution of whale-oil soap, or sulpho-carbonate of potassium, may effectually arrest the disease. When, however, the roots of a large tree once become thoroughly infested (and in this State unfortunately that requires but little time), almost all the remedies usually recommended prove wholly insufficient, and on a large scale impracticable. For a number of years we have tried, at the experimental grounds of the University, various remedies, including tobacco decoction, hot water, common lime, ashes, bisulphide of carbon, and several proposed remedies of unknown composition furnished by outside parties. Of the latter that of Mr. Lille, of San Francisco, appears, so far, quite promising. We must, however, reserve our judgment for some time yet.

GAS LIME.

On the whole, we have found no remedy so inexpensive and efficacious as gas-lime—the refuse of gas-works. Outside of its penetrating odour this material has but one objection; it is a strong medicine that must be used with care, and the dose must be regulated somewhat according to the soil and subsoil and the age of the trees. There is necessarily some difference in its strength, according to its freshness, as it gradually loses some of its ingredients by exposure to the air, and especially to the rain. Nevertheless, when applied to a given spot it will retain its efficacy for at least three years. Our first experiments with it began four years ago, and at the convention held in San Francisco that year I made my first statement in regard to this remedy. I stated that a marked effect had been produced by it, and that the aphis had been killed, but that in spite of the very strong dose applied to each tree (something like 10 lb.), the insects were again descending to the roots. I stated also that some of the trees on shallow soil had been killed by the gas-lime, and that on the whole the remedy was not satisfactory. During the succeeding spring and summer, however, I gained fresh confidence in it, as, with the exception of very weak trees, or of those in shallow soil, comparatively few died, those less injured showing returning vigour. The gas-lime had also been very beneficial to the soil, causing the heavy stiff loam to pulverise like ashes. The next season, after the first rain, I noticed the peculiar strong odour of the gas-lime. Examination later on in the spring showed that the aphis was not to be

found about the roots, and existed right at the surface only. It evidently had not gained any headway. Altogether the remedy now looked so promising that it was decided to give it a trial on a larger scale, but in much smaller doses; these, if proving sufficient, to be increased the next year. The call to take charge of the collection of plants for the New Orleans Exposition prevented me from carrying out my intentions at the time, and it was not until the past season (1885–6) that experiments properly guarded could be made.

The bad effect of the first application was to corrode the bark on the younger trees, causing it to decay. Instead of removing the soil and putting the gas-lime in close contact with the tree, as was done the first time, there was spread about a shovelful and a half—*i.e.*, about 2 or 3 lb. in a dry state—within a radius of 4 feet over the surface around the tree, trusting to the rain to wash it into the soil. To prevent the aphis from remaining close on the root-crown, fresh ashes, a few shovelfuls to each tree, were piled close about the trunk. The work was done early in October, and the copious rains of this season gave good opportunity for action.

On the trees examined thus far the result has been very satisfactory. They show, by the knots and swellings on the roots, that they were once badly infested; still there is no aphis on them now, while on a few other trees left without treatment the insects are crowded. Two rows of trees treated several years ago, and now treated again, but having had no ashes placed about them, show the aphis working downward again. To make the work complete, therefore, it seems necessary to use ashes or some similar material close about the root.

The dose of gas-lime to be given to a tree should vary according to its size and age and the nature of the soil. In a porous deep soil there is less danger of injury than in a clayey one, where the water charged with the antidote permeates the soil very slowly, and has time to corrode the bark. In the case of some old trees in the Santa Cruz mountains, treated last season according to our suggestion, although the gas-lime had been put right on the roots after the soil had been taken away, the roots were perfectly sound and all the aphis killed. The soil was a sandy loam, underlaid by limy sandstone. Thus the exact dose to be recommended is a little difficult to determine. It is always safe to use a small dose first—from one shovelful on a small tree to four on a very large one, spread over the surface according to the spread of the root, will generally be found right.

It should be stated that a thorough treatment of the top was never made, because we wanted to see how far we could depend upon the ladybug for extermination there. From observations during the last few years, I believe that in this locality this useful little beetle can be depended upon for keeping the crown of the tree free from aphis. We cannot recommend too highly the protection of the ladybugs, Coccinellæ. During more than one year we have seen them completely annihilate the aphis above-ground in a very few days. It is generally stated that their larvæ are the most destructive to the latter. We ourselves have witnessed what an enormous quantity of aphis the fully-developed ladybug will consume.

As the Coccinellæ hibernate on evergreen trees I very strongly recommend the planting of these trees (Conifers especially) around the orchard, to give the necessary shelter. I have often seen them congregated on the Monterey Cypress in such quantities that they could be taken up by the handful. Should the ladybugs not appear in numbers sufficient to exterminate the aphis, it may be necessary to kill the latter by means of washes. As it is impossible to accomplish this with one spraying on badly infested trees, I recommend two or three sprayings. This should be done in the following manner:—For the first application use hot water of 140° Fahr. in the tank, sprayed with great force. This will wash off the greater number of the insects. For the second application take tobacco water and whale-oil soap in the following proportions: In a decoction of tobacco (1 gallon of water to ½ lb. of tobacco) put ½ lb. of whale-oil soap. Apply this mixture at about 130° Fahr.; in about a week give another similar application. If early varieties of Apples are in question, leave out the whale-oil soap, as, especially in a cool climate, the odour of the whale-oil will not leave the fruit. *W. G. Klee, Berkeley, (University of California Agricultural Experiment Station), May 6.*

FORESTRY.

NURSERY WORK.

In the nursery weeds are growing apace, and the utmost exertion of those in charge will be required to keep them in bounds. Have all, more particularly Groundsel, hoed down before seed-time, for if these are allowed to be shed over the ground the work of extermination is greatly increased. Dig between rows of plants that were not shifted during the past season, thoroughly loosening up the ground, and at the same time picking out and burying deeply all weeds that appear in sight. Hand-weed all seed beds—an operation that is best performed during damp weather—collecting them in heaps to ferment, and where it is noticed that the young plants have been lifted partially by the frost, or otherwise become loose and shaky, an application of light sandy soil from a fine-meshed riddle will put matters right as well as impart fresh vigour to the seedlings. When ripe, Elm seeds may be collected and sown at once, but in this district the almost full crop has been blown off during the past stormy weather. Sow in sandy loam, cover thinly, and run a light roller over the beds, tending with water should dry weather set in. The remains of Birch seed kept over winter may be sown in any rough out-of-the-way place where the seedlings can be lifted as required. We find this a more successful method of raising Birch from seed than when coddled in nursery beds. These thick sowings of forest tree seeds have been made early, and heavy thinning-out must be attended to, else the plants will become drawn and weakly and from which it will require them years to recover.

ROADS AND WALKS.

These have occasioned almost endless work in the way of repairing and keeping clean during the past six months. Owing to the heavy and continued rains ruts are constantly appearing, even in well formed roads, so that active measures must be enforced to have these repaired as soon as possible, for few things are more annoying or noticeable either to foot or other passengers than irregular surfaced roads.

Weeds are likewise hard to keep in subjection, and will, for the next couple of months, require special attention. Hoeing during dry, sunny weather is about the best remedy, but with the weather we are at present experiencing this is of but little use unless, indeed, the weeds are hand picked or raked off immediately after being passed over by the hoe. Salt, if judiciously applied, we have found a sure and profitable weed exterminator. In laying it on keep it well away from the drive or walk borders, else evil will come of good intentions.

FENCES, SHEDS, &C.

Wire fences will now require a little tightening, the posts ramming up if loose, new staples supplied where others have been lost, and the application of a good coat of varnish or tar. This latter had best be given in warm, fair weather, after the wires have been cleansed of all rust, and the posts of bottom herbage, so that the tar can be applied well down to the ground level. Tool-houses, nursery sheds, seats, gates, and styles, may all be repaired and painted, while rustic work, which usually comes under the forester's charge, including bridges, arbours, and summer houses, should be looked over and set to rights by repairing and varnishing. Furze hedges may now be trimmed. This prevents seeding, and renders the hedge more lasting and closer as a fence. Hoe the sides of recently-formed hedges, collect the rubbish, and, along with any straggling side-shoots and overhanging branches, have them burned or otherwise disposed of.

Watercourses of all kinds will require frequent looking after, as the past wet weather has taxed to the utmost their powers of delivery. Accumulations of broken branches, leaves, and other woodland *débris* should at once be cleared from the mouths of culverts and closed drains, and thrown well back to prevent their occasioning a similar recurrence. Drift sand and mud must also be taken from gratings alongside drives and roads, indeed this will require almost daily attention during weather like the present.

LAND WORK.

The preparation of land intended for planting on next season may, as soon as the workmen can be spared, be proceeded with. Draining, fencing, clearing, or whatever other preparations may be considered necessary for this work can hardly be taken in hand too soon, indeed were this early start oftener insisted upon fewer would be the individuals who defer planting until the spring months.

TREE WORK.

Tree stakes, tree guards, rabbit-proof fencing, and similar precautionary erections had better be scanned over and repaired where necessary. Tree stakes in particular, after the stormy weather we have experienced, must be loosened and their moorings broken and out of place. Such matters should be put to rights at once, the trees at the same time being firmly tramped up, and a sod of earthy turf placed firmly on the side opposite that from which the most severe winds may be expected.

The foliage in all its varying and refreshing shades of green on our forest trees is just now very effective, and which, coupled with the abundance of bloom on the deciduous kinds, renders the late spring months perhaps the most desirable in the woodlands. The Maples and Chestnuts have been glorious, while the Broom and Furze light up with their golden flowers even the darkest nooks of our Welsh mountain sides. *A. D. Webster, Penrhyn Castle, North Wales.*

ALPINE PLANTS.

(*Continued from p. 756.*)

ERYTHRONIUM GIGANTEUM AND E. GRANDIFLORUM.

These are two fitting subjects for any garden, even where but the choicer bulbous plants are grown. To see a good-sized patch of E. giganteum, with its mottled foliage and large erect-growing flowers of the purest white with a ring of red halfway down, does one good, even although it leave a secret hankering after more of so ornamental a plant. Although frequently confused with E. grandiflorum, the plant in question is, however, perfectly distinct from that species, the flowers being borne singly, whereas on the other more than one flower is always produced on the same stem, not unfrequently five or six on well established plants. Here both are growing well, and increasing from year to year, in good loamy peat.

The yellow Adder's-tongue (E. Americanum) is another desirable member of this family that does well with us, the mottled leaves and canary-yellow flowers looking healthy and well from year to year. Being of rather diminutive stature it should be planted well away from large growing subjects, and on a somewhat elevated position.

ARNEBIA ECHIOIDES, OR THE PROPHET PLANT.

This is certainly, at present, one of our most distinct and handsome alpines, the arching clusters of yellow and black spotted flowers rendering it highly attractive, these being well thrown up above the dense green lanceolate foliage. It is a most profuse bloomer, frequently two, and occasionally three, crops of flowers being produced in the same season. A free sandy soil, kept constantly moist, and direct exposure to sunshine, would seem—at least, judging from specimens here—to meet the wants of this pretty Borage wort well. Propagation may be effected either by seed or division, the former method being perhaps preferable; for few care to split up a large healthy specimen of such a plant.

ANEMONE BLANDA.

This is now finely in flower, which may also be said of A. apennina, A. ranunculoides, A. Robinsoniana, *alias* A. nemorosa cœrulea, A. narcissiflora, A bracteata fl.-pl., the common double wood Anemone, and others. The latter, when well established in free vegetable matter, is about as beautiful as any, the regularly double flowers and extreme floriferousness being special recommendations for its extended culture. A. blanda looks well in a pocket of the rockwork, and almost in company with the bright and long-lasting A. fulgens. Another pretty effect is produced by patches of our natives, A. ranunculoides and A. nemorosa cœrulea. The flowering of A. pulsatilla is nearly over, but we have seldom seen these produced in such quantity as during the past two or three weeks.

TULIPA GREIGI.

This plant, with its brilliant oriental Poppy-like flowers and nicely mottled leaves, is without doubt a

great acquisition to early flowering bulbous plants. This Turkestan Tulip was at first thought to be somewhat tender, but fortunately this idea may now be completely banished, after the severe and long-continued frosts of the past winter. It likes plenty of moisture and plenty of sunshine, but is sadly knocked about and disfigured by prolonged east winds.

Notices of Books.

The Book of Garden Management, &c. Ward, Lock & Co.

This is announced as a considerably enlarged and entirely remodelled, rearranged, and reconstructed edition of Beeton's *New Book of Garden Management*, carefully brought down to date—"a complete and comprehensive work on the theory and practice of gardening in all its branches." This is an ambitious statement, which need not be too severely criticised, for although we could not ourselves speak of the book in quite such terms, it is fair to say that there is no book of which as much could be said, and at the same time there is no doubt that the editor and compiler has succeeded in this instance in producing a very useful compilation. Like some of its predecessors it aims at too much, and some chapters—as, for instance, the first—might have been omitted with advantage. The chapter on natural soils embodies a number of geological details necessarily incomplete, and of no direct value to the practical gardener. So again, in discussing the chemistry of soils, the compiler goes back to what is now ancient history, and starts with the false assertion that plants derive the chief part of their food from the soil: had he substituted "water" for "food," he would have been somewhat nearer the mark. The action of Bacteria is, so far as we see, entirely overlooked, though this is certainly one of the most, if not the most practically important matter connected with the soil-food of plants that has been discovered of late years. We should not have alluded to a matter like this—and we may say the same of almost the whole of the section relating to the "Principles of Vegetation"—were it not that they belie the statement that the information has been brought down to date. Had the compiler read his *Gardeners' Chronicle* with attention, or perused lately issued works on the physiology of plants as applied to cultivation, he would have found that a judicious compilation from such sources would have been more generally acceptable than detailed accounts of Mr. Smith's fertiliser or Mr. Jones' patent manures. Another instance of the fact that the book has hardly been brought down to date is evident in the allusion to the gardens of the Royal Horticultural Society at Kensington, which have for several years lost the character the author attributes to them. The details of garden management are for the most part judicious and useful, and conveniently arranged for reference. There is a good index, numerous woodcuts, some of which, old friends, have gone the round of the catalogues and got rather worn in the process, and some coloured plates, which add nothing to the value, though, as we imagine, considerably to the cost of the book.

Although we cannot entirely endorse the compiler's favourable opinion of his work, we can, nevertheless, recommend it as a convenient book of reference.

Handbook of Plant Dissection. By J. C. Arthur, C. R. Barnes, and J. M. Coulter. New York: Henry Holt & Co.

This is a handy little volume on a similar plan to Bower and Vines' *Course of Practical Instruction in Botany*, but comprising what that volume at present does not, the investigation of some of the lowermost types of structure. The present work opens with a most serviceable introduction treating of ways and means and the mode of turning them to the best advantage and then proceeds to give directions for the study of various plants from the lowest to the most complex. Each is treated in detail, and at the end of the instructions for the analysis of the plant are given annotations which give the pupil some idea of the bearing and significance of the details he has been studying. This is very desirable, for under the system of instruction now followed it often happens that a student acquires a mass of facts concerning the plant he is studying without much insight into their relative importance physiologically, and still less morphologically and systematically. Before being set to use such books we think the pupil should acquire some elementary knowledge of the morphology and physiology of plants, and with this preliminary knowledge he will be better able to use to advantage the instructions given in this volume. We should prefer, for instance, that the "preliminary" notes in the present volume should be extended by the incorporation of so much of the annotations as might suffice to give the pupil a general idea of what he has before him, and what he is expected to see. With this information before him the pupil will more readily and rapidly grasp the details and their significance, just as a reader sitting down to read a play of Shakespeare is greatly helped by a preliminary sketch of the plot of the play and an indication of the *dramatis personæ*. The present work is the result of the joint labours of three American professors, and we heartily congratulate them on their success, and most cordially recommend the book to the attention of students.

DISEASE OF PEACHES, NECTARINES AND GRAPES.

At this season of the year, immature Grapes, Peaches and Nectarines, are frequently sent to this office in a mildewed condition, with a request for the name of the fungus and for advice. The disease appears to be more prevalent amongst Peaches than Nectarines or Grapes, for that reason the appearances

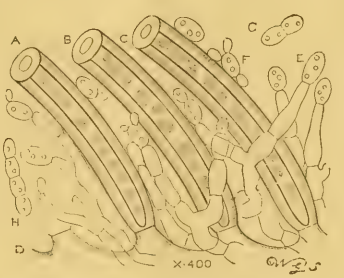


FIG. 177.—PEACH MILDEW: GLŒOSPORIUM LÆTICOLOR.

presented by Peaches are here given. The Peaches sent are generally green, with a large patch (often covering one half the young fruit) of pale buff or pale salmon coloured or whitish mildew, the mildewed part of the fruit being slightly depressed and the whole fruit hardened and obviously ruined. The depressed and discoloured place looks exactly as if the fruit had been pressed against a pipe or brick-work and had become mildewed on the pressed place, but the fact is, the mildew does not grow on the side of the fruit next to the wall, but on the surface exposed to the sun. Young Peaches are densely covered with a natural crop of short hairs; the fungus, however, is very much shorter than the hairs, and nestles on the fruit surface well protected at their base.

The fungus is Glœosporium læticolor, and was first described in the pages of the *Gardeners' Chronicle* by the Rev. M. J. Berkeley, in 1859, p. 604. As no illustration has hitherto been given of this pest the accompanying drawing (fig. 177) made from Nature, and enlarged 400 diameters, may be useful. The bases of three hairs belonging to a Peach fruit are shown at A, B, C; the surface line of the fruit from which the hairs arise is shown at D. The hairs in the illustration are cut off short; if the complete hairs were shown to the same scale they would be at least 8 inches long. The fungus which bursts through the membrane of the fruit is shown growing between the hairs and bearing spores or conidia. A typical spore is shown at E. When the spores fall from their supports they produce other spores by budding in a yeast-like manner, as at F, sometimes two will be seen conjoined, as at G, or a chain of four or more may be seen, as at H. The membrane of the diseased fruit and the basal part of the hairs swarms with transparent or very faintly salmon-tinted spores, in all stages of growth. The fungus, which is transparent, grows within the fruit, and bursts through the membrane outwards. The pale salmon-coloured diseased patch on the fruit is not however caused by the colour of the fungus, but by the hairs of the fruit being in a diseased condition. The presence of the fungus within the fruit causes the hairs, which are normally colourless, to change to a whitish salmon colour. The granular contents of the hairs take on a darker salmon hue.

The fungus is a destructive and dangerous one, for it often spreads from Peaches or Nectarines on to Grapes, and instances are on record where all the stone fruit, including Grapes of a house have been infested and destroyed by this fungus. This is not to be wondered at, for the spores are produced in extraordinary profusion; they are extremely variable in size, and often fall from their supporting threads when very small. Fully grown spores, as at E, measure $\frac{1}{1000}$ inch long, An allied species of Glœosporium greatly injures Cucumbers, another infests Apples.

The only known method of getting rid of the Glœosporium is to carefully handpick and burn all infested fruit, the affected examples are readily seen by the salmon-coloured whitish or pale buff disease patches. When gardeners see green Peaches presenting pale salmon-coloured patches, often nearly covering the young fruit, they may be assured they have the Glœosporium in the fruit-house. *Worthington G. Smith, Dunstable.*

The Rosery.

A PLAGUE OF RED RUST ON ROSES.

THIS has appeared in great force, and apparently over the greater part of the country, within the week ending June 12. The rust mostly succeeds growth and bloom—this season it has run ahead of both; and this not so much because the rust is later, but the Roses. It is, however, most unfortunate, for there are fewer leaves and shoots to destroy, and the rust is making short and terrible havoc among them. I wish Mr. Worthington Smith would do for this orange fungus what he has so admirably done for the Potato disease—throw light upon its origin and causes, and also suggest, or enable others to suggest, cures.

At present we know comparatively little of this pest, only that it is the most injurious and destructive as well as inscrutable of all that attack or infest the Rose. Pick off the spots or infected leaves the moment they appear, and promptly burn them, is the most effective means we have found of curtailing its ravages. Cure there seems to be none. Unless the picking is done with care, that is, without agitating the boughs or leaves, it is all too prone to become a mere broadcast sowing of the spores of this most injurious and destructive pest. The extreme alternations of temperature between the recent bright days and almost freezingly cold nights seem to have helped to range over the heads of our Roses with this pest. *D. T. F.* [We shall give some remarks on this next week. ED.]

MARÉCHAL NIEL ROSE.

The exuberant growth of this Rose under glass no doubt materially helps to bring about its comparatively early exhaustion. Stocks are often blamed, and perhaps rightly, although I find it to do equally upon several kinds of stocks; but it seems certain that some blame attaches also to the lack of courage shown in the use of the knife; hence, in a few years, many once fine and vigorous trees are found one mass of old hard wood, and small pigmy growth. I have found here that the Dog Brier gives admirable results, although the scion has almost trebled the stock in dimensions of stem; also double worked on the Brier through Madam Berard, a first-rate stock; Lamarque, and other robust Roses. I am now working the Maréchal upon Marie Guillot, which is quite unfitted for house work; Homère, a very robust and fairly free kind; and Anna Olivier, none of these comparing for a moment with the former for robust growth and floriferousness. All strong growths close home to the original stock are saved, and others obtained by cutting the old wood hard back and compelling it to break, thus enabling buds to be put at the moment it is stout and fairly well set. Buds for this purpose may be found on the Maréchal almost at any time during the summer, but still to secure those strong

growths which are so necessary to ensure good blooms the succeeding spring the buds should be got in not later than the present month. As to the pruning of Maréchal Niel, I find it well to cut very hard the moment the bloom is over, and not only hard on the previous year's growth, but even to take out some of the branches hard back. If this does not compel the Rose itself to break again strong just below the cut the second stock will be sure to do so, and buds put out to these strong growths soon fill up the gap. I think I may say that in pruning recently I cut out fully two-thirds of the previous wood, but the remainder is already pushing strong growth, and yet another thinning of the weaker shoots must be given in the autumn, specially because of this facility to throw, first, robust growth, and second, the power, to throw new back growths for budding as required. I think Madame Berard to be a first-rate stock. *A. D.*

Scotch Notes.

THE PILRIG PLANE.

This is a coloured variety of Acer Pseudo-Platanus, superior to and distinct from any other form of the species that we happen to know. It is quite distinct from the well-known Corstorphine Plane, and will prove a very pleasing companion and contrast to it. It is free of growth and hardy, as the type or any variety of it is. The foliage is, throughout the spring and the greater part of the summer months, a fine warm bronze-crimson, shaded deep orange, equal in effect to some of the higher coloured Japan Maples—in facts so long as the tree continues to put forth new foliage the colour is maintained all over it.

ACER HOOKERI.

Of this very distinct plant there were some very fine plants growing in a cool-house at the Pilrig Nurseries sufficiently lofty to give a very fair idea of the style of the species. Indoors it is evidently a very rapid grower, but unfortunately it is evidently a very rapid grower, but unfortunately it is not hardy enough to endure the winter scatheless in most parts of Scotland. About Edinburgh it has its young growth cut badly by frost in winter, but it ought to succeed in some of the warmer and sheltered places of Argyll and Wigtonshire, and some parts of Wales and the southern counties of England, where the winters are mild and the summers such as would enable a deciduous Indian species such as this to ripen its rather gross growth perfectly before winter sets in. The foliage and distinct aspect of the tree renders it desirable among deciduous trees wherever it may be successfully grown out-of-doors. Messrs. Dicksons & Co. have secured a valuable yellow variegated form of the species which at first sight somewhat resembles the yellow blotched Ontario Poplar, but is more constant and more conspicuous in its effect.

SEEDLING CALCEOLARIAS AT DICKSONS & CO.'S PILRIG NURSERIES, EDINBURGH.

At the present time the above-named firm have in bloom, at their Pilrig Nurseries, a superior strain of greenhouse Calceolaria. There is a large house devoted to them, in which are contained several hundreds of plants in prime health and condition. The house being a lofty one—too much so for the most favourable formation of the habit of this easily drawn plant—the uniformly dwarf character of all the plants is a point that can only be satisfactorily accounted for to the practical observer as the result of an inherent peculiarity of the strain. The conditions as regards light are certainly such as would suggest a tendency to legginess rather than the compact stubbiness that is the conspicuous peculiarity of every plant. Many plants are no more than 9 inches high, yet with very ample and luxuriant foliage, and corymbs of flower of from 12 to 18 inches across. The flowers are enormous in size, many exceeding 2½ inches in diameter, yet without flabbiness of texture. The variety and clearness of the colours are also remarkable, and there are in respect of selfs some novel departures from the usual styles of colouring. This is particularly notable in some brilliant sparkling crimsons and various shades of red, for which we are not colourists sufficient to find a satisfactorily descriptive term, and beautiful tints of canary and nankeen, the two latter being accompanied by a substance and size of flower rarely seen in light-coloured Calceolarias. The strain is in all respects a very superior one, and deserves to be well known. *X.*

Home Correspondence.

Odontoglossum vexillarium.—Mr. Crawshay seems rather sceptical with regard to the growth of this Orchid at Woodhatch Lodge. On referring to our book I find the large plant mentioned by your reporter was one of four bought at Messrs. Stevens' rooms on April 12, 1882, and costing 15*s.* 6*d.* each. They all proved to be distinct varieties, and have been grown separately, and not on the make-up system. Our collection has been increased from time to time since by the purchase of imported pieces. I cannot give Mr. Crawshay the rate the plant in question has grown and bloomed at, but many of our plants have borne three spikes to the bulb, with as many as nine or ten blooms on a spike. They do best by being kept gently growing nearly all the year round. *J. Ridout.*

The Codlin Moth (Carpocapsa pomonella).—We have often had occasion to illustrate this destructive creature, whose larvæ or grubs destroy

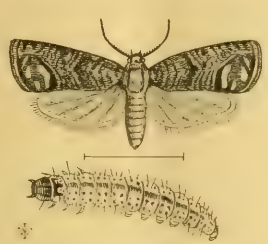


Fig. 178.—The codlin moth.

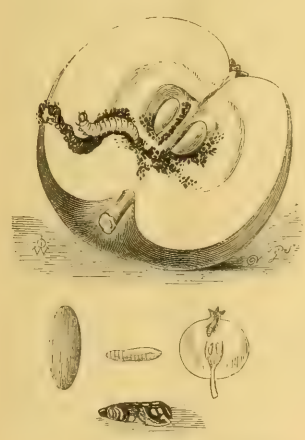


Fig. 179.—The codlin moth's transformation

so many Apples. Mr. A. J. Cook, of the Agricultural College, Michigan, finds the application of Paris green (arsenite of copper) very effectual in the proportion of 1 lb. to 50 gallons of water, which is used with a fine syringe or spray pump. The important thing is to scatter the spray on all the fruit, and to use as little as possible, at the time when the fruit is the size of a small Pea. The danger in the use of so violent a poison is shown to be *nil*, as the poison is all removed before the fruit is ripe. [Nevertheless, the utmost caution should be used with so dangerous a substance. Ed.]

Sowing Seeds of Carnations, Pansies, &c.—One of the simplest and most effective methods of raising seedlings of florists' flowers is to sow the seeds in the ordinary small dried fruit boxes; place immediately over them oiled newspapers, and cover with squares of glass, and place the boxes on the ground in an eastern aspect. A frame is unnecessary. *T. W.*

Is the Wallflower a Native?—On comparing Continental and British forms of this popular old garden flower, it may be seen that it is evidently prone to vary exceedingly, whether as a cultivated plant, or growing about at its own free will, scattering its seeds over rocks, old walls, ruinous ramparts, or old castle walls. It is by most botanists of the present generation considered as a garden escape as far as Britain is concerned; but it seems to be unhesitatingly given as true native, and described as common in Withering's *British Botany*, seventh edition, published in 1848, and is figured in *English Botany*, vol. xxvii., pl. 1934. No account of Mimulus luteus is given in the former work, although the plant is now known to be thoroughly naturalised over the greater length of Great Britain and Ireland. Cheiranthus Cheiri assumes a shrubby much-branched habit when growing on walls, and hence has frequently been named C. fruticulosus. Specimens collected on Lochleven Castle in 1827 exhibit small yellow flowers, narrowly linear leaves, about 1—3 inches long, and slender, seed-pods quite 2—2½ inches long, while another collection made in the Isle of Wight in 1832 on the walls of a castle, shows a less vigorous plant with comparatively broader lanceolate leaves, aggregated towards the apex of short branches. The seed-pods are similar to the last, but the whole plant is much more hoary with the characteristic bipartite hairs, appearing like simple ones attached by the middle. A form growing in great abundance on the high sea cliffs at Tenby bears a considerable resemblance to the latter form in the dwarf, much-branched habit and aggregated leaves, but it differs in being even more densely covered with white hairs, and has short pods 1—1½ inch long and ¼ inch broad. The latter character seems peculiar to it, and neither agrees with many dried specimens examined, nor with cultivated garden specimens. It crops up in precipitous and inaccessible places, and even on an isolated rock in the bay. Plants collected last autumn and compared with Continental forms from widely separated localities, afford no apparent reason why they should not be considered as that of a wild variety, which is certainly able to hold its own amongst the other forms of vegetation there. It is stated to have been introduced to British gardens in 1573 from South Europe, and the whole question would seem to hinge on whether it existed in this country previous to that date. Even if records existed, it is questionable whether the botanists of those days were so thoroughly acquainted with the British flora as to be trusted implicitly in giving a reliable decision. Furthermore, in the absence of other proof it would be difficult to determine whether a plant was aboriginal or not where it maintains itself spontaneously, and persistently inserts itself into every available crevice of rock and wall as it does at Tenby. *J. F.*

Diseased Cucumbers (p. 768).—I judge Mr. Simpson used too many wet leaves with the stable litter, consequently the bed was too cold for early Cucumbers to thrive in, the heat should have been from 70° to 75° instead of 60° with such a bottom, and it may be that the materials were not properly prepared before the bed was made. Possibly too many wet leaves were used and too little stable manure, and both may have been in a bad condition. Has should have selected good sound fresh leaves not too much soddened with wet, and good fresh stable manure with the long dry straw shaken out of it, "in proportion of one third leaves to two-thirds manure;" this should have been put into a heap for a fortnight and turned over and mixed well twice before being used, to get it into a warm healthy mass. Cucumbers delight in plenty of moisture when growing in a high temperature, but if kept too wet in a low temperature it is almost certain death to them. Cucumber weather out-of-doors is when the glass stands from 70° to 80°, and it is precisely the same in doors—you cannot calculate upon healthy vines or fruit with the glass at 60°. *C. D.*

Gilbert's New Late Broccoli Victoria.—This is without doubt a first-class acquisition to our late Broccolis. On the 7th of this month I had an opportunity of testing its merits: it is perfectly white, and when cooked had both the appearance and flavour of a very finely grown example of Early London Cauliflower. It appears to be very hardy, and is so thoroughly protected and encased by its foliage that some little difficulty is experienced in removing it without injury to the flower. I would strongly advise growers of Broccoli to give the above variety a trial. *John Austen.*

—— Permit me to thank Mr. Gilbert, of Burghley Gardens, Stamford, for having given me an opportunity of pronouncing an opinion upon his Victoria Broccoli, which has taken all the honour a new vegetable can lay claim to—a First-class Certificate. When I say that the heads of Victoria Broccoli are almost as white and as tender as an Early London Cauliflower is at the end of May, and that the plants are as hardy as the hardiest of Broccolis, your

readers will therefore agree with me in saying that the veteran gardener whose name and that of Burghley are associated with so many good things, has, in the raising of the Victoria Broccoli, added another link to his already lengthy chain of achievements in the raising of new fruits, vegetables, and florists' flowers of sterling merit. I have great pleasure in being able to pronounce Victoria the best late Broccoli that I am acquainted with, not excepting those two really excellent late varieties, Ledsham's Latest of All, and Model, the heads being well protected from the effects of frost and sun by closely overlapping leaves. Growers should note this. *H. W. Ward, Longford Castle.*

Wasps.—Here in Chester I have observed, like some of your recent correspondents, a greater number of queens than usual, their abundance indicating a corresponding destruction of fruit in the autumn. After watching the progress of nests hanging upon branches of trees I incline to think that the queen only builds a few cells, at once depositing eggs for brood hatching after leaving the work of enlargement of premises and cell building to her progeny, and these never leave a nest in the ground without a particle of soil in their mandibles. Your correspondent, Mr. Duffield, mentions 500 to 700 cells as the probable number in a nest, but an equal number of thousands would be a more approximate calculation. For the destruction of nests I have never tried the bisulphide of carbon, but consider that cyanide of potassium, both in ease of applicaiion and certainty of destruction supersedes squibs or any explosive material. Last year some miles from here I with above cyanide destroyed sixty-four nests without being stung, although I carried on the destruction whenever I had time to spare, either morning, noon, or night. It will be found a good plan to approach the nest resolved neither to be easily frightened—for a wasp often threatens an attack without stinging—nor to show fight by striking with hand or stick, for if you do the alarm will be given, then you will soon find yourself in a warm corner. I always advanced slowly, stood as motionless as possible, and found that the wasps were too intent upon work to have time to waste with assaulting me. The cyanide, of which I had 1 lb., was crushed to facilitate solution in water, afterwards preserving the fumes by keeping it in a stoppered bottle. A medical gentleman told me that, used as I proposed, the cyanide would act in the same way as prussic acid, rendering great precaution necessary with its custody; but I experienced no unpleasantness in handling it. Furnished with this solution and some cotton wadding, a thin stick about a yard long, a man with a spade and a basket, I was ready at any hour. A piece of wadding is soaked in the solution and pushed into the hole, when on the instant egress ceases. In one hour, or by the time the operation is repeated to all nests found, the first will be ready for digging out, in the majority of cases the wasps being all dead, the exceptions I met with being where the passage was intricate and of considerable length. In such cases it will be found that the passage has become so completely blocked with dead wasps that the fumes of the solution cannot penetrate to the nest. Without fear of being stung the passage may be traced and some wadding placed near to the nest. Nests can be destroyed equally well by day as by night, for the cyanide not only destroys those at home but those away die as soon as they return, one inhalation being sudden death. On this account many collectors of butterflies and other winged insects make use of it to prevent the possibility of injury to the wings with fluttering. *Thomas Reid, Upton Nurseries.* [Such a poisonous means of destroying wasps as the above is not to be recommended for general use, for in inexperienced hands fatal results to those handling it might result. ED.]

Seedling Gloxinias.—The blooms of seedling Gloxinias which I now send you are the result of carefully fertilising eight different varieties. I find out of 150 plants there are scarcely two alike, and some of the plants carry over thirty blooms, fully expanded. *H. Craike, Ouseffeet, Goole.* [A vigorous strain, with large flowers, possessing much diversity of colour. ED.]

Educational Flower Shows.—The suggestion made by "B.," at pp. 767, 768, about establishing or arranging for a "system of lectures" to be given at flower shows, is one that ought to be firmly taken in hand by those interested in the education of the public at large. Unfortunately after the School Board standards have been passed no one is responsible for the further education of the public, not even to furnish them with an opportunity of learning, while, as a matter of course, compulsion is out of the question. Lectures at the South Kensington flower shows used to be of frequent occurrence—why are they discontinued? These lectures should be entirely of a popular character, intended for the general body of the people, while scientific lectures should be confined to the meetings of the Scientific Committee. Such a course might be the means not only of diffusing a knowledge of plant life, but of uprooting or unseating some of the many current popular errors, which when they once get disseminated, like our European Thistles in some of the colonies, appear to be impossible to exterminate. The popularity of Orchids no doubt sends hundreds to Kew to see them, but so little is known about them by many visitors that it is of quite common occurrence for a party to pass through the Orchid-houses and then inquire where the Orchids are. Quite as absurd are the questions and statements made about the Victoria regia, and many seem so convinced of the truth of their statements that they will not, or with difficulty, be gainsaid. One old lady seriously inquired of the writer of this whether the Victoria was not a cross between a vegetable and a fish? I believe the spines and ribs on the upturned young leaves suggested the idea. Had she been a Darwinian? Gardeners are not exempt from errors, which, if they cannot be termed popular, are somewhat akin. It is high time the term spongiole was discarded, not only from the vocabulary of the rising generation of gardeners, but also expunged from our gardening books. The newest edition of Thompson's *Gardeners' Assistant* quotes the following from *Cours Elémentaire d'Arboriculture*:—"The root consists of a main trunk, from which proceed numerous ramifications called fibrils, at the extremities of which are situated little swellings of cellular tissue and mucus. These absorb fluids with great force, and are called spongeoles." This is extremely misleading, although it has obtained considerable currency, and the spongeoles are spoken of as the mouths by which the roots absorb plant food from the soil. The so-called spongeole is the root-cap, impervious to moisture than otherwise, consisting outwardly of dead cellular tissue, that serves to protect the growing point as it pushes its way through the soil. It is a pity this doctrine should still be taught (see p. 760 of the present volume). Questions of this nature might even be dealt with at a flower show, and let us hope the prizes offered for the three best essays on roots will act as a stimulus and incentive to young gardeners to acquire a truer and more correct knowledge of the subjects under their care, and not be guided by the rule of thumb, merely because it served its day and generation. We must march forward with the times, or be left behind. Another great and serious drawback of flower shows that ought to be educational, is their conventionality. It is quite a common practice of the compilers of the schedule of prizes to stipulate that the boxes in which such things as Roses, Pansies, Picotees, Dahlias and the like are to be exhibited should be of certain dimensions and colour. All this may be consistent enough in order to calculate the space required for their reception, but surely it is possible to judge plants fairly without having recourse to this universal system of arrangement, and an alteration of the existing order of things would, if properly managed, afford endless variety, and prove more attractive to visitors. It has been said, that whoever has seen one metropolitan flower show has seen all; that is, where the exhibits were of the same character. On the other hand, Northern visitors have looked upon as a novelty the arrangement of plants on grassy terraces in the large tent at South Kensington, space now occupied by the Colonial Exhibition. Certainly the fine old specimens of Azaleas, Heaths, Pimeleas, and Palms, as well as soft-wooded stuff and Orchids, were seen to best advantage on the grass, and proved more grateful to the eye than if the same had been arranged on long formal benches or staging. It would, I doubt not, prove a safe investment to offer prizes for the most naturally (under existing circumstances), tastefully, and informally arranged groups of plants or cut flowers, where the opposite sides and corners should not be the repetitions and counterparts of the others. Those engaged in the arrangements would not only educate themselves, but greatly assist in educating the public taste. *J. F.*

Gloxinias.—In the *Gardeners' Chronicle* of the 5th inst. there is an account of some very fine Gloxinias grown at Belmont, Devonport; and it is stated that there were at least twenty flowers on each specimen. Would your correspondent be surprised to hear that I have seen one Gloxinia in a 7-inch pot this year which produced no less than a hundred blooms of the erect type, and several others in 6-inch pots with sixty and seventy? I could scarcely have credited it had I not actually seen them. They were also inspected by Mr. A. D. Christie, of Warwick Castle Gardens; Mr. Moorhouse, gardener to Mr. G. H. Nelson; and Mr. West, gardener to Mr. F. W. Arkwright. They were grown by Mr. Cleaver, gardener to Major Forbery, Castle Park, Warwick, from last year's seedlings. Those gardeners who have examined them have pronounced them the best specimens they had seen. The secret of Mr. Cleaver's success is, that he takes up one flower at a time, and is never satisfied until he has thoroughtly mastered its peculiarities. Two years ago he was equally successful with Tuberous Begonias, and his results are all the more creditable; for he has but limited appliances, and only a boy to help him in the garden and grounds. *Lloyd Evans, Warwick.*

A Royal Bouquet.—In a dingy little street in the then poverty-stricken and somewhat grimy town of Leicester, lived, thirty years ago, a pale, middle-aged "stockinger." In the front room of the little house—it contained only four rooms—were the stocking-frames at which he and his wife sat, back to back, busy with feet and hands the livelong day at the rattling, screeching machines. By dint of hard labour the pair would earn between them perhaps a dozen shillings a week all told, and out of this would have to come rent, firing, candles, living, and clothing. A careful observer, however, would divine that this stocking-maker was no ordinary man, but a patient thoughtful worker and waiter for the knock that Dame Fortune is supposed to give—once at least—at every one's door. The man had an inventive genius, and employed his short but well earned leisure in constructing tiny models of a machine that should utilise the properties of india-rubber in an elastic web. His invention was patented, large factories were built, and the industry within a few years gave employment to thousands of nimble fingers and willing hands. The erst stockinger rose rapidly to wealth and position, and was elected mayor of the ancient borough of Leicester. What now will he do with his leisure? What is to be his hobby? He had wealth and leisure, and intelligence enough to enjoy the fruits of them. It is scarcely matter of surprise that his hobby was an expensive one, yet, no more strange than true, it was Orchids! His house was situated near the factory, and he at once set about erecting suitable houses, and engaged one of the foremost Orchid growers of that time, Mr. Bullen, as his head gardener, sparing no expense in the purchase of the most costly species and varieties of this beautiful family of plants. With a view to competition at the Great Exhibition of 1862, Luke Turner—that was the name by which he was familiarly spoken of—did nothing by halves, and gave orders for the construction of vans specially suited for the conveyance of his pets. The magnificent bank of Orchids was, it is needless to say, immensely admired by the multitudes of visitors, and won the Gold Medal awarded by the Horticultural Society. Among the many who lingered to admire Mr. Turner's Orchids were the Prince and Princess of Wales. As they passed to their carriage the proud exhibitor, touching Sir Wentworth Dilke on the arm, asked him if he thought the Princess would accept a few blooms, and on being answered in the affirmative, took a knife from his pocket and cut from his plants an armfull of the costly flowers which he carried to the Royal carriage. The gift was, as a matter of course, gracefully accepted and the donor epecially thanked. Probably the magnificent sprays of bloom formed one of the most expensive bouquets ever presented even to Royalty, and considering their beauty and rarity, might have been valued at a hundred guineas. *T. W.*

Polyanthus—Polianthes.—In the *Gardeners' Chronicle*, Saturday, May 15, 1886, p. 631, first column (*ad calcem*) figures the name Polyanthus, and this is not the first time I have seen this mode of spelling in your paper. Yet Bentham and Hooker have taught us in their *Genera Plantarum* that it must be Polianthes, and so I venture to call your attention to this aberration. It seems to me that papers of the great reputation of the *Gardeners' Chronicle* should not propagate the faults of orthography committed by unlearned men. *C. A. J. A. Oudemans, Amsterdam, June 12.* [Our correspondent is probably unaware that the Polyanthus of English gardens is an umbellate Primrose or Oxlip, which has nothing to do with the Polianthes or Tuberose. But when was the term Polyanthus applied first to varieties of Cowslip and Primrose? Gerard has no mention of them nor Johnson. They are not mentioned by Parkinson (1629). The nearest approach to our Polyanthus are what he calls "Paralysis" or "herba Paralysis," from the notion that they were "profitable" for the "palsie" even as the Beares ears' Auriculas are. Chabræus (1656), does not allude to the Polyanthus. In Hale's *Eden* (1756), it is spoken of as universally known under the name Polyanthus—"an abbreviation," the true name being the Polyanthous Primrose, the native country being stated to be Turkey! In Miller's *Dictionary*, ed. 8, 1768, the only one to which we have access at the moment, the term Primula polyantha is used, and these are said to have been so much improved within fifty years as almost to equal the Auriculas, and to sell for a guinea a root. ED.]

Orchid Nomenclature.—In Mr. De B. Crawshay's communication on this subject there is little that requires a reply; positively erroneous statements, however, must not be allowed to escape. Vanda cœrulescens Vesta, certificated at the Royal

Horticultural Society, is not the same as a V. c. Boxalli; and the fact that Mr. Douglas, in whom he has so much faith, suggested the name "Vesta," ought to satisfy him. With respect to his instance of a plant bearing two names, and of which he says, "Cattleya Percivalianaalba was certified by the Royal Horticultural Society's Committee, and also named afterwards by Professor H. G. Reichenbach as C. crocata." In this he is in error, for C. crocata is of the C. Eldorado section, and nearest to C. Wallisii, from which it differs in having its fine pure white flowers much larger, and some often three or four on a spike; the throat of the labellum is orange. I flowered it first in 1878 from an importation from the Amazon, and thought it the loveliest of large white Cattleyas; it was not, however, then distinguished. Afterwards Mr. Pilgrim, of Cheltenham, had the plant, and then Mr. Cypher. In 1882 it was named from Mr. Wrigley's collection at Preston, and since that it has appeared with Sir Trevor Lawrence, Mr. Lee, and others; Mr. Gaskell also has a delicate rose-coloured form of it. It will therefore be seen that it is not likely to get confounded with C. Percivaliana alba, unless it is by those who know nothing about it. *James O'Brien.*

Sweet Brier Hedge.—In answer to the inquiry of "W. H. S." (p. 733), there is a grand Sweet Brier and Thorn hedge near this town on the Glyn Estate, which will measure about 200 yards in length. It runs by the side of the road, and I have observed its condition for this last twelve years. It must have been planted at least twenty years ago, and the Sweet Brier growing amongst the Thorns makes a charming picture. *John Richards, Dolgelly, North Wales.*

Fragrant Solomon's Seal.—Permit me heartily to thank Messrs. W. Brockbank and "R. C. F." for their most interesting notes (see p. 767) to the effect of the fragrance of Solomon's Seal. Unfortunately I am going on the Continent this Whit week, but trust, if spared till next year, to add a new pleasure to the treat of the great show marshalled by Mr. Findlay in the Botanic Gardens, and that is to partake of a feast of sweetness from the Didsbury Solomon's Seal. Of the latter place I may say I have been there, and still would go, for few are more full of interest or rich in satisfying pleasures. Without at all disputing the worth or value of the testimony so kindly furnished may I beg of your readers to furnish more, and also for an editorial pronouncement on the amount of odour in samples sent? As one swallow does not make a summer, so two or four cases will hardly establish the fact that the Solomon's Seal is generally fragrant. I had not noticed the differences in structure of the different varieties of the common Solomon's Seal, P. multiflorum, or that the wild variety, P. officinale, was quite odourless. Now that Mr. Brockbank has established the point that there are fragrant Solomon Seals we want a crusade against the odourless varieties. So far as I am aware, up till now no Solomon's Seal has ever been described as fragrant, and though it is a plant I have cultivated nearly all my life I have never yet met with a plant of it that could fairly be described as sweet-scented. *D. T. F.* [The specimens sent had lost their fragrance. We have had, however, personal evidence of the fact. ED.]

FRUIT NOTES.

PEAR PROSPECTS.

I AM pleased to be able to record a heavy crop of fruit on all trees of Marie Louise in this part of Worcestershire. Although we generally manage to secure a crop in most years, yet the present year promises by far the heaviest crop. Those planted against east walls are equally well cropped as those on the west. I have a good quantity of trees of this, in my my opinion, the most useful of all Pears, as I find none are more appreciated for dessert; and by having them on both east and west walls the season can be prolonged, by gathering a few at a time according to requirements, and the latest being left hanging on the trees till quite sharp frosts set in; and I quite agree with your able correspondent, "A. D.," that this will be a noteworthy Marie Louise year. Other trees on walls that are carrying heavy crops are Jargonelle, Beurré d'Amanlis, and also the striped variety, Durondeau, Marie Louise d'Uccle, Napoleon, Glou Morceau, and Winter Nelis. Others, that are bearing moderate crops, are Doyenné d'Ete, Doyenné du Comice, Pitmaston Duchess, Duchesse d'Angoulême, Brockworth Park, Dana's Hovey, Marie Benoist, Emilie d'Heyst, Beurré Bosc, Beurré de l'Assomption, Chaumontelle, Bergamot d'Esperen, and Josephine de Malines. Pyramids, for the second time within the last ten years, are bearing a good crop of fruit, for although annually covered with bloom, they seldom set much fruit, and with the exception of Doyenné d'Ete, Bon Chrétien, Louise Bonne of Jersey, Beurré Clairgeau, Souvenir du Congrès, Beurré Bachelier, and Bergamot d'Esperen, all other kinds seldom produce and mature fruit sufficiently good for dessert purposes. *Edward Ward, Hewell Grange Gardens, Bromsgrove.*

ON THE PRINCIPAL VARIETIES OF PINUS SYLVESTRIS.

PROBABLY there is no tree that is more extensively employed in works of afforestation than the subject now under notice. Its hardiness, power of accommodating itself to soils of almost every class, the rapidity of its growth, the facility and cheapness with which it can be raised, either from open sowings or in the nursery, and last, but not least, the many purposes to which its produce may be applied, all tend to make it deservedly popular as a forest tree both in our own country and on the Continent. For the purpose of reclaiming waste lands, more especially wherever a luxuriant growth of Heather has taken possession of the ground, it is the only tree that can at the outset be planted with any certainty of success. However high and thick the surface vegetation may be I have never seen it fail to establish itself with ease, and from the moment that its leading shoot has overtopped the Heather, the latter's fate is sealed, and but a few years are needed for its complete extirpation. The Austrian Pine is not so well suited to Heath soils, and fails to make headway under such trying circumstances; the cover of the Laricio is too light to exercise any material influence on the tangled growth beneath, and although it may make a fair start it is soon arrested in its progress. Nowhere could ocular demonstration of the facts above noted be seen more clearly than in the district of the Sologne, from which I now write, where thousands of acres of the most hopelessly barren wastes have been successfully reclaimed by laying down plantations of this hardy Pine. On grass lands, abandoned farm cultivation, and the better class of soils, the Laricio and Austrian Pines, as well as Larch, Spruce, and other Conifers, are found to make satisfactory growth: the Laricio is in great favour in all those parts where rabbits abound, but for the purpose of reclaiming *bonâ fide* Heather wastes the Scotch Pine is without an equal. The annual deposit of vegetable matter shed by this tree is in excess of that afforded by any other European forest subject, hence it continues year by year to improve the surface soil, and by the gradual formation of a thick layer of humus to fit it for the reception of timber trees of a higher value (?). In the important works of afforestation that are now being carried out in the extensive Forest of Orleans it has been found necessary to prepare the ground by a preliminary course of Pinus sylvestris. The plants employed for this purpose are chiefly derived from seed of a particular type of tree that has been established in the Forest of Fontainebleau, and which approaches as nearly as may be in all its characteristics to those of the true Riga Pine. But these are details on which I am now about to enter, and which form the chief object of the present paper.

Although the Scotch Pine is widely spread by Nature throughout the forests of Northern and Western Europe, as well as in America, it is not generally known, amongst us especially, that it exists in many well marked varieties, I may even say species, as well as in a multitude of intermediate types, that seem to graduate almost imperceptibly into one another, although the plants raised from their seed remain constant to the characteristics of the parent tree. The cause of this state of transition has been ascribed by many able authorities to be due chiefly to the conditions of latitude, soil, and climate, in which the trees whence the seeds were derived grew in their original state; but all are agreed that the variations which occur in their outward form are confirmed to a greater or less extent in the value and quality of their timber. M. le Baron de Morogues, one of the most talented and indefatigable of French scientists who have devoted their attention to this subject, has enumerated, classified, and figured no fewer than eighteen distinct types that occur in the forests of Savoy alone, and that may be readily identified in plantations that have been raised from seed produced in that district. He still has reason to believe that others may still exist that have hitherto escaped his notice. It is not my intention to put my own humble judgment in the scale on either side, but I feel bound to admit that he has so far made a very strong case in favour of his argument; and that, so far as the four principal varieties that I propose to deal with in this paper are concerned, the question seems to be beyond dispute. The field for observation does not, however, cease here, as he truly remarks in the opening paragraph of his interesting pamphlet (*Pins Indigènes de la Savoie*).

"The different types of trees that form the foundation of our forests are hitherto far from being well known; among the many species that are met with but few find a place in our lists of classification. The Oaks and Pines alone will furnish many illustrations of this fact. How many species hitherto considered as identical exhibit marked differences? The study and comparison of the different types of each so-called species can alone enable us to determine their number."

There is not the space at my disposal, nor am I competent, to enter more fully into these minute investigations, and there is not, so far as the practical details of this paper are concerned, any necessity for my doing so.

I propose to confine myself to the consideration of four very distinct varieties, that may be said to differ essentially from one another in many respects, and whose relative merits have for some fifty years past been exhaustively tested at the *domaine forestier* of Barres-Vilmorin, near Nogent sur Vernisson, Loiret. In the first instance I shall deal with the facts that have been proved with regard to them at the above establishment, and conclude with a few notes of my own personal experiences of their habits in the forest nursery. For the object in view it will be sufficient to take the four following clearly defined types, viz:—1, Pinus sylvestris var. rigensis (the Riga Pine); 2, P. s. var. scotica (the true Scotch Pine); 3, P. s. var. haganensis (the Hagenau or German Pine); 4, P. s. var. genevensis (the Geneva Pine).

All these differ widely enough among themselves so far as all the practical purposes of afforestation are concerned, and the seed of each can be obtained with ease, of genuine quality, and, save the Scotch variety, at cheap rates. I propose to consider them in the order given above, and to quote at full length the remarks made concerning them in the Barres catalogue:—

1. *Pinus sylvestris rigensis.*—In the *Nouveau Cours complet d'Agriculture* (1839), edited by Louis Vivien, aided by the late M. de Morogues, the Riga Pine is described as follows:—"This Pine has been classed as a species by many botanists; its leaves are long, greener and narrower than those of the common sylvestris, or of the Scotch Pine. It has a straighter growth, its wood is lighter, more supple, and stronger than that of any of the other forms of P. sylvestris" (De Morogues).

At Barres it is reported on as follows:—"Of all the varieties of Pinus sylvestris, the Riga Pine is incontestably that which possesses the most perfect habit. Its stem, which is perfectly straight, rises to a great height, preserving at the same time an almost perfect cylindrical form. The lateral branches, which are few in number, never assume undue development, nor, as is the case with the German variety, occasion a deformity of the trunk. The bark, which is of a bright red colour at 5 feet from the ground, is very thin, and split into scales as thin as paper, beneath which, at a depth of 1 millemetre, lies the green herbaceous underbark. The quality of its wood, however, is a question that can hardly be solved here, inasmuch as it is only perfected in trees that have made slow growth in a cold climate.

"It is much to be desired that the seed of the Riga Pine should be substituted throughout all our works of afforestation in lieu of that of the German type, whose shape is always more or less faulty. The cost of so doing would not be very great, inasmuch as the seed can be delivered at from 10 to 11 francs per kilogramme. and there would be the certainty of establishing fine plantations, whose growth would be directed solely to the production of trunk wood, which is by far the most valuable part of the tree.

"Woods of the Riga Pine should be raised by planting, on account of the high price of the seed; otherwise the latter is always good in quality, germinates

readily in the nursery, and produces excellent plants. Another reason for raising this Pine by planting in lieu of sowing is that it is the variety that takes hold of the ground the most readily, and whose transplantation holds out the greatest certainty of success. In the nurseries of Barres it is always the beds of Riga that are the fullest and the most vigorous."

"*Riga Pines from Seed gathered at Barres.*—It was a matter of no small importance to determine whether the superiority of the Riga Pine over all the other forms would remain constant in the succeeding generations. This has been clearly proved in the second generation, which is in all respects fully equal to those raised from Russian seed. Fresh sowings made with the seed produced by this generation will in a few years definitely settle this question. (Since the above was written they have, I belive, done so in the most incontestable manner.)

"A fear exists, however, that, closely mixed as they are in the plantations, the several varieties of Pines may hybridise amongst each other, and that the results will lead to inferiority of produce. This the future must show."

A few other blocks of Pines of the Riga type also exist at Barres, which were raised from seeds derived from Brittany; but here, again, the original supply has been traced to a Russian source; they are so identical with the true Riga Pine in every respect as to call for no further notice on my part. In the course of my own journeys through that province I have always been much struck by the superiority of the types of Pinus sylvestris in all the older plantations. In those of more recent date the same care has not been exercised in the selection of seed.

The facts noted above with reference to the unaltered transmission from generation to generation of all the leading characteristics exhibited by the parent tree are fully borne out by M. de Morogues, who goes even further still, and affirms that the varieties named by him are not due to accidental causes, or to the action of soil and climate, but have existed from time immemorial, and are handed down, (save in some chance instances of hybridisation) intact from one revolution to another, and that he has only to examine a plantation to determine whence the seed supply was derived, but is also able to trace individual specimens to their original source. This clearly illustrates the necessity on the part of those who are engaged in works of afforestation to assure themselves that the seeds they make use of are not only good in quality, but also gathered from mature trees of an unexceptional type.

2. *Pinus sylvestris scotica.*—This receives but scant consideration at the hands of the Barres authorities. The sole reference to it is:—"The Scotch Pine is the type of its species, and is, at Barres at any rate, inferior to the German Pine."

In the *Nouveau Cours complet d'Agriculture*, alluded to above, distinction is made of two varieties of this type, indigenous to Scotland, which are described as follows:—

"(1.) *Pinus rubra*, Miller.—The red Scotch Pine, so named because its wood is somewhat hard and red in colour. This fine tree was in times past widely spread throughout the Highlands of Scotland, and formed vast forests that have since, in a great measure, been destroyed.

"(2.) *Pinus horizontalis*, G. Don (Horizontal Pine of the Scotch Highlands).—G. Don (who, in addition to this Pine, makes mention of two other types peculiar to Scotland) details as follows the chief characteristics which distinguished it from the variety given above. Its branches are perfectly horizontal, and tend by their weight to incline downwards towards the stem. The leaves are broad and dentate instead of being emarginate as in the common Scotch Pine, and may be recognised at a distance by their glaucous hue. The bark of the trunk, too, is also less rough; the cones, as a rule, thicker, less pointed, and more compact. G. Don is inclined to look upon this horizontal branched variety as the primitive type of the Scotch Pines." (De Morogues.)

So far as my own humble observation goes I cannot fully endorse the extreme opinion given concerning this Pine at the domain of Barres. It seems to me to partake a great deal more of the habits of the Riga, though still very variable, than does the German Pine. But then, again, it seems to have been established that there are in Scotch forests other forms besides the two noted above, some of which, both in form and in the quality of their timber, are clearly superior to the rest. Moreover, it may be taken for granted that the Scotch Pines, to be grown to the best advantage, requires a cooler soil and moister climate than those in which the German Pine will be found to thrive, and that it is also less partial to great extremes of heat and cold. The Riga Pine also prefers a fresh soil, but seems better adapted to withstanding long periods of drought. The Scotch Pine is a clearly distinct species, the colour of its foliage, bark, buds, as well as the shape of the last-named, rendering it easily distinguishable, even in the nursery. With regard to the quality of its seed I cannot speak so favourably; all the parcels that I have received have been inferior in germinative power to that which has been obtained from Germany and Russia, and in price it is excessively dear. This may be due in part to the action of the climate and partly to the absence in the United Kingdom of efficient machinery for cleaning and drying the seed. It is, however, in no danger of being supplanted by the German variety in its own country, though I am by no means certain that the Riga Pine might not be substituted for it with advantage in very many cases. Wherever first-class timber is the chief object in view the Riga Pine is, beyond all doubt, the type of P. sylvestris that is best calculated to produce it.

3. *Pinus sylvestris haguenensis* (the Haguenau Pine).—This type is reported on as follows in the Barres Catalogue:—

"We shall here leave M. de Vilmorin to speak for himself, as he has in his historic and descriptive memoir of the Forest School of Barres (Paris, 1864) described with great ability the characteristics, failings, and merits of this Pine.

"The prevailing characteristic and fault of this Pine lies not only in the excess of its vigour, but also in the irregularity of its distribution, which is so often wasted in the formation of branches at the expense of the stem growth. It is in this respect that it differs so essentially from the true Riga Pine. Its trunk is, as a rule, much more crooked, less regular, and often curved, leaning over, or visibly swollen at the nodes, by the growth of gormandising branches that extend to a great distance and spoil the symmetry of the tree. In one type that is of frequent occurence, the tree is more compressed, and the habit more regular, but the whorls, which are far too vigorous, turn the whole into a thick tangled pyramid, in the centre of which the leader is lost.

"Again, the ruddy colour of the bark is less uniform and less pronounced than is the case in good samples of the Riga Pine; it begins generally at about 7 feet from the ground; sometimes the bark is grey, or but little tinged with red, throughout the whole tree. The lower bark is, moreover, tkicker and much more broken.

"Such are, as a rule, the Haguenau Pines at the Forest School of Barres. We see clearly that this variety is by no means identical, as Bosc and many others have asserted, with the northern Pine that yields timber for ships' masts, and that also, in spite of its vigour and the rapidity of its growth, it is very decidedly its inferior as regards quality.

"It is true that one does find here and there among the German Pines, trees that exhibit a regular bole and crown, with a fine ruddy bark, and which retain the superior degree of vigour peculiar to this race. These will bear comparison with the best of the northern Pines. Moreover, if the time ever comes when an experiment will be made to establish by individual selection the best possible types, some of these may serve, if their use becomes a necessity, as an excellent starting-point for the accomplishment of this result.

"Apart from the differences that I have noted above, the Haguenau Pine may be distinguished from the Riga by its leaves, which are longer, more distant in the branches, sometimes a little bent or convoluted, and more glaucous in hue, also by the shoot, which starts in spring some eight days later. Its buds are less strongly coloured, its cones of a less uniform grey, often tinted with violet, dull or reddish, but the peculiarities derived from the buds and cones are not sufficiently clear or sufficiently constant to afford certain means of distinction—at least, so far as my observations have gone. It is especially on those distinctions that I have given above that I rely in distinguishing the Riga from the Haguenau Pine."

In these parts of France, German seed has been employed almost exclusively by landowners in their extensive works of re-afforestation, and the many faults possessed by trees of this type are apparent even to the casual observer. In Brittany, where use has been made in most cases of seed of a better class, the plantations consist of trees of a more regular habit, the difference being very striking. To insure anything like straight growth, the German Pine must be planted close from the very outset, and even then the symmetry of the trees will fall far short of that of the Riga Pine. On the sides of the valleys, whenever a blank has occurred, or light been let in, this exuberant lateral growth will be at once developed, and the strength of the tree, instead of being expended in the formation of a regular stem, is wasted in constant efforts to produce lateral growth. It is true, I think, the Riga Pine does not grow so fast for the first four or five years as its more vigorous congener, but after that period has elapsed it soon makes up for its previous shortcomings, as none of its efforts are expended in the production of waste material. The result of my own observation, however, is that the Riga Pine to be grown to the best advantage stands in need of a cooler soil and a moister climate: its success at Barres may be due in a certain degree to the fact that the domain is situate within the influence of the extensive forest of Orleans. In the case of fuel plantations the German Pine may give as good results so far as the mere volume of produce is concerned, but where clean sound timber is the object in view the superiority of the Riga Pine is beyond dispute. *E. J. C. Brace, Les Vaux, par Salbris, Loir et Cher, April 14.*

(To be continued.)

WADDESDON MANOR.

FROM Aylesbury, about 6 miles through a fertile and pleasant country, the rural solitude of which after the first mile is only interrupted by two or three habitations, bring us to the grand lodge of Baron Ferdinand de Rothschild's magnificent estate, and entering the gates 2¼ miles over a broad well gravelled and rolled road sweeping through the vast expanse of park and pleasure ground bright with its snowy Hawthorns, scarlet and white Chestnuts, clumps of double scarlet and white Thorns, Lilacs, golden Yews, and other flowering and foliage trees and shrubs we find ourselves within railing distance of the princely mansion itself, which stands on the crest of a hill overlooking the fertile and undulating country in all directions, and itself a landmark as far as the eye or field-glass can reach—a noble pile, solid, vast and beautiful, grand in itself, and an embellishment to the whole country in which it stands. On entering the lodge the ground has a gradual upward tendency until nearing the mansion. The road would have been steep, but that it has been cut over the crest of the hill, thus giving high, rising ground, which has been planted with fine shrubs on the right hand, and a lower bank on the left. This would have wholly intercepted the view from the road, and blocked out the richest scenery, but that at short intervals gracefully curved openings are arranged, the rising grounds between each of which are carefully planted; thus, from each of these openings a series of lovely views down the hill, over the valley, and away to the rising ground again for many miles are provided for, and a panorama displayed which is in itself worth the journey to see. Along the whole of the way the large masses of double and single Furze, white and yellow Broom, Viburnums, &c., are brilliantly effective, and load the air with their delightful fragrance. Arrived at the plateau on which the mansion is built, what is admittedly one of the very finest approaches in existence reveals itself, consisting of a level of about five acres, the portion farthest from the house having a large gravelled sweep, with a massive white marble basin about 30 yards in diameter in its centre, the middle of which has three colossal groups in white marble arranged as a fountain.

Approaching the mansion from the fountains is a broad gravel drive through a correspondingly wide, smooth, green sward; and well back, so as not to obstruct the view, are on either side the noble avenue of Oaks over forty years old, the removal and planting of which was such a grand idea, and fortunately attended with success. In the rear of the Oaks on the right is a massive rockery, tastefully planted with important-looking subjects, such as Pampas-grass, large growing Ferns, Palms,

&c., a very novel effect being produced by dropping in some tall Dracæna australis, whose straight bare stems and graceful heads of foliage leaning over the highest point have a tropical appearance, and may be seen from a long distance. On this front a few beds of bright flowers, some of Ghent Azalea, and the dwarf belt of Rhododendron planted round the three sides of the mansion close to the base, give plenty of variety and bright colouring, the whole being neatly edged with Golden Pyrethrum and blue Lobelia. On the other or south side, overlooking Aylesbury, the belt of Rhododendrons is continued with one of Palms and other foliage plants which look well on the broad white stone terrace. Below the terrace in the geometrical flower garden, planted with mixed carpet and flowering plants, with large specimens of variegated Phormiums, Dracænas, &c., in the centres of the beds, and still lower is another fountain and basin about thirty yards in diameter, all in white marble, and equal in beauty to the one at the main entrance. The descent to the lower ground is most skilfully arranged, so as to make as many quiet nooks of different styles of gardening, the whole of them being very tastefully planted and bright, with handsome foliage and flowers, and massive rockeries too, with small lake and bridge beneath, and cascades overhead, lend their aids to beautify the garden; and a fine aviary and enclosure, with deer of different kinds, also give interest and variety. Passing still lower, and far away from the mansion, we come to the model dairy and stables, so situated as to be almost out of view, and then we come to the kitchen garden, which is four acres within the walls and three out, the whole being neat and tidy as a flower garden. The fruit range, 400 feet long, in nine divisions, is here. Most of its trees and Vines are comparatively young, but in every department, whether Peaches, Nectarines, Figs, or Grapes, there is a good crop, plenty for present use, and a large supply for the future.

The Houses.

We now come to the very fine new block of plant and forcing houses, about fifty in number, all built on one plan, with a view to neatness, convenience, and utility. Throughout the whole of the houses the ornamental as well as the useful is studied, and while many of them are devoted to the production of large supplies of cut flowers, plants for decoration, the forcing of Beans and Tomatoes, which are required nearly the whole year round, and such-like useful objects, the cleanliness and order observed in every department renders the inspection of all both pleasant and satisfactory.

The main plant-houses, however, are arranged together so that the showy things may be visited without the ordinary stock in the smaller houses being noticed if desired. Thus at the entrance we have a large and lofty corridor, the roof of which bears flowering climbers, and the base dotted with specimen Azaleas, &c., which leads to a very fine series of rockeries partly planted with Ferns, drooping plants and partly furnished by the pockets being filled with large specimen Palms, Adiantum Farleyense, Caladiums, flowering plants, &c., which arrangement admits of greater variety than when the whole is permanently planted, as by the constant changing of the prominent plants the view presented is never twice alike.

Part of the rockeries is by the now celebrated Clapham, and part by Mr. Bradshaw, the head gardener, and the best compliment that can be paid is to say that Mr. Bradshaw's attempts are well worthy to bear company with Mr. Clapham's. Underground, beneath the rockeries, are large stalactite caves, and a winding brook dotted with little islands, over which the Ferns and mosses luxuriate, and beside them the handsome white Arum sends its flowers out of the water. Ascending and crossing the bridge another rockery is seen, in which Begonias and other plants are very effective and the large pots of Tea Roses, which embellish the large recesses, both handsome and fragrant. The Orchid-houses contain a good representative collection of showy flowered kinds, the two Odontoglossum-houses being full o sound, healthy plants. Many of the Odontoglossum Alexandræ are in bloom, and arranged with the showy mauve and crimson Masdevallias, the elegant sprays of O. cirrosum and O. Pescatorei, the delicately tinted sprays of O. vexillarium, the rich orange colour of Epidendrum vitellinum majus, and the slender sprays of Oncidium cucullatum, a fine show is made. Of this last named a very handsome large form is grown at Waddesdon, with flowers quite twice the size of the old kind; it is now in flower, with two spikes of twenty-four flowers.

Besides the above, in the cold houses are Masdevallia chimæra, with flowers 18 inches across the tails; Odontoglossum Halli leucoglossum, which had 108 blooms; Oncidium macranthum, some fine Odontoglossum Uro-Skinneri and O. hastilabium, Dendrobium infundibulum covered with bloom, and various of the smaller Masdevallias.

The Lælia-house is constructed on a novel plan, a rockery tank being in the centre, and the plants suspended over it. Certainly they thrive well so, and the sturdy plants of L. purpurata and L, elegans are very floriferous. Also luxuriating here are V. teres, V. Hookerii, Oncidium nigratum, and many finely flowered specimens of Odontoglossum citrosmum.

The Cattleya-house also has its show of massive flowers of many varieties of C. Mossiæ, C. Warneri, and C. Mendeli; and the just protruding buds of C. Gaskelliana and C. gigas show where the supply is next to come from. The Phalænopsis-house, which contains a healthy lot of those plants, has also finely bloomed plants of Oncidium Lanceanum and Odontoglossum Roezlii, Phalænopsis Sanderianum, Angræcum sesquipedale, Oncidium Papilio majus, Saccolabium præmorsum, &c. all of which, in common with the rest of the Waddesdon Orchids, are in good sound condition.

Noticeable in the many other plant-houses are well grown specimens of Eucharis, Clerodendron Balfourii, Stephanotis, Ixoras, Anthuriums, and other showy flowering plants; and the immense stock of decorative Dracænas, the fine and well grown Ferns, especially the handsome lot of Todea superba; the house after house of Tree Carnations in full bloom, the two houses of Souvenir de la Malmaison, especially good; the house of trained pyramid, double-flowered Ivy-leaved Pelargoniums, equal to specimen Azaleas; and not less interesting is an inspection of the Cucumber, Melon, and Tomato houses, and those devoted to stock for decoration, the houses full of Poinsettias, Maidenhairs, &c., proving that the winter supply is now being well worked.

In many of the houses there is a good plan of edging the stages adopted, in having wooden troughs 2 inches or so wide planted with mosses, Tradescantias, &c., all round; the woodwork of these troughs is also cleverly made to imitate stone by painting them, and while wet sprinkling them with coarse sand from a dredger: so managed they are durable, novel, and effective. Also in one of the houses may be seen a good method of managing the supply of plants for vases, particularly the costly white marble ones which are at Waddesdon. This consists in having for each a movable wood lining, which early in the season is planted with the plants required, and thus they have time to establish themselves before the season arrives for putting them out. They have then only to be dropped into the vases to which they belong.

Convenient to the garden is the comfortable bothy for the ten young men kept on the place, and at the village entrance is the handsome new lodge, in which Mr. A. Bradshaw, the clever head-gardener lives, and adjoining it is a commodious reading-room and hall, in which lectures on educational subjects are frequently given. A Philharmonic Society, largely supported by the garden, is also in good going order, and many other kindly and philanthropic schemes started by Baron Ferdinand de Rothschild, who, like the rest of the Rothschilds, is never happier than when conferring the means of happiness on those around him, are flourishing, not one of them having languished, let alone failed.

MESSRS. J. COOLING AND SON'S ROSE NURSERIES, BATH.

Roses are largely grown in Bath for trade and other purposes; this beautiful city of the West appears to possess a climate peculiarly suited to an early and rapid, yet vigorous development. It is now many years since Mr. George Cooling established himself in business in Bath, and in addition to commodious seed warehouses and offices in Broad Street, he has nurseries at Batheaston and Swain's Wick, both near to the city. At the former Roses are largely grown, and especially the newer varieties, and Teas and Noisettes, for sale in pots; and this has become an important branch of the business. Almost close to the entrance to the nursery at Batheaston, which is on a south-easterly slope, falling down to the River Avon, which glides along the fertile valley below, the visitor gains admission to a long potting and packing shed; and on the right, each opening into the shed, are several low span-roofed houses, 60 × 12 feet, with stages on either side of a passage down the middle. At the present time these houses are filled with a stock of young Roses, mainly growing in large toms, 4½ inches in diameter, in which they make vigorous growth. About 10,000 Tea and Noisette Roses are worked annually; in addition to H.P.'s single Roses, and various other types. On every hand is to be seen a clean and healthy stock, in the best condition.

Grafting commences early in September, and goes on until March, when a finish is made with the spring wood; Teas and Noisettes are worked on the seedling Brier, H.P.'s on the Manetti stock. The grafted stocks are plunged in frames in the propagating-houses, in a hotbed made up of leaves and manure, which is turned over occasionally; and the junction of stock and scion is perfected in a fortnight. In a few weeks the plants have rapidly developed and are fit for sale.

Mr. Bennett's new Rose, Her Majesty, in addition to its other excellent qualities, must be set down as a remarkably good grower. Saleable plants are ready within six weeks of the time of grafting. It may be said of all Mr. Bennett's Roses that they are very free, and make capital pot stuff. The more prominent of the new Roses being largely grown are, in addition to Her Majesty—of which Messrs. Cooling & Sons have a fine stock—W. T. Bennett, H. Tea; Madame Norman Neruda, H.P., a new variety of the Beauty of Waltham class; Sunset, Tea, Pride of Reigate, a striped H.P.; Grace Darling (Bennett), Tea, a flower of which Mr. Cooling thinks very highly and regards as a great acquisition: colour white, tinted with deep pink; Gloire Lyonnaise, the new yellow H.P.; Mary Bennett, &c.

Single flowered Roses appear to be becoming popular; an article by Mr. T. W. Girdlestone in the last issue of the *Rose Annual* has operated to draw public attention to them. A good stock of Rugosa, Rugosa alba, Paul's Single Crimson, Macartney simplex, and Camellia japonica, pure white, with large yellow stamens, are most in demand. Here there is to be seen a good lot of the best form of the old striped York and Lancaster, and such sorts as Rose Button, Paquerette, Lawrenceana rubra, de Meaux or Pompon, and Perle d'Or, a yellow miniature Rose, flowering in clusters of thirty or forty blossoms, are becoming favourites.

The most popular Tea and Noisette varieties are Niphetos, Madame Falcot, Perle des Jardins, Alba rosea, Catherine Mermet, Marie Van Houtte, and Souvenir d'un Ami. Of these large quantities are annually worked.

Climbing Roses are growing into popular favour; varieties like Reine Marie Henriette, W. A. Richardson, Belle Lyonnaise, Rêve d'Or, Maréchal Niel, and climbing Devoniensis are in such demand that it is difficult to get enough to supply orders.

As soon as the young Roses are cleared out of the houses three of them are devoted to the culture of Cucumbers for seed, the leading sort being a fine strain of Telegraph.

But the Maréchal Niel house must not be overlooked. It is an old orchard-house converted into a place for growing cut blooms of this grand yellow Rose; it is 30 by 25 feet, boarded at the sides, and roofed with glass. The plants (some three or four) are planted out, and they are trained along horizontal wires, kept at a fair distance from the glass; it is found best not to be too near. The house has a flow-and-return pipe, but little fire-heat is applied, however, unless absolutely needed; some is applied to ripen the wood in autumn, and to assist the expansion of the flowers in spring. Mr. Cooling begins to cut at the beginning of April, and the supply goes on until the middle of May and later. At the end of May the plants are pruned hard, and they are encouraged to grow and make vigorous shoots, as it is found that the finest blooms are had from the wood of the preceding year. The house is kept close and moist, and well shaded during the summer.

In the open ground standard and dwarf Roses are to be seen in great quantities.

It is simply necessary to mention that a general stock of stove and greenhouse plants, bedding stuff, &c., is grown; while in the open ground fruit trees of all kinds, shrubs, and ornamental hardy plants, are found in great variety.

In the way of choice selections of seeds, a matter to which Messrs. Cooling & Son have given special attention, their Ne Plus Ultra dwarf Bean has made a great and deserved reputation. Their Omega Beet, Matchless spring Broccoli, Early Market Cabbage, and Leviathan Cos Lettuce are highly thought of by gardeners in various parts of the country. *Visitor.*

Reports of Societies.

ROYAL BOTANICAL and HORTICULTURAL of MANCHESTER: June 11 to 18.

THE annual exhibition at the Society's gardens, Old Trafford, was opened on Friday last under very favourable conditions. The fact that Whit week fell this year unusually late, was most advantageous to many of the usual classes of plants, &c., that are here staged for competition, and judging from the specimens that were placed on the tables, we cannot help thinking that many of the growers must certainly desire that this annual display could always take place in the month of June. The show was perhaps the most bright and attractive that has ever been held in the grounds, and that is saying a good deal; but from the first entrance to the glass exhibition house, until we strolled through every pathway and examined every group, it was an immense display of cultural skill in every sense of the word. The Orchids were most beautiful, more numerous than on any previous occasion, and the majority of those entered for competition were of large dimensions and wonderfully floriferous. No fewer than 250 of these plants were staged in the various competing classes, whilst almost a similar number were to be seen in various groups that were not entered for prizes. The stove and greenhouse flowering plants were just a little weaker than we have generally seen here. The foliage plants, Ferns, both stove and hardy, were fully up to the average, whilst the hardy herbaceous and alpine plants were finer and more numerous than has ever been seen here. The fruit was in excellent condition, and many dishes were shown. The winning collection of Strawberries in pots was noticeable for the number of fine fruit on the plants.

ORCHIDS (AMATEURS).

Proceeding to notice many of the classes in detail, it is better to take them as they appear in the schedule. In the class for fifteen exotic Orchids in flower, the 1st prize fell to G. Hardy, Esq., Pickering Lodge, Timperley (gr., J. Hill), with a group that was as near perfection as could well be:—Dendrobium Paxtoni, with 260 spikes of its rich golden clusters; D. Wardianum, having sixteen good flowering growths; Vanda suavis, seven spikes; Cattleya Skinneri, a grand plant, having twenty-five spikes; Odontoglossum vexillarium, full of flower and 4 feet across; Lælia purpurata, fifteen spikes; Cattleya Mossiæ, 4 feet over, covered with blooms; Cypripedium superbiens, eighteen blooms; Dendrobium suavissimum, twelve spikes; Aërides odoratum, twenty-four spikes; Cattleya Mendelii, thirty-six flowers; Cypripedium Lawrenceanum, forty flowers; C. Stonei, six spikes; Odontoglossum vexillarium, and Masdevallia Harryana, forty blooms, making a most complete and showy group. The 2d prize was taken by A. Hine, Esq., Fallowfield (J. Craggs, gr.), who had fine plants, among which we noticed Lælia purpurata, five spikes; Odontoglossum crispum, twelve spikes; Cattleya Skinneri, six spikes; C. Mossiæ, fifty flowers; Dendrobium thyrsiflorum, fourteen trusses; D. chrysotoxum, and D. nobile. J. Broome, Esq., Didsbury (A. Cole, gr.), was a good 3d.

In the class for nine the position of the two first-named gentlemen was reversed, A. Hine taking 1st with grand examples of Calanthe veratrifolia, twenty spikes; Cypripedium Lawrenceanum, thirty-six flowers; C. Mossiæ, forty blooms; Odontoglossum Roezlii, thirty-six blooms; O. crispum, thirty-six spikes; Dendrobium Devonianum, a grand mass 4 feet through, full of bloom; D. Paxtoni, with over 150 spikes; Cattleya Mendelii, with forty-three blooms, and a C. Mossiæ superba, with over 100. G. Hardy, Esq., was placed 2d, with a lot scarcely inferior, including a fine Lælia purpurata, Cypripedium candatum, seven spikes; C. Parishii, eleven spikes; Odontoglossum vexillarium, 4 feet across; Dendrobium Paxtoni, fifty spikes, and D. Jamesianum, with forty of its beautiful white and scarlet orange blossoms; J. Heywood, Esq., Stretford (gr., Mr. J. Elphinstone), was 3d.

G. Hardy was 1st for six Orchids, showing Dendrobium clavatum, with fifteen spikes; D. Wardianum with twelve flowering bulbs; a grand variety of Lælia purpurata, with five spikes; Odontoglossum vexillarium, O. citrosmum roseum, and Cattleya Mossiæ; J. Heywood 2d, T. Slatter, 3d.

With ten *bonâ fide* specimen Orchids G. Hardy was again to the front, having splendid plants, well bloomed, of Aërides Veitchii (true) with three spikes, two of which bore four laterals, the remaining spike having three; Cypripedium Stonei, three spikes; Odontoglossum vexillarium, and O. v. giganteum, a very fine form, with many spikes; Lælia purpurata, four spikes; a very large and dark form of Cattleya Mossiæ; Brassia verrucosa, with twenty spikes; Dendrobium crassinode, Aërides Fieldingii, and Trichopilia crispa, in a basket, having twenty fully expanded blossoms. J. Broome, Esq., was a capital 2d; and A. Heine, Esq., 3d.

Mr. Hardy was 1st with six Cattleyas, staging four immense plants of C. Mossiæ in variety, C. Skinneri, with sixteen spikes; and C. Mendeli, with thirty flowers. Mr. Heine had three good C. Mossiæs, two C. Skinneri, and a C. Mendeli.

For three Vandas only one competitor entered, and was deservedly placed 1st—J. Broome, Esq., showing Vanda teres Andersoni, with 240 flowers; V. teres, with fifty blooms; and a Vanda suavis, well bloomed.

A nicely bloomed Dendrobium Falconeri, with sixty blooms, appeared in one group, whose name we could not get; and a nice piece of Oncidium Jonesianum in flower was staged.

NURSERYMEN.

In these classes there was strong competition; the plants were mostly large, and very finely bloomed. Mr. J. Cypher, Cheltenham, was 1st for fifteen, with Lælia purpurata alba, Dendrobium thyrsiflorum, twenty spikes; Odontoglossum vexillarium, twelve spikes; Cattleya Mossiæ, 4 feet across; C. lobata, C. Mendeli, C. Mossiæ Rothschildiana, Anguloa Clowesii, fifteen flowers; and Epidendrum vitellinum majus, with fifty spikes, as his best plants. Messrs. Heath & Son, Cheltenham, were 2d, who had Dendrobium Dearei, with seven spikes of its pure white flowers; D. Parishii, Aërides Lobbii, nine spikes; A. virens, and a large mass of Cattleya Mendeli. H. James, Lower Norwood, came 3d, in whose group we noticed a grand Cattleya gigas, and a fine Dendrobium Bensoniæ.

For ten Orchids, H. James came in 1st, with a number of fine even plants, including Masdevallia Harryana, Odontoglossum crispum, C. Mossiæ, Cattleya Warneri, and others. J. Cypher was 2d; Messrs. Heath & Son 3d. In this last collection were very good examples of Oncidium macranthum, O. cucullatum, and Vanda Denisoniana.

Messrs. Sander & Co., St. Alban's staged a numerous lot, not for competition, including Cattleyas and Odontoglossums in variety, as well as new and rare Oncidium superbiens, which was certificated; and Oncidium tetracopis.

A Vanda tricolor, 10 feet high, was shown by Mr. Masters, High Leigh Hall, Knutsford, having five spikes of flowers, and leaves down to the pot.

STOVE AND GREENHOUSE PLANTS (OPEN).

The plants from J. Cypher were in his best style, and took the 1st for ten, with Erica Cavendishii, full of bloom, 5 feet through; E. affinis, almost as large; E. tricolor elegans, Ixora Williamsii, with immense trusses of bloom; Azalea Souvenir de Prince Albert, Darwinia tulipifera, and Aphelexis macrantha purpurea, a very fine group; J. F. Mould, Pewsey, Wilts, was 2d; H. James 3d.

TEN FINE-FOLIAGE AND STOVE AND GREENHOUSE PLANTS (AMATEURS).

These prizes were well contested, the premier award falling to the Earl of Zetland, Upleatham (gr., G. Nicholson). Here were good examples of Cycas, Kentia Balmoreana, Croton Johannis, C. majesticus, and C. Warreni, fine in form and colour; Davallia fijiensis plumosa, 6 feet through; Gleichenia Mendeli, 6 feet through; Dion edule, &c. H. Nicholson, Leek, came very close and was placed 2d, having Cycas circinalis, with fronds 8 feet long; Cycas revoluta, Encephalartos villosus, Croton Baron J. O. Rothschild, large and good in colour. S. Schloss, Esq., Bowdon (gr., C. Paul), was 3d. The last named exhibitor was 1st with eight stove and greenhouse Ferns, showing grand masses of Gleichenia Mendeli speluncæ, G. rupestris glaucescens, and G. flabellata, the last being 6 feet through; a large plant of Goniophlebium subauriculatum, &c.

With eight stove and greenhouse plants in flower, the Earl of Zetland was again to the front, with a nice clean lot, including Statice profusa, Anthurium Scherzerianum, Dracophyllum gracile, Allamanda grandiflora, Stephanotis, 5 feet through; and Aphelexis macrantha purpurea. S. Schloss, Esq., came in a close 2d, having a large Anthurium Scherzerianum, with forty spathes; Clerodendron Balfourii, Boronia elatior, in grand condition.

In the class for six Azaleas, J. Broome was the only exhibitor, showing Iveryana, Trotteriana, Stella, and Nonpareil, James Veitch, and Belle Gantoise.

J. Broome took 1st with six Ericas, having healthy and well bloomed plants of Ventricosa tricolor, V. alba picta, V. coccinea minor, V. magnifica and Cavendishii; J. Baerlein, Esq., Didsbury (G. Williams, gr.), was a good 2d.

PITCHER PLANTS, SARRACENIAS, &C.,

were well shown by amateurs and nurserymen, J. Broome, Esq., in the former class, showing fine examples of Nepenthes bicalcarata, N. Hookeri, N. Mastersiana, N. Broomeana, N. Harryana, Sarracenia Illustration, S. Chelsoni, S. Swaniana, S. flava, maxima, S. Mitchelliana, and S. Maddisoniana, &c.

In the nurserymen's class Mr. H. James, Mr. J. A. Bruce, Chorlton, and Mr. J. Mould staged ten plants each, and prizes were awarded in the order in which the names occur.

DRACÆNAS.

For twelve Dracænas (nurserymen), R. P. Ker & Sons were placed 1st, with fine plants of D. Elizabethiæ, D. Goldieana, D. recurva superba, D. Weismanni, D. variegans, D. picta, &c.

Messrs. C. Ryland & Co. were the only exhibitors with eight fancy and eight show Pelargoniums, and were placed deservedly 1st in both classes.

HERBACEOUS AND BULBOUS PLANTS.

The collections of these were much above the average. In the 1st prize lot sent by R. P. Gill, Esq., we observed fine examples of Spiræa aruncus, S. palmata, with forty spikes; Lilium aurantiacum, Centaurea rubra, Anthericum liliastrum, Ajuga genevensis, Hemerocallis flava, Erigeron cæruleus, Aquilegia chrysantha, Phlox Countess of Home, Cypripedium spectabile, Campanula grandis, &c.

In the class for sixty hardy herbaceous and bulbous plants, in or out of flower, Messrs. J. Dickson & Sons, Newton Nurseries, Chester, were 1st, with a grand collection, such as has never been seen in Manchester before. The plants were a very even lot, full of flower, and next to the Orchids the exhibits from this firm were among the most admirable of any class in the show. The same firm were 1st for the best collection of hardy herbaceous plants, with a group in every way fit to compare with the foregoing. This firm was the only exhibitor of a collection of Ixias and Sparaxis, and was placed 1st. A large collection of choice alpines in their best form came from Messrs. J. Backhouse & Son, York, not for competition: these were awarded the Society's Gold Menal. A fine show of Pansies and Violas in pots were made in five separate classes; over 250 pots were shown—1st prizes being taken by S. Robinson for twenty fancy Pansies; J. Heywood, 1st for twenty Violas in 8-inch pots; Mrs. Mellor for twenty Pansies; S. Lord for six Pansies; J. Blower for six fancy Pansies, and D. McClure for six Violas. With only one exception every class had three or more competitors.

MISCELLANEOUS EXHIBITS.

Ten Gloxinias were shown by L. Ward, Esq., Didsbury, and placed 1st; a clean and well bloomed lot—J. Heywood, Esq., taking 1st honours with eight Calceolarias, dwarf plants covered with large well shaped flowers.

The Roses were not specially noticeable as regards size, and though small were well bloomed. Messrs. Paul & Son were 1st for twenty Roses in pots, not more than 9 inches across. Messrs. Paul & Son were also 1st for a group of thirty Roses in any size pot. A fine display was made by Messrs. J. Waterer & Son, with large beds of Rhododendrons, full of flower. Mr. J. Horley also had a very attractive bank. From Messrs. R. Smith & Co., Worcester, came some charming specimens of Clematis, also some small plants in flower, showing the freedom with which many varieties will bloom.

Messrs. Cutbush & Son, Highgate, London, had a capital display, including Ericas, Spiræas, Azaleas, and other useful summer-flowering plants.

From Mr. B. S. Williams, Holloway, London, came a large collection, containing many rare and choice stove and greenhouse plants, with a good number of small Orchids staged amongst them. Messrs. R. P. Ker & Sons also had a very charming group, among which Crotons and Dracænas were very conspicuous.

FRUIT.

The fruit was more plentiful than is usual at this show, Peaches, Nectarines, &c., being in good condition. For eight dishes of fruit the Earl of Carrington, Wycombe Abbey (gr., Mr. G. T. Miles), was 1st, with Black Hamburgh Grapes, Stirling Castle Peach, Longleat Perfection Melon, Lord Napier Nectarine, and a Pine, Cherries and Strawberries. Sir J. W. Pease, Bart., M.P. (gr., Mr. J. M'Indoe), 2d, with a good lot, consisting of Black Hamburgh and Buckland Sweetwater Grapes, Best of All Melon, Banana, Peaches, Nectarines, &c. The Hon. Mrs. Meynell Ingram (gr., Mr. R. Dawes), 3d.

Mr. J. F. Campbell was 1st with two bunches of black Grapes; Mr. J. Barnes, Chirk, 2d.

The Earl of Carrington was 1st with white Buckland Sweetwater Grapes; Mrs. Ackers, Congleton 2d; and Mr. W. Bretherton, 3d. The Grapes throughout were good, the black varieties especially so.

Mr. Jas. Tomkinson was 1st with twelve pots of Strawberries; Mrs. Meynell Ingram 2d, and the Earl of Ellesmere 3d.

With Peaches, E. W. Munday, Esq., Shipley Hall (gr., Mr. N. Elpinstone), was 1st with Royal George; Rev. E. Sneed 2d, and Earl of Carrington 3d. The latter exhibitor was 1st in classes for dish of Nectarines, scarlet-fleshed and green-fleshed Melons.

Mr. R. H. C. Neville was successful with a dish of Cherries; the Earl of Carrington coming 2d.

Pines not being very fine the 1st prizes were withheld, the 2d and 3d only being awarded.

A new Melon, Penrhyn Castle, was shown by Messrs. Dickson, Brown & Tait, and was awarded a First-class Certificate.

Messrs. J. Laing & Co., Forest Hill, showed a group of their excellent strain of flowering tuberous Begonias; and Messrs. J. Davies & Son, Ormskirk, sent a box of cut blooms of choice seedling Rhododendrons.

A large space in the grounds is covered with implements—machines, stands, and other articles pertaining to the use or adornment of the garden.

EDINBURGH BOTANICAL: June 10.

THE Society met this evening at the Royal Botanic Garden, Professor Dickson, President, in the Chair. The following communications were read:—

I. "On an Unnamed British Orchid," By A. D. Webster, Llandegai, Penrhyn. The specimen resembled very closely Orchis maculata, but differed in height of station, it being always found above 500 feet, and flowered in April and May, instead of June and July.

II. "A Forest Tour in Provence and Cevennes." Part ii. By Major F. Bailey, R.E. Communicated by H. Cleghorn.

III. "Report on Temperature and Vegetation at the Royal Botanic Garden." By Robert Lindsay, Curator.

"During May slight frost occurred on three mornings, the total amount registered being 4°, while for last May a total of 17° were recorded. The lowest readings took place on the 2d, when the thermometer fell to 30°; 13th, 35°; 16th, 32°; 20th, 34°; 27th, 30°. The highest morning readings were on the 4th, 55°; 6th 54°; 7th, 60°; 17th, 55°; 18th, 54°. The first week was mild and genial, after which cold easterly winds and heavy rains were prevalent till the end of the month. Despite the ungenial nature of the weather experienced the foliage of forest trees and shrubs has come rapidly forward. On our dry soil the drenching rains have done much good in assisting deciduous trees and shrubs to develope clean and luxuriant foliage. By the end of the month a good many ornamental trees and shrubs were in flower, all of which are fully up to the average as regards quantity and quality of blossom. The Horse Chestnut, in particular, has not been so richly flowered for several years, having been uninjured by frost; the flowers are large and fully developed. The various species of Prunus, Pyrus, Rhododendron, Azalea, Magnolia, Lilac, single white Hawthorn, and Laburnum, also presented a rich appearance. Hardy bulbous plants generally have flowered well; the earlier kinds, however, are not forming seed so freely as they usually do.

"The rock garden was very attractive, owing to the large number of plants in bloom throughout the month; 253 distinct species and varieties of hardy herbaceous and alpine plants came into flower, as against 178 for the same month last year. The following were amongst the most interesting, viz.:—

Andromeda fastigiata
Anemone alpina
" " sulphurea
Androsace coronopifolia
" sarmentosa
" villosa
Anthyllis erinacea
Aubrietia Hendersoni
Aquilegia Stuarti
Carex Vahlii
Cheiranthus Allioni
Cytisus d cumbens
Coronilla minima
Dianthus geltdus
Dodecatheon integrifolium
Enkianthus himalaicus
Exarrhena Lyallii
Gentiana acaulis
Gentiana verna
Geum minutum
Iris Cengialti
Lamium Orvala
Meconopsis simplicifolia
Myosotis alpestris
Olearia Gunniana
Primula involucrata
" luteola
" Olgæ
" pedemontana
" scotica
" sikkimensis
Pentstemon Menziesii
" humile
Polygonum sphærocephalum
Silene quadridentata
" acaulis, &c.

IV. "On the Vegetation in the Garden of the Royal Botanic Institutton, Glasgow." By R. Bullen, Curator.

"The lowest temperature registered was 31°, or 1° of frost during the night of the 25th. On several other nights during the month 32°, 33°, and 34° were registered. The highest day temperature was 66°, on the 7th; the lowest 44°, on the 11th. Last year 23° of frost were registered during the first half of May, so that although we have this year experienced much dull, cold, and wet weather, we have had no extremes of temperature. This, combined with the late leafing of most deciduous trees and shrubs, will tend to a better development of the early leafing trees than was the case last year. So far the season has been favourable to the planting out of half-hardy plants and transplanting generally. Hardy annuals have germinated well, but will be late in bloom unless we get more sunshine shortly. Herbaceous plants never looked better, the snow covering having served as a protector for the most part of the winter; many species are in bloom earlier than is usual here."

V. "Exhibition and Description of New and Rare Plants from R. B. Gensen." By R. Lindsay.

Plants Exhibited in Flower at Meeting of Botanical Society, June 10.

Aster Stracheyi, dwarf creeping species from Himalaya
Allium Karatav ense
" Ostrowskyanum
Campanula abietina
Coronilla minima
Cypripedium macranthum
Dracophyllum Traversii
Delphinium Brunonianum
Erigeron aurantiacus
Fritillaria kamtschatica
Gastronema sanguine m
Globul ria nana
Houstonia cœ ulea
Leontopo ium alpinum, Himalayan form
Lychnis alpina
" lapponica
" Lagascæ
Linaria origanifolia
Myosotis alpestris
O o-ma taurica
Primula elliptica
" lon.iscapa
" prolifera
" Rusbeyi
Pinguicula alpina
Pentstemon Menziesii
Ramondia p.renaica
Ranunculus biloba
Saxifraga cæsia
" odontophylla
" longifolia

TREES AND SHRUBS.

RHODODENDRON FALCONERI.

A CORRESPONDENT expresses surprise to see Rhododendron Falconeri outdoors in Kent, but I am of opinion that it is quite hardy, as we have a plant here that has stood without any protection for many years, is now of large size, and this season is making very strong growth. As yet, however, it has not flowered with us, but I am hopeful it will next season, as we have planted it in a better position that is more open and sunny for ripening and hardening the shoots, and where it has better soil, with a cool moist bottom, which the plant seems to require. Even where it does not bloom this Rhododendron is worth cultivating, as it has very fine foliage, the leaves being quite a foot long and 4 to 6 inches wide, with the upper surface rugged and of a peculiar hue, with the under sides of a ruddy brown. I have tried several of the other Himalayan species out-of-doors, including the well-known and fragrant Edgworthi, but all have succumbed to the frost. I have some hybrids raised from the last named and R. Gibsoni, which I mean to test—one has been out the whole of last winter, and looks none the worse. *J. Sheppard, Woolvertone.*

VIBURNUM PLICATUM.

How fine on one of the walls at Chiswick just now is this deciduous Japanese species, with its very handsome and showy globular heads of white flowers. There is a refined beauty about the plant that is quite captivating; it is a subject in every way worthy of more extended culture. *B.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JUNE 16, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of Thirty Years.	TEMPERATURE OF THE AIR. Highest.	TEMPERATURE OF THE AIR. Lowest.	TEMPERATURE OF THE AIR. Range.	TEMPERATURE OF THE AIR. Mean for Day.	TEMPERATURE OF THE AIR. Departure of Mean from Average of 30 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
June	In.	In.	°	°	°	°	°	°			In.
10	29.64	—0.15	62.1	50 8	9 3	54.9	—3.2	52.9	94	E.N.E.; N.N.W	0.07
11	29 78	—0.02	68 5	49 0	19 5	57.6	—0.7	48 4	72	W.S.W.; S.S.W.	0.00
12	29 57	—0.22	68.2	54.0	14.2	57 4	—1.1	51.4	81	S.W.; W. S.W	0 03
13	29 68	—0.11	61.8	53 2	11 6	54 1	—4 6	43 6	68	W. S.W	0.09
14	29.86	+0.08	67.3	45 6	21.7	55 4	—3.5	47.9	77	S.S.W.	0.05
15	29 89	+0.10	61 .5	53.4	8.1	57.2	—1 8	44.0	61	W. NW	0.01
16	29 93	+0.14	63.5	45 2	18.3	52.0	—6.2	42.1	66	N. N.W	0.00
Mean	29 76	—0.03	64.4	49.7	14.7	55.7	—3.0	47.2	74	Variable	0.22

June 10.—Very dull day; darkness from 11.30 A.M. till 12.20 P.M., and again from 2 P.M. till 2.20 P.M.
— 11.—Fine bright day.
— 12.—Fine and bright generally.
— 13.—Dull morning; rain between 10 and 11 A.M.; bright at times in afternoon.
— 14.—Fine day; occasional sunshine.
— 15.—Fine day; sun shining mostly.
— 16.—Fine day and night; cold wind.

LONDON: *Atmospheric Pressure.*—During the week ending June 12, the reading of the barometer at the level of the sea decreased from 30.06 inches at the beginning of the week to 29 88 by 5 P.M. on the 7th, increased to 29.95 inches by 9 A.M. on the 8th, decreased to 29 75 inches by 9 A.M. on the 10th, increased to 29.98 inches by 9 A.M. on the 11th, and was 29.74 inches by the end of the week.

The mean reading of the barometer for the week at the level of the sea was 29 87 inches, being 0.17 inch lower than last week, and 0.10 inch below the average of the week.

Temperature.—The highest temperature in the shade in the week was 71°.5 on June 7; on the 10th the highest temperature was 60°.1. Of the seven high day temperatures the mean was 67°.8.

The lowest temperature was 43°.5 on the 6th; on the 12th, the lowest temperature was 54°.0. The mean of the seven low night temperatures was 48°.8.

The greatest range of temperature in one day was 26°5, on the 7th; on the 10th the smallest was 9°3. The mean of the seven daily ranges was 19°.0.

The mean temperatures were, on the 6th, 56°.5; on the 7th, 58°.9; on the 8th, 57°.7; on the 9th, 57°.7; on the 10th, 54°.9; on the 11th, 57°.6; and on the 12th, 57°.4; and these were all below their averages (excepting the 7th, which was 1°.3 above, and the 8th which was the same as the average) by 1°., 0°.2, 3°.2, 0°.7 and 1°.1 respectively.

The mean temperature of the week was 57°.2, being 2°.7 higher than last week, and 0°.7 below the average of the week.

The highest reading of a thermometer with blackened bulb in vacuo placed in the full rays of the sun, was 130°.5, on the 8th. The mean of the seven readings was 121°.4.

Rain.—Rain fell on the 10th to the amount of 0.07 inch.

ENGLAND: *Temperature.*—During the week ending June 12, the highest temperatures were 73°.6 at Cambridge, 71°.8 at Wolverhampton; 71°.5 at Blackheath; the highest at Sunderland was 63°, at Newcastle 67°, and at Nottingham 67°.5. The general mean was 69°.3.

The lowest temperatures were 36°.1, at Cambridge, 40°.6 at Wolverhampton, 42° at Hull; the lowest at Liverpool 49°.6, at Preston 48°, and at Bristol 47°.4. The general mean was 44°.5.

The greatest ranges were 37°.5 at Cambridge, 31°.2 at Wolverhampton, 28° at Blackheath; the least ranges were 18° at Sunderland, 20° 8 at Liverpool and Bradford. The general mean was 24°.8.

The mean of the seven high day temperatures was highest at Cambridge 72°.4, at Brighton 68°, at Blackheath 67°.8; and was lowest at Sunderland 59°.5, at Hull 60°.6, at Newcastle 61°.1. The general mean was 65°.1.

The mean of the seven low night temperatures was highest at Liverpool 51°.9, at Preston 51°.6, at Plymouth 50°.6; and was lowest at Cambridge 45°.6, at Hull 45°.7, at Wolverhampton 46°. The general mean was 48°.7.

The mean daily range was greatest at Cambridge 26°.8, at Wolverhampton 19°.6, at Brighton 19°.3; and was least at Liverpool 11°.9, at Sunderland 12°.4, at Newcastle 13°.1. The general mean was 16°.4.

The mean temperature was highest at Blackheath and Cambridge, 57°.2; at Preston, 57°.0; and was lowest at Hull, 51°.4; at Sunderland, 51°.5; and at Newcastle 52°.7. The general mean was 55°.1.

Rain.—The largest falls were 0.63 inch at Wolverhampton, 0.57 inch at Truro, 0.50 inch at Preston; the smallest falls were 0.01 inch at Leeds and Newcastle, and 0.02 inch at Sunderland. No rain fell at Hull or Bradford. The general mean fall was 0.20 inch.

SCOTLAND: *Temperature.*—During the week ending June 12, the highest temperature was 70°.5, at Paisley; at Aberdeen the highest was 64°. The general mean was 68°.1.

The lowest temperature in the week was 47°.2, at Paisley; at Dundee the lowest temperature was 42°.7. The general mean was 45°.2.

The mean temperature was highest at Paisley 56°.4, and lowest at Aberdeen, 51°.1. The general mean was 54°.3.

Rain.—The largest fall was 1.40 inch at Leith, and the smallest fall was 0.29 inch at Paisley.

JAMES GLAISHER, F.R.S.

SUMMARY OF TEMPERATURE, RAINFALL, AND DURATION OF BRIGHT SUNSHINE in the United Kingdom, for agricultural and sanitary purposes, for the week ending Monday, June 14, 1886, issued by the Meteorological Office, 116, Victoria Street, London, S.W.:—The *weather* has been in a dull and unsettled condition generally, with frequent falls of rain. Thunder and lightning were experienced in many parts of England on the 9th, and again in some localities towards the end of the period.

The *temperature* has been below the mean over the whole kingdom, the deficit being 1° or 2°. The highest of the maxima, which were recorded on the 11th in most parts of Great Britain, and on irregular dates in Ireland, varied between 63° and 70° in Scotland, 67° and 68° in Ireland, and 70° and 74° in England. During the greater part of the week the daily maxima were much lower than these readings; at Scarborough on the 8th and 9th the thermometer did not rise above 48°. The lowest of the minima, which were registered on various dates, in different districts, ranged from 39° in "England, E." to 46° in "Scotland, W.," and to 56° in the "Channel Islands."

The *rainfall* has been more than the mean in "Ireland, N.," and over Scotland, but rather less, or about equal to it elsewhere.

Bright sunshine shows a slight increase over Ireland and in "England, S.W.," on the low percentages recorded there last week, but in all other parts of the kingdom a decided decrease is shown. The percentages of the possible duration ranged from 19 in "Scotland, N.," to 36 in "England, S.," and 38 in "England, S.W."

Depressions observed.—At the commencement of the period a shallow depression lay over the north of France, and the winds over the greater part of our islands were light from north-east or east. On the 9th, however, this disappeared, and during the remainder of the week small, shallow disturbances passed over our islands in a north-easterly direction, while some larger ones skirted our western and northern coasts. Light winds, generally between south and west, were consequently most prevalent over the United Kingdom, but at the end of the period they increased considerably in force in the west and north, and in some localities blew a slight gale.

Answers to Correspondents.

CORRECTIONS: *Royal Botanic Gardens Show Report.*—Mr. J. F. Mould, Pewsey Nursery, Wilts, obtained 2d prizes in classes 1 and 3, and was not 3d in each, as was incorrectly stated by our reporter.—*Agapisia cærulea*, p. 750: This should have been written Agapisia cyanea, and it is synonymous with Anacallis cyaneæ, not cœrulea, as printed.—*Vanda cærulescens*, p. 752, should be V. cœrulescens var. Vipani. *H. G. Kchb. f.*—In the Royal Horticultural Society's report last week, the plant of Cattleya Mendeli leucoglossa, stated to be shown by the New Plant and Bulb Company, was shown by Mr. De B. Crawshay.

ERIGERON AURANTIACUS: *T. W. B.* (p. 772). If this gentleman wishes for seed or plants of Erigeron aurantiacus I shall have pleasure to send some to him. E. aurantiacus was introduced some six years ago by Regel, and is a very showy plant. *Max Leichtlin, Baden Baden.*

GRAPES: *W. C.* The flowers were imperfectly fertilised, hence the small stoneless berries. In a still atmosphere, with few bees or other insects about, such mishaps are not rare. Another season, pass the hand over the bunches when in flower, or use the pollen of another Grape.

IRID FROM PORT ELIZABETH. Flower exactly that of Tritonia lineata, but if the detached leaf really belong it must be a new species. Please send a complete specimen. *J. G. Baker.*

NAMES OF PLANTS: *Cranston.* A fine form of the widely distributed Spiræa media.—*A. G. N.* Rhododendron ferrugineum, native of Switzerland.—*X. Y. Z.* Saxifraga granulata, double-flowered variety.—*W. H. S.* 1, Passiflora macrocarpa; 2, Passiflora Buonapartea probably; 3, Brunfelsia americana.—*John Cowan.* Acineta Humboldti.—*Ferndene.* Oncidium orientale, Rodriguezia suaveolens.—*Miss O.* Sarcopodium Dearei, Oncidium Jonesianum.—*W. P. H* Dendrobium draconis.—*R. W. R.* 1, Iris graminifolia; 2, Saxifraga longifolia probably; 3, Sedum kamschaticum; 4, Saxifraga cuneifolia; 5, Periploca græca; 6, Reineckia japonica variegata.—*C. B. P.* Lonicera Ledebourii.—*W. Scott.* Numbers loose, Polemonium humile; 2, Myosotis sp., Valeriana dioica, Oxalis incarnata.—*J. F.* Berberis vulgaris.—*J. S. U.* 1, Tellima grandiflora; 2, Poterium sanguisorba; 3, Sanicula europæa; 4, Chrysosplenium oppositifolium; 5, Aremonia agrimonioides. Nos. 2, 3, and 4 are British.

NARCISSUS: *G. M.* Not unusual.

NOTICE TO QUIT: *A. B. C.* You would do well to consult a solicitor, as you do not appear to have any sort of an agreement.

RATING: *Douglas B.* The amount on which the rating is calculated is the rent of the premises, less the actual rates and taxes. You ought to be able to show to the satisfaction of the Assessment Committee what sum you actually pay as rent for the ground. Beyond that, the rateable value fixed on the buildings you have put up should be fixed by a proper valuer.

SEEDLING LARCH: *A. D. W.* Some insect enemy has done this, we expect, but we will report more fully later on.

THE ASPARAGUS BEETLE: *G. D. P.* Shake the beetles into nets and destroy them. Syringe the shoots with soft-soap and water, or burn the shoots.

CATALOGUES RECEIVED.

E. G. HENDERSON & SON, Maida Vale, London, W.—Conservatory and Hothouse Plants, &c.

EWING & CO., Sea View Nurseries, Havant—Summer List.

COMMUNICATIONS RECEIVED.—F. W. S.—Canon Ellacombe (your wishes on both points will be attended to: a cut is in preparation).—Sig. Rovelli, Pallanza.—Rev. F. D. Horner.—E. Walker.—Prof. Oudemans, Amsterdam.—C. M. O.—Max Leichtlin, Baden Baden.—Herr Sendtner, Munich.—J. S. W. (next week).—Pounsett (next week)—Nauscawen.—G. H. Bowen.—J. Colebrook.—H. H. D'O.—G. W.—J. S. B.—C. M. O.—W. H.—J. G. H.—G Syme.—W. G. S. (next week).—J. F.—E. M. T.—B.—Wild Rose.—A. B.—W. C.—J. G. B.—A. D.

DIED.—On the 14th inst., THOMAS TIFFEN of 17, Norton Folgate, St. Swithin's Lane, and Cannon Street; deeply regretted by all who knew him.

—— We also regret to announce the death, on June 11, of SARAH, the wife of Mr. THOMAS BAILEY, of Shardeloes Gardens, Amersham, aged eighty-four years. Mr. Bailey, who has been fifty years at Shardeloes as gardener, and who is so well known in the gardening world, will meet with much sympathy in his sad bereavement.

Markets.

COVENT GARDEN, June 17.

LARGE quantities of all classes of goods to hand, mostly cleared at lower rates. Business unsteady. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Apples, Canadian, per barrel	8	0–21 0
Figs, per dozen	2	0– 4 0
Grapes, per lb.	2	0– 4 0
Kent Cobs, 100 lb.	40	0– ..
Lemons, per case	18	0–36 0
Melons, each	1	0– 3 0
Peaches, per dozen	2	0–10 0
Pine-apples, Eng., lb.	2	0– 3 0
— St. Michael, each	2	6– 8 0
Strawberries, per lb.	1	0– 3 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.
Artichokes, per doz.	4	0– ..
Asparagus, Eng., 100	2	0– 5 0
— French, bundle	1	6– 0 0
Beans, Kidney, lb.	1	0– ..
Beet, red, per dozen	1	0– 2 0
Carrots, per bunch	0	6– ..
Cauliflowers, per doz.	3	0– 9 0
Celery, per bundle	1	6– 2 0
Coleworts, doz. bunch	8	0– ..
Cucumbers, each	0	6– 1 0
Endive, per dozen	1	0– 2 0
Herbs, per bunch	0	4– ..
Leeks, per bunch	0	6– ..
Lettuce, per dozen	1	0– 1 6
Mint, green, bunch	0	4– ..
Mushrooms, punnet	1	0– 1 6
Mustard and Cress, do.	0	4– ..
Onions, per bushel	5	0– ..
Parsley, dozen bunch	2	0– 3 0
Potatos, per cwt	4	0– 5 0
,, kidney, per cwt	4	0– 5 0
Shallots, per pound	0	3– 0 9
Spinach, per bushel	2	0– ..
Sprue Asparagus, per bundle	1	0– ..
Tomatos, per lb.	1	6– ..
Turnips, bunch	0	9– ..

POTATOS:—Old: About the same as last week. New: Jersey Kidneys, 2½*d.* to 3*d.* lb.; Rounds, 10*s.* to 12*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18 0
Bedding Plants, various, per dozen	1	0– 2 0
Begonias, per dozen	6	0–12 0
Bouvardias, doz.	12	0–18 0
Calceolarias, per doz.	5	0– 8 0
Cyperus, per dozen	4	0–12 0
Dracæna terminalis, per dozen	30	0–60 0
— viridis, per doz.	12	0–24 0
Ericas, various, per dozen	12	0–24 0
Euonymus, in var., per dozen	6	0–18 0
Evergreens, in var., per dozen	6	0–24 0
Ficus elastica, each	1	6– 7 0
Ferns, in var., dozen	4	0–18 0
Foliage Plants, various, each	2	0–10 0
Fuchsias, dozen	6	0–12 0
Hydrangeas, doz.	9	0–18 0
Lobelias, per dozen	4	0– 6 0
Marguerite Daisy, per dozen	8	0–12 0
Mignonette, per doz.	4	0– 8 0
Myrtles, per dozen	6	0–12 0
Nasturtiums, dozen	3	0– 6 0
Palms in var., each	2	6–21 0
Pelargoniums, doz.	6	0–18 0
— scarlet, per doz.	3	0– 6 0
Petunias, dozen	5	0– 8 0
Rhodanthes, dozen	6	0– 9 0
Spiræa, per dozen	6	0–12 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.
Arum Lilies, 12 blms.	4	0– 6 0
Azaleas, 12 sprays	0	6– 1 0
Bouvardias, per bun.	0	6– 1 0
Carnations, 12 blms.	1	0– 3 0
Eucharis, per dozen	4	0– 0 0
Forget-me-Not, or Myosotis, 12 bun.	2	0– 4 0
Gardenias, 12 blooms	2	0– 4 0
Iris, various, 12 bl.	0	9– 1 6
Lapageria, red, 12 bl	1	0– 2 0
Lilac, French, bunch	5	0– 7 0
Lilium longiflorum, 12 blooms	4	0– 6 0
Marguerites, 12 bun.	3	0– 6 0
Mignonette, 12 bun.	3	0– 9 0
Narcissus, 12 bun.	12	0–18 0
Pansies, 12 bunches	1	0– 3 0
Pæonies, 12 blooms	1	0– 2 0
Pelargoniums, per 12 trusses	0	9– 1 0
— scarlet, 12 trusses	0	4– 0 6
Primulas, double, per bunch	0	6– 1 0
Pyrethrums, 12 bun.	2	0– 6 0
Ranunculus, 12 blms.	2	0– 4 0
Rhododen., 12 bun.	3	0– 6 0
Roses, Tea, per doz.	0	9– 2 0
— red, per dozen	2	0– 4 0
— outdoor, 12 bun.	6	0–12 0
— Moss, 12 buds	6	0–12 0
Spiræas, 12 bunches	6	0– 9 0
Stephanotis, 12 sprs.	1	6– 3 0
Tropæolums, 12 bun.	1	0– 2 0
Tuberoses, 12 blms.	0	6– 1 6

SEEDS.

LONDON: *June 16.*—The seed market to-day presented quite a holiday appearance, there being scarcely any business doing. Just now the sowing requirements are very small, and no speculation of importance shows itself. The figures asked for new French Trifolium continue above the views of English buyers. Although the transactions in Clover seeds are scarcely worthy of notice the article is firmer generally. As regards Hemp and Canary seed there is no change to report. White Millet for birds maintains late rates. Mustard and Rape seed steady. Fine blue Peas are scarce. *John Shaw & Son, Seed Merchants, Mark Lane, London, E.C.*

CORN.

MARK LANE: *June 14.*—This being a Bank Holiday, as usual no business was transacted.

June 16.—The weight of supply of Wheat and flour induces extreme caution on the part of buyers, and business was nearly of retail extent at easy rates, but hardly sufficient to establish quotations. To sell in quantity, however, lower rates would have to be taken for both wheat and flour. So far this season English Wheat has had the command of the trade. For Barley rates are steady on the moderate supplies on hand, but the trade is very quiet. Beans and Peas also move off slowly, but at steady prices. Oats continue dull, with prices again easier.

Average prices of corn for the week ending June 12:—Wheat, 31*s.* 11*d.*; Barley, 25*s.* 2*d.*; Oats, 20*s.* 2*d.* For the corresponding period last year:—Wheat, 33*s.* 8*d.*; Barley, 32*s.* 2*d.*; Oats, 22*s.* 1*d.*

FRUITS AND VEGETABLES.

COLUMBIA (East London): *June 16.*—Average supplies of vegetables. Prices moderate. Trade fair. Quotations:—Gooseberries, 4*s.* 3*d.* to 5*s.* 3*d.* per bushel; Cauliflowers, 2*s.* to 4*s.* per dozen; Lettuces, 1*s.* to 1*s.* 6*d.* per score; Spinach, 2*s.* to 2*s.* 6*d.* per sieve; Cabbages, 3*s.* 6*d.* to 6*s.* 6*d.* per tally; spring Onions, 5*s.* to 6*s.* per dozen bunches; Radishes, 8*d.* to 1*s.* do.; Greens, 4*s.* to 5*s.* do.; Parsley, 1*s.* 6*d.* to 2*s.* 6*d.* do; Onions, 4*s.* 6*d.* to 6*s.* 6*d.* per cwt.

STRATFORD: *June 15.*—The market has been well supplied with all kinds of produce, and a fair trade was transacted at the undermentioned prices:—Cabbages, 5*s.* to 7*s.* per tally; Turnips, 5*s.* to 6*s.* per dozen bunches; Mangels, 14*s.* to 18*s.* per ton; Radishes, 2*s.* 6*d.* per tally; Lettuces, 1*s.* to 1*s.* 6*d.* do.; Onions, 4*s.* . to 6*s.* per dozen bunches.

POTATOS.

BOROUGH AND SPITALFIELDS: *June 15.*—Supplies are at length seasonably increasing. Quotations do not vary very much for new, but with larger growth represent better value for the money.

COLUMBIA (East London): *June 16.*—Large quantities of St. Malo and Jersey new Potatos continue to arrive. Quotations:—New Potatos: Jersey kidneys, 13*s.* to 14*s.*; do. rounds, 9*s.* to 10*s.*; St. Malo kidneys, 12*s.* to 13*s.* 6*d.*; do. rounds, 8*s.* to 9*s.* per cwt.; old Potatos: Champions, 60*s.* to 65*s.*; Regents, 60*s.* to 70*s.*; Victorias, 65*s.* to 70*s.*; Magnums, 65*s.* to 90*s.* per ton.

STRATFORD: *June 15.*—Quotations:—Best Magnums, 70*s.* to 80*s.*; do. seconds, 60*s.* to 75*s.*; Champions, 50*s.* to 60*s.*; do. inferior, 45*s.* to 50*s.* per ton. New Potatos: Kidneys, 12*s.* to 14*s.*; do. rounds, 8*s.* 6*d.* to 10*s.* 6*d.* per cwt.

HAY.

WHITECHAPEL: *June 15.*—Fair supplies met an exceedingly dull trade, in consequence of the holiday time, which exercises a prejudicial influence, and sales were effected with difficulty. Quotations:—Clover, prime, 90*s.* to 107*s.*; inferior, 70*s.* to 85*s.*; hay, prime, 70*s.* to 90*s.*; inferior, 50*s.* to 65*s.*; and straw, 25*s.* to 36*s.* per load.

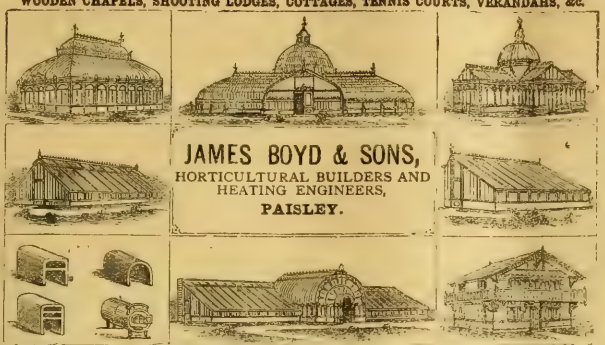
June 17.—There was a fair supply on sale. The trade was better at late rates.

STRATFORD: *June 15.*—Hay, 80*s.* to 90*s.*; Clover, 95*s.* to 100*s.*; and straw, 29*s.* to 32*s.* per load.

Government Stock.—There was no business done on 'Change on Monday, it being a Bank Holiday. On Tuesday and Wednesday consols closed at 101⅛ to 101⅛ for both delivery and the account. On Thursday the final quotations were 101 to 101⅛ for both transactions. These figures are ex div.

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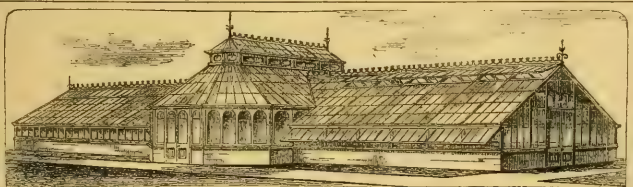
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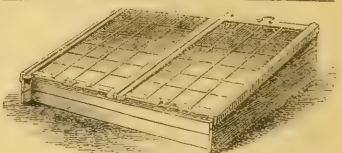


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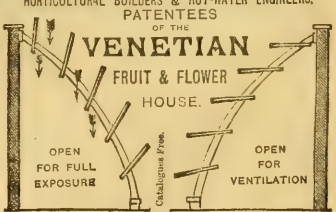
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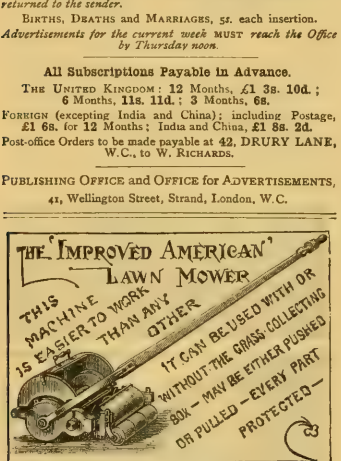
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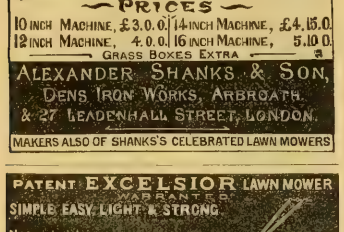
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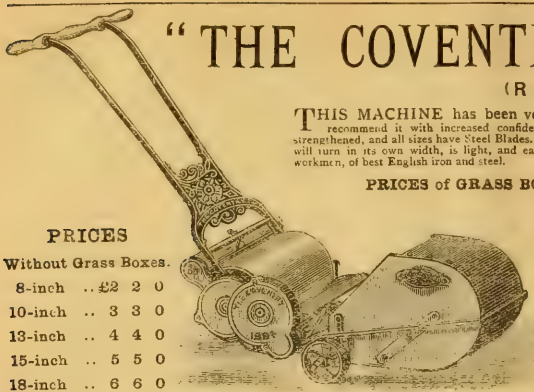
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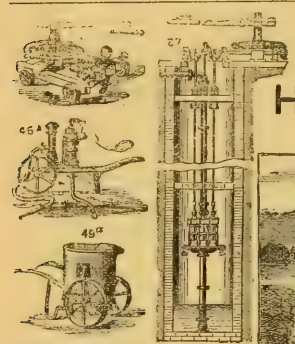
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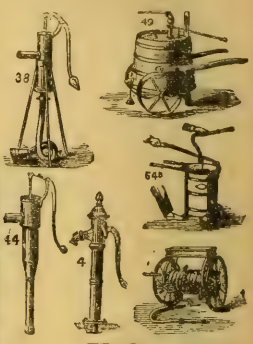


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THE

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Established 1841.

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GARDENERS' CHRONICLE PRIZES
FOR YOUNG GARDENERS.

The Awards (£10, £5, and £2) will be made known on TUESDAY NEXT, by the President of the Royal Horticultural Society, Sir Trevor Lawrence, Bart., M.P., at the meeting of the Royal Horticultural Society, at Liverpool.

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White Flowers for Cutting.
EUCHARIS MASTERSII and SANDERII. These useful new free flowering Eucharis can be offered, in good Bulbs, by the dozen or hundred, by
Mr. WILLIAM BULL, Establishment for New and Rare Plants, 536, King's Road, Chelsea, London, S.W.

CREEPERS for WALLS, &c.—By planting what is suitable an ugly object may easily be made beautiful. Descriptive LIST and advice free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

SEEDS, of the finest quality, at the cheapest rate. See CATALOGUES, sent free on application.
The LIVERPOOL HORTICULTURAL CO. (John Cowan), Limited, 39, Bold Street, Liverpool.
TELEGRAPHIC ADDRESS—"COWAN, LIVERPOOL."

Now Ready.
TEA and NOISETTE ROSES, in Pots, of best sorts only, in great quantity, and of best possible quality. Priced LIST gratis. A Sample Dozen will be put on rail, carefully packed for travelling, on receipt of 13s. 6d.
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HINTS on the IMMEDIATE BEAUTIFYING of GARDENS. See Herbaceous, Alpine and Bedding Plant LISTS, free on application.
RICHARD SMITH AND CO., Worcester.

PRIMULAS, CINERARIAS, CYCLAMEN.—Plants now ready for potting in single pots. First-class strains (still supplying Customers who have had from us for 12 years). PRIMULAS and CINERARIAS—12 for 1s. 6d., 24 for 2s. 6d., 100 for 9s. CYCLAMEN—12 for 2s.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham; 12, Market Street, Manchester.

To the Trade.
FRESH PALM SEEDS.—Before ordering Cocos Weddelliana, Areca lutescens and rubra (quickest growing), Pandanus utilis, Phœnix of sorts, &c., write for special low offer and samples to
H. DAMMANN, Jun., Breslau, Germany.

CLEMATIS JACKMANNI ALBA (new).—Strong flowering Plants (4 feet bine), of this free-blooming "White Jackmanni," now ready, 3s. each, 30s. per dozen. Choice varieties of CLEMATIS, in pots, 1s. 6d., 2s., to 2s. 6d. each. The usual allowance to the Trade.
GEO. JACKMAN AND SON, Woking Nursery, Surrey.

100 Herbaceous and Alpine Plants for 25s.
RICHARD SMITH AND CO.'S selection as above contains a most interesting and valuable assortment of beautiful and Hardy Plants for the Border or Rockwork, which produce flowers and render the garden attractive all through the year. New LIST of sixty-four pages free.
RICHARD SMITH AND CO., Nurserymen and Seed Merchants, Worcester.

PRIMULAS.—PRIMULAS.—PRIMULAS.—Seventeenth year of distribution. Williams' Superb Strain, 1s. 6d. per dozen; 10s. per 100. CINERARIAS, same price. Package and carriage free. Also Double White Primulas, 6d. each.—JOHN STEVENS, The Nurseries, Coventry.

FOR SALE, MYATT'S EARLY OFFENHAM CABBAGE SEED, saved from stems carefully selected. This splendid strain is unequalled as an early Cabbage. New Seed of good growth, 5s. per lb. Special quotations for large quantities. Apply to
C. MYATT, Harvington, Evesham

To the Trade.
TURNIP SEEDS.
H. AND F. SHARPE have to offer fine, selected Stocks of SWEDES and other TURNIP SEEDS of 1885 growth, and raised from transplanted bulbs. Prices very reasonable.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Johnson Hall, Eccleshall, Staffordshire.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, on the Premises as above, on TUESDAY, June 29, at half-past 12 o'Clock precisely, the COLLECTION of ESTABLISHED ORCHIDS formed by C. E. Lyon, Esq, comprising fine plants of Cattleya superba splendens, Cattleya Eldorado, Odontoglossums and Masdevallias (including some splendid varieties), Cypripediums, Oncidiums, STOVE and other PLANTS in variety, &c.

On view day prior and morning of Sale, and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer and Valuer, 38, King Street, Covent Garden, W.C.

N.B. Conveyances will meet the trains at Norton Bridge Station to convey intending purchasers to and from the sale free of charge.

Thursday Next.—(Sale No. 7181.)

The COLLECTION of ORCHIDS formed by J. T. Barber, Esq., of Spondon, near Derby.

MR. J. C. STEVENS has received instructions from J. T. Barber, Esq. (in consequence of his lease having expired), to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, July 1, at half-past 12 o'Clock precisely, his entire COLLECTION of ORCHIDS, comprising Cattleyas, Lælias, Oncidiums, Masdevallias, Odontoglossums, a fine lot of seedling Calanthes in great variety, Restrepias of sorts, &c.

On view morning of Sale, and Catalogues had.

Thursday Next.—(Sale No. 7181.)

EXTENSIVE IMPORTATION of RARE BULBS and SEEDS from the Cape.

MR. J. C. STEVENS will include in his SALE by AUCION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY NEXT, July 1, a COLLECTION of RARE BULBS and SEEDS, collected and brought home by Mr. R. W. Adlam, of Pietermarizburg, Natal, including, amongst many other species, 100 Lissochilus Krebsii, quantity of Eulophia ensata and Dregeana, 2400 Montbretia Pottsii, 100 Cyrtanthus Mackennii, 125 Anemone Fannini, 60 Disa polygonoide, 300 Begonias geraniodes, 50 Scilla natalensis, 25 Hæmanthus natalensis, 16 lb. of Eucalyptus amygdalina Seed, 3½ lb. of Wattonia densiflora, 1700 Seeds of Phœnix reclinata, &c.

On view morning of Sale, and Catalogues had.

Special Sale of Orchids in Flower.

MR. J. C. STEVENS begs to announce that his NEXT SALE of ORCHIDS, in Flower and Bud will take place at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, July 14, and he will be glad if Gentlemen desirous of entering plants for this Sale will please send particulars of same as soon as possible.

Tuesday Next.

SPECIAL SALE of ORCHIDS in FLOWER.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on TUESDAY NEXT, June 29, at half-past 12 o'Clock precisely, over 250 lots of ORCHIDS in FLOWER or BUD, from various collections, and including amongst others—

Odontoglossum Pescatorei, variety beautifully spotted, similar to O. Pescatorei Lowianum	Vanda suavis
	Lælia elegans
	Cypripedium Godefroya
O. Alexandræ, numerous very fine forms	Odontoglossum sceptrum
	,, mirandum
Bifrenaria inodora xanthina, £4 5 blooms	Cattleya Sanderiana
	Cypripedium purpuratum

Masdevallias, Cattleyar, Oncidiums, &c.

On view morning of Sale, and Catalogues had.

Friday Next.

MESSRS. PROTHEROE AND MORRIS are instructed by Mr. F. Sander to SELL by AUCTION, at their Central Sale Rooms, 67 and 68, Cheapside, E.C., on FRIDAY NEXT, July 2, at half-past 12 o'Clock precisely, the following PLANTS, in healthy condition :—

Lælia elegans	Cattleya Lowiana
,, purpurata, fine masses	Læl a xanthina
Cattleya Mendelii	Oncidium Jonesianum
Aërides, fine lot	Cattleya species
Angræcum Leonii	Odontoglossum Phalænopsis
Cypripedium caudatum	Epidendrum Wallisii, growing plants
Oncidium amplistum majus, large bulbed pieces	Oncidium cucullatum
Odontoglossum Pescatorei	

Also the following in Flower :—Mormodes luxatum eburneum, Cattleya Mossiæ, fine varieties; C. Mendelii, Odontoglossum Alexandræ, fine varieties, &c.

On view morning of Sale, and Catalogues had.

Heathrow, in the Parish of Harmondsworth, in the County of Middlesex. About 14 miles from London, and a short distance from G.W. and S.W. Railways.

IMPORTANT SALE of valuable FREEHOLD ESTATES, all Tithe Free.

MR. E. P. NEWMAN is instructed by the Trustees under the Will of the late Samuel Hunt, Esq., to SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on TUESDAY, June 22, at 1 for 2 o'Clock, an exceedingly valuable property known as the HEATHROW FARM, with comfortable Farmhouse and numerous Buildings, forming 2 Homesteads, 16 Cottages, Orchards, and Garden thereon; the whole comprising about 235 acres, and calculated to produce about £650 per annum. The land, which is well drained, is principally arable, has been highly farmed, and comprises a good depth of rich Loam; it is in a very clean state, and well adapted for Market Gardening, Seed Growing, or Nursery purposes; and the whole Property will be divided in 9 Lots. There are very extensive Building Frontages to good roads, and there is Brick Earth on a considerable portion of the estate. Possession on completion of the purchase.

May be viewed 7 days prior to the Sale, and particulars with Conditions and Plans can be obtained at the Auction Mart, London, E.C.; Messrs. WOODBRIDGE AND SONS, Solicitors, Uxbridge; and of the Auctioneer and Estate Agent, 42, High Street, Uxbridge, Middlesex.

WANTED to RENT, or PURCHASE, a piece of LAND, about 2 Acres, suitable for Nursery purposes, with Cottage. North of London preferred.

J. L., 37, Corbyn Street, Hornsey Rise, N.

TO BE SOLD, a Small Freehold NURSERY, 2 Glass Houses, Frames, and Horse and Cart. The lot £300. A. V. C., 1, Cambridge Villas, Strode Road, Willesden Green.

ROYAL HORTICULTURAL SOCIETY.

Great Provincial Exhibition, Botanic Gardens, Liverpool,

JUNE 29 to JULY 5.

THE LIVERPOOL HORTICULTURAL COMPANY (John Cowan), Limited,

Invite Visitors to this Exhibition, to see their immense Collection of [ported.

ORCHIDS—Established, semi-established, and newly im-

GRAPE VINES—This year's, as usual, in grand condition.

TEA and NOISETTE ROSES—Thousands of fine healthy

FERNS—A large and fine stock. [plants.

GENERAL COLLECTION of STOVE and GREEN-HOUSE PLANTS.

The Nurseries are easily reached by the L. & N.-W. Railway. From *Edge Hill Station* trains run every hour to *Church Road Station*, Garston, 5 minutes' walk from the Nurseries, and more frequently to *Allerton Station*, 15 minutes' walk from the Nurseries.

THE VINEYARD and NURSERIES, GARSTON, near LIVERPOOL.

To Nurserymen, Landscape Gardeners, Florists, and SEEDSMEN.

FOR IMMEDIATE SALE, by Private Contract, the STOCK, GOODWILL and ERECTIONS of an OLD-ESTABLISHED BUSINESS in one of the most fashionable suburbs of Birmingham. The Nursery contains about 2½ acres, and is well stocked with Shrubs, Trees, and Herbaceous Plants. The Erections consist of four capital Glass-houses, well stocked Seed Warehouse, Frames, &c. The above is a thoroughly genuine affair, and has been in present owner's hands upwards of twenty years. The Nursery commands a good trade and is in the midst of an immense suburb, and without opposition. Price, £600, or valuation. An immediate purchaser would be liberally dealt with.

Full particulars from FLEETWOOD AND GOODEVE, Auctioneers and Estate Agents, 42, Cherry Street, Birmingham.

FOR SALE, a small NURSERY, FLORIST, and SEED BUSINESS. Excellent position, and good neighbourhood. Giving up for want of capital. £100 for Plants, Stock, and Van, Frames, Tools, &c.

Apply, Mr. R. T. LACK, 43, Effingham Road, Lee.

FOR SALE.

NURSERY AND SEED BUSINESS.

THE OLD-ESTABLISHED NURSERY and SEED BUSINESS, so long successfully carried on by THOMAS IMRIE AND SONS, Ayr, will be offered for Sale.

The Nursery Grounds, extending to about 45 acres, adjoin the Railway Station, and are well stocked with saleable Trees and Shrubs, and there are commodious premises for carrying on the Seed Business. The Business may be Sold either as one, or Nursery and Seed separately; and is being disposed of solely on account of Mr. Imrie's delicate state of health.

Further particulars on application to THOMAS IMRIE AND SONS, Ayr, N.B.—June 11, 1886.

BERKS.

TO BE LET OR SOLD,

as a thorough going concern,

A NURSERY,

Comprising 3½ acres, about 50 miles from London, with Shop in Market Place.

Good Dwelling House, Greenhouse, Frames, &c.

For particulars, apply to J. FLOOD, 57, Albert Street, Mornington Crescent, London, N.W.

TO LET.—Gardeners with a little capital can hire in the country a nice COTTAGE, with Garden, 3 Greenhouses and Pit, and as much Land as required. All in good order, and in a healthy part of Essex.

Apply to J. SMITH, 125, Southgate Road, Islington, N.

To Landed Proprietors, &c.

A. McINTYRE (late of Victoria Park) is now at liberty to undertake the FORMATION and PLANTING of NEW GARDEN and PARK GROUNDS and REMODELLING existing GARDENS. Plans prepared.

115, Listria Park, Stamford Hill, N.

To Orchid Growers, &c.

MR. CHAS. PATIN, of Antioquia, U.S. Colombia, who has been resident there for the last thirteen years, and is now on a visit to Europe, is now Booking Orders for COLOMBIAN ORCHIDS for next spring delivery. About 80 species can be supplied. Price LIST and full particulars will be furnished upon application to

Mr. CHAS. PATIN, Bateeles, Hainhaut, Belgium,

up to August 25, after which date please address all communications to ANTIOQUIA, U.S. Colombia.

WGORDON, IMPORTER OF ORCHIDS from ALL PARTS of the WORLD.—An IMMENSE STOCK of recently imported Plants compels a SALE of the Established Plants to make room. These have not yet flowered, but are all flowering plants, and must be sold at a great sacrifice. VERY VALUABLE VARIETIES are certainly to be obtained, and great bargains; see Public Journals for high prices recently obtained. THE SPECIAL OFFER affords a PAYING INVESTMENT to any one with glass at command, which should not be overlooked. SUCH PLANTS may never again be offered to the PUBLIC and the TRADE.

Apply to W. GORDON, The Nurseries, Amyand Park Road, Twickenham, Middlesex.

CUTTINGS of Choicest New FLORISTS' FLOWERS (1885) very cheap. Per dozen varieties:—Fuchsias and Pentstemons, 2s.; Zonal Pelargoniums, single and double, Ivy-leaf, &c., 3s.; Chrysanthemums, 1s. 6d. Or to include new of last three or four years—Chrysanthemums, 50 for 3s.; Fuchsias, 50 for 3s.; Zonal Pelargoniums, double and single, Ivy, &c., 100 for 8s. Plants also supplied very cheap. All free by parcel post. A quantity of choice single Dahlias, fine plants, 2s. per dozen.

CATALOGUES free on application.

RICHARD PANNETT, The Nursery, Chailey, Sussex.

ROYAL HORTICULTURAL SOCIETY.

Patron—HER MAJESTY THE QUEEN.

The GREAT PROVINCIAL SHOW of PLANTS, FRUITS, FLOWERS, VEGETABLES, HORTICULTURAL IMPLEMENTS, and APPLIANCES, will be held in the BOTANIC GARDENS and WAVERTREE PARK, LIVERPOOL, from JUNE 29 to JULY 5, inclusive.

Prices of Admission:—June 29, 5s.; June 30, 2l. 6d.; July 1, 2, 3, and 5, 1s.

CRYSTAL PALACE. GREAT ROSE SHOW OF THE SEASON, SATURDAY, July 3.

For Schedules, Entry Forms, &c., apply to

Mr. W. G. HEAD, Garden Superintendent.

Crystal Palace, S.E.

CRYSTAL PALACE COMPANY'S SCHOOL for the IMPROVEMENT of ESTATES. The next Term opens on THURSDAY, July 1. Prospectus of the undersigned.

F. K. J. SHENTON, Superintendent Educational Department.

TWICKENHAM HORTICULTURAL and COTTAGE GARDEN SOCIETY, under the distinguished patronage of H.R.H. the Princess Christian, H.R.H. the Princess Frederica, the Lady Adeliza Manners, the Lady Alice Peel, Eliza Lady Freake. President—O. E. COOPE, Esq, M.P.

The ANNUAL SUMMER SHOW of the Society will be held on TUESDAY, June 29, at 2 P.M. (by kind permission of Mrs. Meek), in the Grounds of Poulett Lodge. The Band of the 7th Hussars will attend, under the direction of C. Zoeller, Bandmaster (by kind permission of Colonel F. M. Drew and Officers).

Admission:—Subscribers by Ticket, between 2 and 8 P.M.; by Payment at the Gate from 2 to 3 P.M., 2s. 6d.; from 3 to 6 P.M., 1s.; from 6 to 8 P.M., 6d. Children half-price.

MARTINDALE C. WARD, M.D., Hon. Treasurer.

J. J. G. PUGH, Hon. Secretary.

RICHMOND (Surrey) HORTICULTURAL SOCIETY.

The TWELFTH ANNUAL SUMMER EXHIBITION of Plants, Flowers, Fruit, Vegetables, Dinner Table Decoration &c., will be held in the Old Deer Park, on WEDNESDAY July 7. PRIZES amounting to TWO HUNDRED and FIFTY POUNDS. Large Prizes for Dinner Table completely laid out. Almost all Classes are Open. For Schedules apply to

22, George Street, Richmond. J. H. FORD, Hon. Sec.

GRAND ROSE SHOW, Norwich, TUESDAY and WEDNESDAY, July 13 and 14 (during visit of Royal Agricultural Society). ONE HUNDRED and FIFTY POUNDS offered in PRIZES, including Roses, 72 vars., £10; 48 vars., £5 5s.; 36 vars. (amateurs), £5 5s.—83 classes in all. Entries close July 8.

ARTHUR W. PRESTON, Hon. Secretary.

Bank Plain, Norwich.

HORTICULTURAL SHOW, at BEDFORD, JULY 14.

Open Classes for ROSES and CUT FLOWERS. Entries close July 6.

Stoneleigh, Bedford. HENRY TEBBS, Hon. Sec.

HULL, EAST RIDING, and NORTH LINCOLNSHIRE HORTICULTURAL SOCIETY.

A GRAND HORTICULTURAL EXHIBITION will be held in the Hull Botanic Gardens, on WEDNESDAY, THURSDAY, and FRIDAY, July 14, 15, and 16. Upwards of TWO HUNDRED GUINEAS in Money Prizes, besides Gold and Silver Medals. Schedules and particulars of

PHILIP MAC MAHON, Curator,

Hull Botanic Gardens.

The following, amongst other valuable Prizes, will be awarded:—Group of Tea Stove and Greenhouse Plants in bloom (Orchids excluded), and Six Ornamental, Fine-foliage or Variegated Plants, distinct varieties. 1st Prize, £15 and the Society's Gold Medal; 2d Prize, £10; 3d Prize, £5.

BEDFORDSHIRE AGRICULTURAL SOCIETY'S SHOW at Luton, on WEDNESDAY, July 21.

A GRAND SHOW of FLOWERS and FRUITS, open to the United Kingdom, will be held in connection with the above, when the following VALUABLE PRIZES, amongst others, will be offered:—

10 ORCHIDS, 1st, £10; 2d, £6; 3d, £4.

6 ,, 1st, £6; 2d, £4; 3d, £2.

12 STOVE and GREENHOUSE PLANTS, 1st, £15; 2d, £10; 3d, £5.

6 ,, ,, 1st, £7; 2d, £5; 3d, £3.

Also for ROSES, FRUITS, &c. For Schedules and particulars apply to Mr. S. C. OLIVER, Hon. Sec.

Park Square, Luton.

GRANTHAM HORTICULTURAL SOCIETY.

FIFTEENTH SUMMER EXHIBITION, JULY 22.

ONE HUNDRED POUNDS in PRIZES. Open Class. Schedules may be had of F. M. WHITE, Hon. Sec.

Finkin Street, Grantham.

SALTERHEBBLE and DISTRICT ROSE SOCIETY.

The ANNUAL EXHIBITION of ROSES will be held on THURSDAY, July 22. Entries close July 20. Schedules on application to ARTHUR M. BEECROFT, Sec.

Heath Lane, Halifax.

SHROPSHIRE HORTICULTURAL SOCIETY.

The SUMMER SHOW, AUGUST 18 and 19. Twenty plants, £25, £20, £15. Collection of Fruit, £10, £6, £3. For Grapes, £35. All Classes open to All England. Schedules from Messrs. ADNITT AND NAUNTON, Hon. Secs.

Shrewsbury.

HUDDERSFIELD CHRYSANTHEMUM SOCIETY.

The THIRD EXHIBITION will be held in the Town Hall, Huddersfield, on FRIDAY and SATURDAY, November 12 and 13. Schedules and Entry Forms are now ready, and may be had on application to

Marsh, Huddersfield. Mr. JOHN BELL, Hon. Sec.

CARTERS'
BRILLIANT PRIZE CINERARIA.



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1st Prize Royal Aquarium 1886
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Large Bronze Medal, Royal Botanic Society 1885
Silver Medal Royal Botanic Society 1883
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Extra and Second Prize, Crystal Palace 1884
Large Bronze Medal, Royal Botanic Society 1884
Banksian Medal, Royal Horticultural Society 1884

Finest MIXED SEED, containing every shade of colour,

Price 1s. 6d., 2s. 6d., 3s. 6d., & 5s. pkt., post-free.

SEEDSMEN to Her Majesty the QUEEN and His Royal Highness the PRINCE OF WALES,

237 & 238, HIGH HOLBORN, LONDON.

For Sale.

SPECIMEN PLANTS.—Grand Plant of RONDELETIA SPECIOSA MAJOR, price £6 6s.; also DIPLADENIA AMABILIS, £6 6s.; and many other SPECIMEN PLANTS. Apply to

THOS. GILBERT, Springfield Nursery, Old London Road, Hastings.

New Fern.

ADIANTUM FRAGRANTISSIMA (First-class Certificate).—In introducing for the first time this lovely Fern, which was raised in their establishment, E. G. H. & SON have no hesitation in saying that never since the introduction of A. Farleyense has anything approaching such a charming variety been introduced; in habit it is all that can be desired as a decorative plant, the fronds rising well from the crown, terminating into a graceful curve, forming quite a plume-like frond, while the pinnæ, which is of moderate size, is beautifully cut, as in the way of A. Farleyense alcicorne, and in a young state; the centre of the same is of a golden-green, verging off into a paler shade, and changing to a deeper green as it approaches maturity; and in addition, when growing, it is deliciously fragrant, a few plants filling the house with a sweet perfume. Either as a valuable addition to a collection, or for exhibition or decoration, this remarkable novelty is certain to become the most popular Adiantum in cultivation. The fronds when cut last a length of time; some which were cut as an experiment remained in perfection more than a week in a warm room. Being of a vigorous constitution, and of such surpassing elegance, it will quickly supersede the old favourite, A. cuneatum, for all purposes.

Healthy plants, in 4-inch pots, each, 5s. and 7s. 6d.; 6 for 21s. and 30s.

E. G. HENDERSON AND SON, Pine-apple Nursery, Maida Vale, London, W.

DUTCH AND CAPE BULBS.

ANT. ROOZEN & SON'S CATALOGUE FOR 1886.

The above, containing details of our immense Collections of New, Rare, and Fine Bulbs and Plants (84 pages, in English), is NOW READY, and will as usual be sent POST-FREE on application to ourselves, or our General Agents for Great Britain, Messrs. MERTENS AND CO., 3, Cross Lane, St. Mary-at-Hill, London, E.C.

ANT. ROOZEN AND SON,
OVERVEEN, near HAARLEM, HOLLAND.

CYCLAMEN — CYCLAMEN — CYCLAMEN.—Same grand strain and from the same celebrated growers that I have sent out for the last twenty years, but with all the latest improvements in colour, size, form, and habit. Five year-old Plants, 12. 6d., per dozen, 5s. for 50, 9s. for 100, all Carriage free.

S. SHEPPERSON, Florist, Prospect House, Belper.

SAMUEL SHEPPERSON, FLORIST, Prospect House, Belper, Derbyshire, begs to offer the following, of which he makes a specialty:—

PRIMULAS—PRIMULAS—PRIMULAS.—Grand Premier Prize Strain of the finest new colours, as White, Carmine, Rose, Salmon, Crimson, Mauve, &c. Fine large trusses and beautifully fringed flowers. Strong Plants, to bloom well, 1s. 3d. per dozen, extra strong 1s. 6d.; 9s. per 100, all free.

CINERARIAS—CINERARIAS—CINERARIAS.—Bull's celebrated Prize Strain, dwarf compact habit, and most brilliant colours, cannot possibly be excelled. Good Plants, 1s. 3d. per dozen, extra strong 1s. 6d.; 9s. per 100, all free.

SAMUEL SHEPPERSON, Florist, Prospect House, Belper, Derbyshire.

5000 Geraniums.

VESUVIUS and WONDERFUL, strong well-rooted cuttings, 7s. per 100, carriage free, cash with order.

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PRIMULAS, Double White, 4s. per dozen, 30s. per 100.

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PRIMULA, Double White, 4s. per 100; BOUVARDIAS, Double and Single, in eight best market varieties, absolutely clean, 20s. per 100, both strong in thumbs. For cash only.

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Special Offer to Amateurs.

PALMS and CYCADS, large, rare, and choice. Prices and full particulars will be forwarded on application to

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NATIVE GUANO, price £3 10s. per ton, in bags on rail, Aylesbury. Lots under 10 cwt. 4s. per cwt. A 1-cwt. sample bag sent, carriage paid, to any station in England on receipt of Postal Order for 5s.

Extracts from Tenth Annual Collection of Reports.—Native Guano for Potatos.—H. S. EASTY, Great Totham, Essex:—"Used for Potatos. Good. Consider this manure about the best for Potatos. Very economical. Took about twenty prizes." Native Guano for Vegetables and Fruit Trees.—J. SMITH, Head Gardener to the Right Hon. Lord Rosebery:—"Used for Pears, Onions, Lettuces, Cabbages, Potatos, Turnips, and Fruit Trees. Onions a splendid crop. Other crops most satisfactory." Native Guano for Vines, Roses, Strawberries, Pot Plants, &c.—J. TOWNSEND, Florist, Putney:—"Used for Celery, Roses, Cucumbers, Tomatos, Chrysanthemums, Pelargoniums, Fuchsias, &c. Excellent results. Best and safest manure I have tried." D. WILLIAMS, Gardener to Lord Wimborne:—"Used for Vines, Strawberries in pots, Peaches, Asparagus, Onions, &c. Very good on all kinds tried." A. F. BARRON, Royal Horticultural Society, Chiswick:—"Without doubt a very valuable manure, and easy of application."—Orders to THE NATIVE GUANO CO. (Limited), 29, New Bridge Street, Blackfriars, London, E.C., where Pamphlets of Testimonials may be obtained.

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To obtain finest Growth and Flowers, use

JENSEN'S Norwegian Fish Potash Manure.

Apply to all Nurserymen, or to

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No. 10, ST. HELEN'S PLACE, E.C.

THOMSON'S IMPROVED VINE and PLANT MANURE.—This valuable Manure is made up solely on our premises here. Every Bag and Tin has our Name on it. It can be had from all Nurserymen and Seedsmen, and direct from us, 1 cwt. and over carriage paid.

Our London Agent is Mr. GEORGE, 10, Victoria Road, Putney, S.W.

WM. THOMSON AND SONS, Clovenfords, Galashiels, N.B.

12-oz. Sample Packets, free by post, 12 Stamps.

FIBROUS PEAT for ORCHIDS, &c.—BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., 46 6s. per Truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton per Truck, Sample Bag, 5s.; 5 Bags, 22s. 6d.; 10 Bags, 45s. Bags included. Fresh SPHAGNUM, 10s. 6d. per Bag. SILVER SAND, Coarse or Fine, 52s. per Truck of 4 Tons.

WALKER AND CO., Farnborough Station, Hants.



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TWO PRIZE MEDALS.

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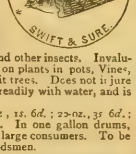
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THE

Gardeners' Chronicle.

SATURDAY, JUNE 26, 1886.

THE COMING FIGHT.

I AM not going to introduce politics into my rambling notes, although when one writes of coming fights the thoughts of most readers, at any rate those of the sterner sex, will at once revert to the electoral struggle which is about to begin, and which is the uppermost thought in men's minds, and the constant topic of their tongues; and yet, strangely enough, in looking forward to our Rose campaign we at once become entangled with it. There was a curious and (had it not been for the facts it brought forward) an amusing leader in the *Times* of June 14 on the disturbing character of the Dissolution, and its injurious effects on the London season, and on trade in general. Almost the first letter I opened this morning, and which was from the secretary of a new society which had been inaugurated in ——shire, ran thus:—"Alas, alas! it is good-bye to our Rose show for this year I am afraid. We had arranged a capital schedule, which was passed by our committee, and the proof was to have been revised at a formal meeting last night Meanwhile came the news of the almost immediate dissolution of Parliament, and as all our leading men are great politicians it was felt to be folly to proceed at present with the Rose show. It is, therefore, adjourned *sine die.*"

This is but an indication of what will have to be taken into account in estimating the character of the present Rose season, so far as the success of the exhibitions financially is concerned. The month of July is destined to be absorbed in the political campaign. Where there are contests it is possible that the show may be fixed on the same day as the polling, and it needs no witch to tell what would be the fate of the attendance in such a case. I am afraid, too, that there can be no compensation from "the House." Under the circumstances we must only hope for the best, and be thankful that politics cannot interfere with the character of the bloom, which is the point we are most concerned about, and on which I wish to make some observations.

I have been at the trouble of obtaining from Rose growers, both amateur and professional, in all parts of the kingdom, their opinions with regard to the prospects of the Rose; and I believe that, taking them on the whole, we may, should the weather of the next three weeks continue at all like what it is now — south-westerly winds and gentle showers—look forward to a fairly good season. We have not had, as I wrote lately, the bitter, killing frosts of May 20—22, which have injured Roses so severely, but there was a severe frost at the end of April, which was very injurious in some localities; to this has been attributed what so many people complain of—"blind shoots," that is, shoots without any flowering bud; but to

me it seems somewhat questionable whether this is the cause—I would rather suppose it to have been occasioned by the long, cold, dreary weather of February and March, with their sunless days and low temperature. That period seems both in the vegetable kingdom and with ourselves to have been more fatal than extreme cold. How many friends have we known who seemed to battle through the winter well, but whom that dreary time laid low: and so with our gardens. I have a notable instance just opposite my window as I am writing: two standard Fig trees, which must be thirty or forty years old, and from which I have in one season gathered 100 dozen of Figs—and which have stood the very severe winters we had during that time without apparent injury—are now in a very feeble state. I thought at first they were dead, but I see now all over them the eyes beginning to start, and I shall therefore leave them, waiting for the result; Figs there cannot be, but it may be that they will push out growth, but it must be of a feeble character. Is not this, then, similar to what has taken place amongst Roses? They were not killed, but they had lost vigour and had not power to fulfil all their conditions, and so some of the shoots came blind. In some instances the forward shoots were killed by the frost, though, as far as I can learn, that was only in a very few instances.

And now with regard to the prospects of the exhibitions. As far as I can gather, notwithstanding the occasional growls that one hears, I cannot but hope that they are favourable. Let us hear the testimony.

"D. T. F." has drawn rather a melancholy picture of East Anglian Roses; let me give the opinion of one of the most celebrated growers in the Eastern Counties:—"As far as I am able to judge, I fancy the season about ten days later than last year; but Roses, with such weather as we are now having, will make up ground fast. My neighbours say their Roses are looking first-class. I have seen mine more promising. I have had too much rain; my Teas were hit hard by late frost, and many have blind shoots, but these will flower later, and be useful. Very early Rose shows must be failures." Higher up, in the same region, "F. P. R." writes:—"My wood is injured by the frost of May 1. On April 30 I measured Tea shoots from the soil—Anna Olivier, 14 inches; Catherine Mermet, 12 inches; Marie Van Houtte, 10 inches; Madame Lambard, 12 inches; Comtesse de Nadaillac, 10 inches, and other fine strong shoots, and very promising, and all were cut quite down. Had to reprune, and now not shooting well again. Mildew has appeared to-day." From the Home Counties the tale is nearly the same. From Reigate "J. R." writes:—"Roses in most places in this neighbourhood have been hardly hit by frost, and will be late." From Sussex "A. S." writes:—"Roses much injured by frost, many blind shoots, bloom-buds very scarce; blooming season about as usual—the end of this month." Kent has evidently fared better. "G. M." writes to me from Canterbury:—"My Tea Roses are looking well. I saw Mr. P.'s; they look very well indeed, especially the H.P.'s; also Mr. S., who won the cup last year—all his Roses look very well, and both will be quite forward enough for the 29th." In my own neighbourhood, so far as I can judge, Roses look uncommonly well. "H. F." tells me that his are very fine—no aphis, and but the slightest appearance of mildew. My own are very promising, and perfectly clear of aphis and mildew. Passing on to the West, Mr. G. C. writes from Bath:—"A few of the more tender Teas were injured by frost with us, but on the whole Roses have started well, and are very promising. We had no spring frosts to do us any injury. From Gloucestershire "F. A. B." writes:—"My Roses are looking very well; some have been killed outright by the frost, and some damaged, but not to any great extent. I should think they are about a week later than last year. I find Teas are looking far better and stronger than last year, and H.P.'s are very strong. All that we want now is warm weather, and, above all, warm nights. I have no blind shoots." I saw Roses in Cheshire last week; they looked well, but I found the complaint of blind shoots had reached them also, but growers were very hopeful of a successful bloom. From the Midlands, which always appear to suffer more severely than any part of England from the winter frosts, I have this laconic statement from "H. F.":—"Roses look sickly and weak: want hot weather. Lost thousands of standards in March, others injured badly; prospects bad." From the North "E. R. W." writes:—"My Roses are pushing very strongly, and seem remarkably fine—finer indeed, than usual, and wonderfully free from insects. Many of the plants were killed to the ground, but seem now to be making strong growth. Of course they are very late."

What, then, are we to assume from these reports? One cannot generalise, but there are a few things which are apparent; 1st, that there is at present, apparently, an absence of greenfly, and knowing how much this militates against successful blooming, it is a great point in favour of a good bloom; 2d, in most places there has been an abundant supply of rain, indeed, in some places it has been rather in excess, but good rains in May are always favourable to the Rose, and

"A dripping June
Sets all in tune;"

and 3d, nothwithstanding the great variations of temperature, there does not as yet seem to be a plague of mildew: however, there is plenty of time before the exhibitions begin to make or mar our prospects.

As far as the shows themselves are concerned, there seems to be no reduction in the number, on the money subscribed to carry them out, or in the enthusiasm of the exhibitors. There are some shows which have fallen through for this year, notably Darlington, which has always been a great success, but which the hard times have for the present killed, but others have sprung into life. Clifton and Bristol inaugurate one this year, so does Henfield in Sussex. East Gloucestershire, which began hesitatingly last year, has launched forth into deeper waters, and offers valuable prizes—one of £10 is offered by a gentleman in that neighbourhood for the best box of Roses in the show. The National Rose Society keeps ahead of the stream, and, as has been lately announced in the *Gardeners' Chronicle*, has provided some beautiful medals to be competed for this year. Whether anticipations will be realised depends on many things, but as "Hope springs eternal in the human breast," so we too will hope that we are on the eve of a successful Rose season. *Wild Rose.*

New Garden Plants.

KARATAS (EUNIDULARIUM) AMAZONICA, *Baker.**

THIS is a well-marked plant, which has been in cultivation for many years, but never described, so far as I am aware. It belongs to the typical group of the sub-genus Nidularium, which is distinguished from the section Regelia by having the flowers produced, not only in a central head, but also in the axils of a few of the inner shortened leaves. The present plant does not possess the bright red or bright violet reduced inner leaves of some of its allies, but all the leaves are similar in colour—a bright glossy claret-brown on the underside. I have twice seen it in flower, once at Kew in 1878, and now Mr. Bull has just sent it for identification. I did not describe it in 1878, expecting that Professor Morren, who gave it the name amazonicum, would deal with it. I follow Bentham and Hooker in sinking Nidularium under Karatas, but in habit the two are very different. It is also sometimes grown under the names Bromelia amazonica and Æchmea amazonica—Acaulescent, producing shoots in the axils of the outer leaves. Produced leaves about twenty, arranged in a dense, rosette, lanceolate, from an ovate dilated base, 1—1½ foot long, 2—3 inches broad above the middle, narrowed gradually to the point, moderately firm in texture, quite destitute of bands, spots or lepidote scales, greenish-brown on the face, a glossy uniform claret-brown all over the back, finely closely serrated on the margins. Flowers numerous, arranged in a sessile head in the centre of the rosette, and in the axils of the ovate-lanceolate reduced falcate inner leaves, which are horny in texture, greenish-brown in colour and serrated on the edge. Ovary green, inferior; calyx-segments ovate, horny, reddish-brown, imbricated. Corolla with a greenish cylindrical trigonous tube, 1—1½ inch long, and a white limb with oblong obtuse segments ½ inch long. Stamens inserted in a single row at the throat of the corolla-tube; free filaments very short; anthers white, linear, basifixed, half as long as the corolla-segments. Style filiform, as long as the corolla-tube; stigmas aggregated in a globose head. The whole plant at the top measures a couple of feet in circumference, and the flower-rosette 6 or 8 inches at the top of its 6—8 leaves. It is an inhabitant of the valley of the Amazon, and was first brought into cultivation by Linden, about 1870. *J. G. Baker.*

AËRIDES GODEFROYANUM, *n. sp.**

The most stately member of the Foxbrush group. The flowers can, however, only be compared to those of Aërides maculosum. They have a light white rosy ground colour. Dorsal sepal and petals with numerous streaks, lateral sepals, with few streaks and spots of the finest amethyst, like the anterior borders of the lateral sepals and petals. The lip is obtusangled, triangular, with a keen retrorse, even uncinate solid tooth, and an exceedingly small angular spur, which is characteristic, as it does not proceed under the lamina of the lip. The lip is of the lightest white rose colour, the whole disc of the blade is of the richest and warmest amethyst. Column as in Aërides affine.

The inflorescences I saw were all simple, but may become branched. Leaves recurved, broad, borders upright, hence they may be called channelled. This might be considered a giant Aërides affine, with Lobbii flowers improved, and with a minute angular spur.

I had it first last year from Mr. W. Bull, but it was undeveloped then, and looked as if opened in a case. This year came a magnificent inflorescence kindly sent by M. Godefroy-Lebeuf, Argenteuil, Seine et Oise, Route du Sannoisa; a fine plant was added to illustrate the manner of growth—a very laudable practice. Two days later appeared once more Mr. W. Bull on the scene with a glorious inflorescence and a fine broad strong leaf.

This very desirable Cochin Chinese novelty is dedicated with the best feeling to M. Godefroy-Lebeuf, the enthusiastic orchidist, who sacrificed his health in benefit of the successful exploration of those unwholesome countries. *H. G. Rchb. f.*

PUBLICATIONS RECEIVED.—*Official Guide to the Museums of Economic Botany. No.* 1. *Royal Gardens, Kew* (London: Eyre & Spottiswood).—*Monographia Generis Eremostachys.* By E. REGEL.—*Fish Culture. No.* 2 (London: Paul & Co., 117, Euston Road, N.W.).

* *Karatas* (*Eunidularium*) *amazonica*, Baker.—Acaulis, stolonifera; foliis productis 15—20, lanceolatis dense rosulatis pedalibus vel sesquipedalibus subtiliter serratis facie brunneo-viridibus dorso splendide vinosis nullo modo lepidotis basi dilatatis ovat s; folius centralibus reductis 6—8 ovato-lanceolatis brunneo-viridibus corneis serratis; floribus plurimis albis in capitulum centralem et ad foliorum reductorum axillas dispositis; sepalis ovatis imbricatis rubro-brunneis; corolæ tubo elongato viridulo cylindrico-trigono limbi segmentis oblongis obtusis albis, antheris albis ad tubi fauccm uniseriatis, filamentis liberis brevissimis; stylo corollæ tubo æquilongo, stigmatibus capitatis. *Nidularium amazonicum*, Linden and Morren, Cat., 1873, p. 11 (name only).

* *Aërides Godefroyanum*, n. sp.—Foliis late loratis carnis, rigidissimis; racemo (semper?) simplici, sepalis oblongis obtuse acutis; tepalis cuneatis oblongis acutis; labello oblongo triangulo obtusangulo unco retrorso: calcari gibbo sub laminam non progrediente; columna ornithorrhyncha. Cel. Godefroy-Lebeuf dicatum. Ex Cochin China. *H. G. Rchb. f.*

ON THE PRINCIPAL VARIETIES OF PINUS SYLVESTRIS.

(*Concluded from p.* 800.)

4. *Pinus sylvestris genevensis* (the Geneva Pine. —This variety is very briefly dealt with in the Barres Catalogue by the simple statement that it is the least presentable in appearance of all, while another of the same type, the Briançon Pine, may be said to be worse still. As M. de Morogues remarks, "In one condition only can there be any ground for making use of it, and that is on wind-swept mountain tops where no other form would have a chance of growing." It does not therefore call for any further comment in this paper.

The following arguments, raised by M. de Morogues, and confirmed by his own personal observation, on the certainty with which all the several varieties of Pinus sylvestris maintain their identity, in spite of all changes of soil and climate, will not, I think, be out of place. I have only mentioned four clearly distinct varieties whose leading characteristics are very marked. Space will not allow of my entering into further details at present regarding the rest, nor from the practical forester's point of view is there much to be gained by my doing so. But in support of the views expressed above M. de Morogues remarks :—"If the influence of physical causes such as I have described above were sufficient to change the character of the species, how would an exotic plant, transported into our soil and climate, preserve its specific characteristics and the normal habit that it has in its own country? How is it that when sown in our climate it reproduces the same identical species? It does so simply because neither soil nor climate have been possessed of sufficient power to effect any alteration in it. All that they can do is to exert a certain influence on its development according as the circumstances in which it is placed are more or less favourable, and in its colour, which is within certain limits subject to change. With regard to its characteristics as a species, they are never effaced."

Further on he adds :—"Herewith what experience has taught me, and shown that the theories that have been enunciated up to the present time are in direct contradiction to the facts. I have raised from sowings on my property of La Caille about 875 acres of Pinus sylvestris. I have derived my supplies of seed from different sources, and having been at the same time able to assure myself that the Pines in question had not been hybridised in any way, have observed that they always produced the same identical species that are natural to the soils and climates whence they came, with this trifling difference, that my Pines were more or less vigorous in proportion to the quality of the soil in which they were sown." (See Morogues' *Question concernant les diverses Espèces et Variétés renfermées dans le Pin sylvestre*)

I will now venture to add a few notes, based on the results of my own observation, on the chief characteristics of the above-named varieties of Pinus sylvestris as exhibited in the forest nursery. The chief features which characterise the different species as growing trees are no less noticeable during the earlier stages of their growth. The samples from which my observations are derived were average specimens taken from our full bed sowings of March, 1885. Their measurements were as follows :—

Pinus sylvestris rigensis : height from collar to apex of terminal bud, 3½ inches ; length of leaves, 1½ inch.
" " scotica : height from collar to apex of terminal bud, 3⅜ inches ; length of leaves, 1⅛ inch.
" " haguenensis : height from collar to apex of terminal bud, 4¼ inches ; length of leaves, 1¼ inch.

The leaves are most numerous in the case of the German Pine, more glaucous in colour, and set more thickly round the stem ; the terminal buds are much compressed. In the Scotch Pine the leaves are fewer in number, set further apart ; in the Riga they are more numerous than in the Scotch, and closer set. The stem is very clean and smooth in the Scotch, less so in the Riga, and somewhat rough in the German Pine.

The true Scotch Pine is very easily recognised, the leaves being of greater substance, somewhat broader, more coriaceous, and of a deep green hue, that remains unaffected by winter cold. They may be no less certainly distinguished by the bright red scales of the terminal bud, which is also more elongated than that of the others. The colour of the German and Riga plants is affected by the first approach of cold weather, the latter turning to a deep dull purple hue. Those unacquainted with the plants would form the idea that they were in an unhealthy state ; but this is not so—it seems to be merely a natural habit due to climatic causes to which they are subject in their native country. In the German variety the colouring matter of the leaves seems to lose its intensity, and assumes a certain flatness of tone.

The Riga Pine is the earliest to push in spring, and to complete its season's growth ; by the middle of September it may be said to have ceased to push upwards ; this peculiarity is inherent. In Russia the growing season is very brief, commencing late and closing early, as is usual in such extreme northern latitudes, vegetation being very active in the short period allotted to it. Hence, in a great measure the superior quality of Russian Pine timber—the increase in volume may be less, the consolidation of woody tissue is greater.

The Scotch Pine, whose general characteristics are intermediate between those of the other two, carries its growth on a few weeks later into the season, and in the past autumn had barely set its terminal bud before the middle of October. In our climate, however, more especially if there is a fair fall of rain towards the end of August and September, the autumn growth is very strong among all classes of plants. During the burning heats of July and August they seem to rest, but after the first heavy showers they shoot up again with increased energy. They have not attained by the end of August half the dimensions that they will have acquired by the end of November.

It may almost be said of the German Pine that it never ceases to grow ; at the date of my observation (November 24) its vegetation was still active, and it seems to require a severe degree of cold to check it, even for a time ; so long as the leaves are not actually frozen, their development seems to continue, and the process of root-formation goes on the whole winter through.

With regard to the seed in the Riga and German varieties, the number in a given weight is the same, and when procured from first-class houses, the germinative power is very great, often as much as 85 per cent. The true Scotch seed is somewhat heavier, and in all the samples that I have received, decidedly inferior in quality. It must, therefore be sown somewhat more thickly in the beds. From the statements made above, it may be taken for granted that the German Pine is naturally, by far the most vigorous grower, and that next to it come the Scotch and Riga Pines in the order named.

The second years' growth, when the seedling Pines have been set out in nursery lines to fit them for their final transplantation at the end of the second season, the same results will be noticed. The proportionate increase of volume is about the same. At the approach of the ensuing winter, they all change their colour in different degrees again excepting the Scotch Pine, which seems always to maintain its bright healthy hue ; the Riga Pine turns somewhat yellow. Certainly the Scotch Pine is, in its earlier stages at any rate, the most cheerful looking and ornamental of the three types, and one is not astonished at the tenacity with which many Scotch foresters maintain that it is the only variety worthy of cultivation. Continental experiments conducted on a large scale, the results of which have been verified with the utmost care, point clearly to the ultimate superiority of the Riga Pine as a timber tree, and the overwhelming testimony in its favour must be accepted by all impartial minds as an established fact. *E. J. C. Brace, Les Vaux, par Salbris, Loir et Cher, April* 14.

DIMORPHISM IN PLANTS.

UNIFORMITY is by no means so frequent a condition in plants as might, at first sight, be supposed. The phrase "As like as peas in a pod," was never uttered by any but a very superficial observer. To the naturalist, it would be more to the purpose to say "As unlike as peas in a pod," for of a truth no two are quite alike, and certainly no two leaves are identical in form, however like they may be to each other. During its passage from the seedling to the adult condition, during the stage of flowering and fruiting, the plant puts forth leaves often of very different aspect. These changes are sometimes easy of explanation, as when they are in manifest relation to the protection of the young leaves, the allurement of insects, or the processes of fertilisation, but at other times the reason of the diversity is not so obvious. Why is it, for instance, that Marattias and some of the Cyathæas send out from their leafstalks a tuft of miniature frondlets of quite different character from the perfect frond? Why does Pteris quadriaurita indulge in like diversity? Sometimes these unusual formations may be survivals—relics of a remote past when all the leaves of the particular plant were of this character, but this is, for the most part, mere guess work. We do not know what was the prehistoric appearance of plants save in the comparatively few cases in which their remains have been preserved to us ; for the great bulk guesswork, and guesswork only, is available. Sometimes the diversity in form is due to an unravelling or disentanglement of mixed characteristics ; thus, many hybrid or cross-bred plants will run back to one or other of their parental forms. It would seem, therefore, that these variations are referable to stage of growth and relative degree of vigour, to physiological purpose, to reversion to remote ancestral forms, or to nearer parental characteristics. We give illustrations of two such cases, both furnished us by the kindness of Baron von Mueller. In the one, Leptospermum lævigatum (fig. 180, p. 816), a small tuft of branches and shoots with relatively very small leaves emerges from a branch of the ordinary character. In the other, Acacia elongata (fig. 182, p. 820), from amid a dense mass of small phyllodes or dilated leaf stalks, bearing at their summits small pinnate leaves, spring long linear phyllodes destitute of true leaves. It is probable that this change has some reference to the occasional need for greater leaf-surface and additional stomatesor transpiration spores.

Another singular illustration is afforded by the Berberis figured at figs. 185, 186, p. 825. This specimen was sent by Canon Ellacombe to Sir Joseph Hooker, and at his suggestion to the Editor of this journal. It will be observed from the figure that the older leaves are alternate, solitary evergreen, and in form, colour, and substance like those of the common Holly. In the axils of some of these are borne tufts of leaves resembling those of the common Berberis, not only in their tufted arrangement, but also in their form, texture, serration, and deciduous character. The leaves of the common Berberis, how ever, are all simple, while many of those before us are ternate, some palmately others pinnately so (*i.e.*, the three leaflets are either stalked or sessile). The Holly-like leaves we take to be exaggerated representatives of the palmately divided spines that are commonly met with in the Berbery. A similar exaggeration of development is manifested in the ternate leaves.

It may here be noted that the apparently simple leaves of the common Berberis are often jointed at the base, so that they are really not simple, but represent the terminal leaflet of a compound leaf, whose side leaflets are not developed, though they are so in Canon Ellacombe's specimen. The truly compound nature of the leaf of the Berberis vulgaris is often overlooked, but it is mentioned by Hooker, Asa Gray, and Baillon. While in the common Berberis, as we ordinarily see it, we have evidence of imperfect development or degradation of the type in the palmate spines destitute of connecting cellular tissue, and in the compound leaves represented by a single leaflet ; in the specimen here figured we have exaggerated development of the primary leaves, and similar exaltation of form in the tufted leaves.

We are indebted to Mr. Nicholson for the identification of this Berberis with that called in German nurseries Berberis Neuberti ×, and which we find, according to Focke's invaluable treatise on hybrids *Die Pflanzen Mischlinge*, originated in A. N. Baumann's nursery, at Bollweiler, in Alsace, as an accidental cross between the purple-leaved variety of Berberis vulgaris and the common Mahonia, B. aquifolium. The explanation of the singular conformation of the plant, with some of its leaves evergreen, others deciduous, is thus furnished by its mixed parentage.

ROUND LIVERPOOL.

(*Continued from p.* 786.)

CRAMP HILL, WOOLTON, THE RESIDENCE OF F. H. GOSSAGE, ESQ., is not far distant from Allerton Station, which is easily reached from Lime Street Station.

This is a pretty place, nicely situated ; the house stands in grounds of considerable extent, which slope southwards. There is a beautiful view of the river some two miles away. Extensive alterations are going on in the glass departmen, some new fruit and plant houses being built, and vineries and Peach-houses renewed.

A lofty house is devoted principally to the smaller growing species of Palms and Cycads ; the front stage is occupied by Mexican Orchids, the whole thriving satisfactorily. Adjoining is a pretty little fernery, laid out with rockwork. Two houses that

have been used as vineries are for the present, until the rebuilding is carried out, filled with a general collection of stove plants, Ferns, &c.

There is a large house of Plums in pots, good sized trees, very well managed. One division of a new range of large hip-roofed houses is filled with Peaches—big, full-sized trees, which Mr. Jellico, the gardener, brought in from elsewhere last January; the success which has attended the removal is shown by the fact of their now carrying a nice lot of fruit. The next house also contains Peaches, good trees carrying a good crop. Adjoining this is a vinery; here the experiment has been tried of moving some old Vines from another house last winter. Pot Strawberries in considerable quantities are very well done. Mr. Jellico is one of a number of amateurs about Liverpool who make a special feature of exhibition Chrysanthemums, and here may be seen numbers of plants coming on which will no doubt make a fine display when their season of flowering arrives.

NORRIS GREEN, WEST DERBY,

the residence of Mrs. Heywood, can be reached by train to West Derby Station, or by tramcars which run to within a few minutes' walk of the entrance lodge. This is a very nice place, where gardening in its various branches is well carried out. There is a pretty approach to the house, which stands well within the tastefully laid out grounds. A good deal of glass is devoted to plants and fruit.

At a short distance from the house there is a large conservatory, consisting of five spans; the greater portion of the centre span is devoted to Camellias planted out—large specimens in beautiful condition, dense and full of foliage as Laurel bushes; the shoots are kept trained in so as to have each plant clear of its neighbours. Here also is a fine example of Luculia gratissima. The rest of the available space is kept gay with flowering and fine-leaved plants. Fronting this house there is a sunk panel, at one time, we understand, laid out as a flower garden, but now planted with Rhododendrons, which, when in bloom, as seen here below the eye, must be very effective.

The greenhouse, at the time we saw it, was principally occupied by Azaleas and greenhouse Rhododendrons. A good-sized span-roofed house is devoted to Roses, planted out in the centre bed, over which is an arched trellis, to which the plants are kept trained; the side stages are filled with pot Roses, the whole in very good condition. In a house devoted to a mixed collection of stove plants, flowering and fine-leaved, we noticed several varieties of Nepenthes growing well, and producing pitchers freely.

There is a small collection of Orchids, the occupants of one house consisting of Cattleyas, Dendrobiums, Lælias, Cypripediums, and similar kinds; a second division is devoted to Odontoglossums and other cool sorts, doing nicely.

Peaches are largely grown, some four houses being occupied by them with Figs on the back walls of two, and Camellias in the others, the trees collectively being in good condition. There are four or five vineries containing crops in various stages from the earliest, ripe in the early part of May, to those intended for late winter use. A house of Muscats has been recently planted. Mr. Bardney, the gardener, deserves much credit for the beautiful condition in which the place is kept, the whole being in perfect order.

SANDFIELD PARK, WEST DERBY, THE RESIDENCE OF J. E. REYNOLDS, ESQ.

There are frequent trains to West Derby Station, and tramcars to West Derby.

This place is well known in the locality from the length of time that the gardener, Mr. Wilson, has been an exhibitor at the Liverpool shows. If we mistake not, it is something like twenty-five years since his plants first appeared at the exhibitions held in the Botanic Garden.

There are a considerable number of houses devoted to the cultivation of plants. A span-roofed house contains Pelagoniums and hard-wooded subjects, including greenhouse Rhododendrons. Another house is occupied by specimen Azaleas; with them is an example of Rhododendron Gibsoni, some 7 feet high by 5 feet through; it is known to be over 50 years old, and Mr. Wilson deserves credit for keeping this grand old plant in a condition still healthy and vigorous. It would doubtless have been double the size if the knife had not been freely used. Ordinary decorative plants occupy one house, and one is devoted to pot Roses, with Roses on the roof.

In the stove there are a number of East Indian Orchids of various kinds, including some nice plants of Saccolabium Blumei, and a fine lot of the useful winter blooming Calanthes. A small house is mostly occupied by Cattleyas, including a healthy plant of C. Skinneri alba. In another house are Dendrobiums and various other species. A small span-roofed house is filled with Odontoglossums, Masdevallias, and other cool kinds. There is a pretty fernery arranged with rockwork; the plants are turned out, and, as usual under such conditions, grow freely.

A conservatory near the dwelling is kept gay with such flowering plants as are in season.

The earliest Peach-house is a high hip-roofed structure, with an arched trellis under the front portion of the roof, and an upright trellis which springs from the back of the arch reaching up to the ridge;



FIG. 180.—DIMORPHIC FOLIAGE OF LEPTOSPERMUM LÆVIGATUM. (SEE P. 815.)

in this way the upper portion of the trees get light both back and front. Some of the trees have been planted thirty-two years, and are in good condition, carrying full crops. The second Peach-house is a large one, containing good trees bearing heavily.

Three or four houses are occupied by Vines; in one there is a mixed lot, consisting of Muscats, Madresfield Court, Gros Colmar, and Mrs. Pince's, with Camellias on the back wall. Another contains Muscats and Mrs. Pince's, promising good crops. A span-roofed house with Vines overhead has Camellias planted out underneath, which do very well.

WYNCOTE, ALLERTON, THE RESIDENCE OF C. W. NEUMANN, ESQ.,

is one mile from Mossley Hill Station, which is 4 miles from Lime Street Station, from whence there are frequent trains during the day.

This place is nicely situated at a sufficient distance from the town to be out of reach of the adverse influences found in the more immediate proximity. There has been a marked advance in the cultivation of stove and greenhouse flowering and fine-leaved plants in the neighbourhood of Liverpool during recent years; and the large collection of finely grown specimens with which Mr. Mease, the gardener here, has held the first position at the Liverpool shows for some time back, at once point to Wyncote as the leading place in the locality for this class of plants. Still cultivation of an exceptional character has not been confined to plants alone, as shown by the success which Mr. Mease has also attained in the fruit department at these exhibitions, where the competition is of no ordinary character.

The glass department is extensive, there being a large number of houses, varying much in size, the greater portion of which are devoted to plants. The conservatory is principally occupied by Camellias and ordinary decorative subjects. The house for plants that require an intermediate temperature is filled with well grown specimens. One house contains a number of greenhouse Rhododendrons, from 4 to 5 feet through; with them were fine specimens of Statice profusa and S. Butcherii. Disa grandiflora thrives well in a corner of one of the houses with the ventilator always open opposite to it except when frosty. In the hard-wooded plant-house, amongst a number of other things, are some good specimen Heaths. The Azalea-house is filled with large and medium-sized specimens in good condition.

There is a small collection of Orchids, consisting o the leading kinds of Cattleyas, Lælias, Odontoglossums, Cœlogynes, Anguloas, Dendrobiums, Cypripediums, Phalænopsis, Saccolabiums, Vandas, &c., thriving well. In the principal stove are numbers of splendid specimens, including Anthurium Andreanum, 5 feet through—a grand variety with extraordinarily large flowers; Ixora Duffii, 5 feet through; Allamandas, Bougainvilleas, Stephanotis, Clerodendrons, Palms, &c. A small house is principally occupied by Ixoras and Dipladenias, in fine order.

Crotons have a house mainly to themselves; the best comprise C. Warreni, C. Queen Victoria, and C. Countess, the last-named in the way of, and an improvement on the elegant C. angustifolius. There is a nice collection of Amaryllis.

There are two vineries, one being principally devoted to Muscats, the other containing mixed varieties; in both there are good crops. A lofty Peach-house, the back wall of from 16 to 18 feet high, contains some good trees, carrying abundance of fruit; in addition, there is a long portion of wall covered with Peaches, and enclosed with glass. Figs are mostly grown in pots. There is a very good collection of hardy Rhododendrons, and a selection of the best herbaceous plants. Most of the best Lilies, grown in prepared ground, seem to thrive here very well; L. auratum has been in the ground seven or eight years, and produces from fifty to sixty flowers on a stem.

WOOLTON WOOD, WOOLTON, THE RESIDENCE OF HOLBROOK GASKELL, ESQ.

Trains run frequently from Lime Street to Allerton Station, which is not far distant. Woolton Wood is a nice old-fashioned place. Orchids are here the principal feature, the collection being the most important about Liverpool. They occupy the greater portion of the space in some half dozen houses, all except one being much above the ordinary size of those in which Orchids are usually met with. The smallest house is filled almost wholly with Masdevallias, of which there is a large quantity, comprising all the best of the leading kinds, including those which possess singularity in the form of their flowers, as well as the finest forms and colours. Some of the plants are from 1½ to 2 feet in diameter.

The Cattleya house contains a large number of plants, amongst which are most of the principal species and varieties. Associated with them are Vandas in quantity, of various kinds. The East Indian house is divided into two compartments, which are filled with Aërides, Saccolabiums, and numbers of heat-requiring kinds. In the Mexican house, amongst other things may be mentioned numbers of Lælia anceps in its various forms, and a fine stock of Odontoglossum vexillarium, and other species that succeed in a like temperature.

Of cool Odontoglots, there is a considerable quantity in a healthy thriving condition, consisting of most of the leading kinds. In a mixed plant stove there is a large stock of Cattleyas and bulbous Calanthes. There is a good example of a fernery arranged in the natural style with rock work; here are a number of tree species planted out, growing strongly and vigorously. Asparagus plumosus in this

house is likewise doing very well. Several houses are devoted to fruit, including Vines, Peaches, Melons, &c.

The present gardener, Mr. Alexander, has only recently taken charge of the place.

PICKERING LODGE, TIMPERLEY, NEAR MANCHESTER, THE RESIDENCE OF G. HARDY, ESQ.

Doubtless some who attend the Liverpool show will go through Manchester, and will thus have an opportunity of seeing some of the noted collections of Orchids and other plants in the immediate neighbourhood. Pickering Lodge is some 5 miles from Manchester, and within half a mile of Timperley Station on the London and North-Western Company's line from Manchester and Stockport, through Warrington to Liverpool. There are frequent trains during the day that stop at Timperley or at the next station, Broadheath, which is near at hand.

Here is one of the most noted collections of Orchids in the kingdom. It is particularly rich in choice varieties of Cattleyas and Lælias. At the time of our visit, one specimen of Lælia purpurata was showing eleven spikes, a Cattleya Mossiæ was throwing up some forty spathes, whilst the quantities of grand forms of Odontoglossum vexillarium, which fill a good-sized house, present a sight when in flower such as those who see them are not likely to forget; some of the plants are very large, and they afford every shade of colour which this variable Orchid is met with in. The number of spikes of this species at Pickering Lodge is this year reckoned at about 2000. Dendrobiums comprise most of the leading species, such as D. Wardianum, D. crassinode, D. formosum, and others. D. fimbriatum, 5 feet in diameter, was showing a quantity of spikes, bearing altogether some 1200 flowers. The plants of the various Orchids named are in beautiful condition, and many of them are of unusual size.

Cœlogynes, including the Chatsworth, Trentham, and other fine forms, fill the greater part of one house. Most of the other leading medium-heat requiring kinds are present in quantity, as also Cypripediums, which do well. Of East Indian species there is a good selection. The cool species, represented by Odontoglossums and Masdevallias, are also grown in considerable numbers. The collection altogether is a large one, filling many houses.

HAIGH HALL, THE SEAT OF EARL CRAWFORD.

This place is situated about 3 miles from the town of Wigan, to which there are frequent trains during the day from Liverpool. The appearance of the town in question as it is often seen, with a thick canopy of smoke floating lazily over it, is not such as calculated to lead to the supposition that gardening on an extensive scale could be successfully carried out so near. And in this those who visit Haigh Hall will be agreeably surprised, not alone in respect to the garden, but also with the extensive grounds attached, which deserve more than a passing comment. After getting fairly clear of the town the park is soon reached, the entrance to which is of a character which at once conveys an idea that nothing has been spared in making it worthy of the grounds within. The surface is much varied, consisting of hills and hollows, open grassy glades, and thickly wooded knolls, in fact a large portion of the park is occupied with wood; deciduous trees grow well, having a healthy appearance. Much has been done in recent times to improve the park; the roads are well made and in excellent condition, they are not confined to the simple requirements of use as existent in most places, but intersect the ground with a view to effect, and with the object of giving room to move about freely in all directions. Many of these roads have evidently involved much labour in their formation so as to make the gradients easy and to give the ground in places through which they have been cut the requisite slope. We understand that the public are allowed free access to the park with such limited restrictions as requiring their keeping to the roads and observing order. Keepers are constantly on duty to see to this. The boon which the inhabitants of Wigan and the surrounding district thus enjoy, is such as exists in few places.

One of the most remarkable features is the collection of Rhododendrons, which form dense banks on the sides of the broad irregular grass margins that bound the roads, and in other places are present in the way of a close thick undergrowth in the woods, the trees not being allowed to stand too close to permit of sufficient



FIG. 181.—THE LAWN AT MENABILLY. (SEE P. 818.)

light reaching them. They are dispersed all through the park, yet are present in greater quantities in the grounds immediately adjacent to the mansion. Seen as this, the finest of flowering shrubs, exists here, in such immense numbers, the effect through the blooming season must be extremely beautiful, whilst when out of flower, especially during the winter when the deciduous trees are bare, they are always effective. In addition to the ordinary forms of ponticum and Catawbiense, there is a collection of 250 named varieties, that occupy a suitable position.

Fruit is grown in large quantities, particularly Grapes and Peaches, which, in common with other kinds, are very well done. No one visiting the place can fail to notice the number and roomy character of the houses, notably those devoted to Vines and Peaches; the former occupy some half-dozen, wider than usual, giving plenty of length for the rods to extend. The Vines are in good bearing condition, and are carrying abundant crops. The first house, this season ripe about the end of May, consists mostly of Black Hamburgh. Another house of Black Hamburgh was bearing a beautiful crop. Bottom-heat, the use of which was expected by some to effect marvellous things in Grape growing, was provided for the Vines in this house, but it is not now used. That excellent Grape, Madresfield Court, has a house to itself. The appearance of the crop is such as to give promise of being well worth seeing later on. Another of these roomy divisions is filled with Gros Colmar and Lady Downe's, and one of like dimensions with Black Alicante, all of which are alike promising, the whole presenting an even appearance such as not often met with.

The Peach-houses are six in number, and, like the vineries, are large, roomy structures, that allow plenty of space to the trees in front without their encroaching too much on those that occupy the back walls. A house, 85 feet by 16 feet, is occupied by Figs on the front trellis, fine trees, in good condition. On the back wall is a Bellegarde Peach that covers a space 55 feet by 13 feet; it was originally planted at the end of the house against the division that separates it from the house adjoining, half its branches being trained through into the latter; last November it was taken up and replanted, so as to admit of the head being wholly within the house where its roots are; so little has it felt the effects of moving that the crop set necessitated several hundreds being thinned—not a bad example of what can be done in moving a large Peach tree, providing the work is carried out as it should be. It was planted in the position from whence it was moved in 1863. The next is also a Peach-house with four grand trees on the front trellis, and others equally good, and in fine bearing condition on the wall. Another house contains an excellent lot of trees carrying a fine crop. The whole of the front trellis in one division is filled with a Balgowan Nectarine—a beautiful tree bearing an abundance of fruit. The remaining house contains trees quite equal to those described, but they have not set quite so well. A long house with a division has Figs on the back wall, with Ferns planted along the front. A long lean-to range is occupied by Melons and Cucumbers, with Euphorbia splendens and Gardenias on the back wall.

The plant department under glass is in no way behind that of fruit, a large number of houses being occupied by most of the leading kinds, especially such as produce flowers suitable for cutting. One long house contains Gardenias planted out, which furnish flowers in abundance. A grand lot of Eucharis amazonica fill the greater portion of two houses; the plants are in beautiful condition, without a trace of disease. The roofs of both these houses are covered with Stephanotis; these two plants go well together, the latter requiring all the light it can get, whilst the Eucharis enjoys the shade it thus receives. In one house was a fine lot of that excellent forcing Lily, L. Harrisii, coming into flower. In another the roof is covered with Stephanotis—here again in fine condition; on the back wall Bouvardias are planted out. Eucharis fill another 40-feet house, with Stephanotis and Bougainvillea glabra overhead. Roses, greenhouse Rhododendrons, and Lilium candidum in pots occupy a house.

Bouvardias, as they are managed here, show what can be done by the continuous use of manurial stimulants and enough warmth to keep them moving freely; quantities of flowers have been cut from them through the winter, and at the present time they are as full of strong shoots as these plants usually are at the end of summer, which will still yield flowers in quantity. Roses and Daphne indica occupy the back wall here.

Double Primulas go to fill the greater portion of a low house; these also are well done. A large and lofty span-roofed house is occupied by Azaleas, Roses, Liliums, and various other things, with climbers overhead, amongst which are Lapageria alba and an immense plant of a red flowered Habrothamnus—a most profuse bloomer.

Near the mansion there is another plant stove filled with the usual flowering and fine-leaved subjects, such as used for decorative purposes; overhead is Clerodendron Balfourii and a very large example of Bougainvillea glabra, with the flaming Passiflora vitifolia (Buchanani), one of the most showy of the genus. A large house is filled with Camellias planted out, the back wall also covered with them, collectively in fine condition. In the centre of this range is a circular house with a dome-shaped roof, once used as an orangery now planted with Camellias. Adjoining this is a large stove, in which is a mixed collection of fine-leaved and flowering plants. Amongst the latter are some good varieties of Anthurium Scherzerianum and an exceptionally fine form of A. Andreanum. Under the centre path of a narrow span-roofed range 150 feet long a flue runs from the principal furnaces that utilises whatever heat passes the boilers. The garden walls are extensive, and such as rarely met with. They are 22 inches thick with a cavity. The trees of various kinds on them are in faultless order so far as attention can make them, but their bearing capabilities decrease in proportion as the atmosphere of the neighbourhood gets worse. Gardening under such conditions is uphill work, and Mr. Jamieson may well be congratulated upon his success under difficulties of no ordinary kind.

(To be continued.)

PLANTS GROWING OUT-OF-DOORS AT MENABILLY.

MENABILLY, Cornwall, which is remarkable for its mild climate, and for the many semi-tropical plants which thrive there in the open air, is the seat of the Cornish branch of the Rashleigh family, and was first built by Jonathan Rashleigh in the reign of Elizabeth; but the present house was nearly rebuilt externally about 1713, when most of the stone mullion windows of the earlier building were unfortunately removed. Some of the Oak-pannelled rooms bear marks of rough usage during the temporary occupation of the house by Lord Essex and the Parliamentary forces in August and September, 1644, when the loyal owner of the house, Jonathan Rashleigh, was sent a prisoner to St. Mawe's Castle, near Falmouth. The house was partly damaged by fire in 1810, and it has been enlarged by the present owner, and the gardens and pleasure grounds have been much improved by him. The position of the grounds, which have some miles of sea coast on three sides, gives to the climate a mildness which is remarkable, and which is proved by the vegetation.

Strangers are surprised and delighted at the thousands of Hydrangeas which flourish everywhere, single plants of which have hundreds of flowers on them of all hues from pink to blue, but the colour most prevalent throughout the woods is a deep blue. The plants of Cyclamen hederæfolium, purple and white, are countless, there being almost a continuous growth of them from the house to the sea. Some of the bulbs have been in the same spot for sixty years, and are from 6—8 inches in diameter. There are upwards of one hundred Bamboos in three varieties, with canes 14 feet in height. The rare varieties of Sikkim and other Rhododendrons, and the avenue of Cordyline indivisa, australis, Banksia, Brueri, and lineata, mixed with Chamærops Fortunei (see p. 821), which flourish out-of-doors are worth seeing. The natural formation of the ground, with its deep wooded valleys, and the terrace overlooking the sea, add much to the beauty of the place, and the "Grotto" at the edge of the wood near the seashore, at the pretty cove of Pridmouth within the private grounds, is known far and wide, as its treasures of minerals, fossils, and polished stones are freely shown to the public, and it is visited by hundreds of strangers every year. Similar "grottos," formed of mineral specimens, exist at Endsleigh, in Devon, and at Chatsworth, in Derbyshire, both of which were suggested by the original grotto at Menabilly, which was built by Mr. Philip Rashleigh (who formed the celebrated collection of minerals in the house of Menabilly), and has existed upwards of one hundred years.

The drive of two miles through the woods to the eastern lodge is lined on both sides with Hydrangeas, Fuchsias, Benthamias, Rhododendrons of various kinds, and Escallonias. Hydrangeas, indeed, are found everywhere throughout the woods and about the cliffs on the edge of the sea. There are every year about 2000 cuttings of Hydrangeas added to the stock of the home nurseries; and, where suitable soil and positions can be found about the cliffs, young plants of H. hortensis are being established close to the sea.

We subjoin a list of some of the rarer plants which have been cultivated for some years without protection, as well as of others of interest:—

Abutilon vitifolium
Aloysia citriodora
Alnus incana
Aralia papyrifera
,, japonica
,, Sieboldi
,, Maximowicii
Arundo conspicua
Arundinaria falcata
,, Metake
Arbutus Menziesii
Azalea indica, vars.
Banksia integrifolia
,, serrulata
Benthamia fragifera
Berberidopsis corallina
Chilenothamnus spectosus
,, saligna
,, lævigata
,, religiosus
Carya microcarpa
,, sulcata
,, amara
,, alba
,, olivæformis
,, elliptica
Cassine fulvida
Cerasus flore-pleno
Cercidiphyllum japonicum
Chamærops Fortunei
Choisya ternata
Cliathus puniceus
Colletia bictonensis
,, horrida
Corræa alba
Camellias vars (many)
Cordyline indivisa (true)
,, australis
,, Banksii
,, Veitchii
,, Baueri
,, Rashleighana (a cross between C. australis and C. Banksii)
,, lineata
Desfontainea spinosa
Diospyros Lotus
Drimys aromatica
Edwardsia grandiflora
Elæagnus japonicus
Embothrium coccineum
Eriobotrya japonicus
Eryngium pinnatifidum
Escallonia revoluta
,, illinata
,, montevedensis
,, organensis
,, rubra
,, macrantha
Eugenia Ugni
,, apiculata
Eurybia tomentosa
Euonymus europæus
,, japonicus
,, latifolius albo-variegatus
,, aureo-variegatus
,, radicans variegatus
Ericas vars.
Eucalyptus citriodora
,, globulus
,, amygdalina
,, occidentalis
,, rostata
,, coccifera
,, viminalis
,, coriacea
,, Gunnii
Ficus repens
Grisilinia lucida
Grisilinia littoralis
Goodia latifolia
Gunnera scabra
,, manicata
Hydrangea paniculata
,, ,, grandiflora
,, scandens
,, Dr. Hogg
,, stellata
,, quercifolia
,, hortensis (upwards of 50,000)
,, Otaksa
,, Thunbergii
,, elegantissima japonica
,, stellata flore-pleno
,, rosea
Hakea pectinata and species
Hippophaë rhamnoides
Illicium anisatum
Jubæa spectabilis (two winters)
Juglans rupestris
Kalmia latifolia
Lapageria rosea
Laurus nobilis
,, angustifolia
,, canariensis
,, sassafras
Lavandula spica
Leptospermum scoparium
Litsea reticulata (40 feet high)
Metrosideros floribunda
Myrtus communis
,, angustifolius
Olea fragifolia
Olearia Haastii
,, ferruginea
Photinia serrulata
Parrotia persica
Phormium tenax
,, atropurpureum
,, Moorhouseii
Rhaphithamnus cyanocarpus
Rhododendron barbatum
,, calophyllum
,, Campbellii
,, argenteum
,, lancifolium
,, Maddeni
,, Nuttallii
,, formosum
,, Falconeri
,, glaucum
,, Royleii
,, affghanicum
,, Hodgsoni
,, vaccinioides
,, Edgworthii
,, longifolium
,, suave
,, niveum
,, campanulatum
,, retusum
,, Aucklandii
,, Dalhousiæ
,, ciliatum
,, Thomsoni
,, campylocarpum
,, cinnabarinum
,, lancifolium
,, ponticum—&c.
,, Waterer's hybrid vars.
Tasmania aromatica
Tamarix dahurica
Veronica Andersoni
,, Traversii

Coniferæ.

Araucaria Bidwilli
,, Cunninghamii
,, excelsa (lived several winters)
Athrotaxis imbricata (?)
,, laxifolia
,, selaginoides
Cedrus africana
,, Deodara
,, atlantica
,, brevifolia
,, Libanica
,, Whitleyana
,, globulifera
,, Goveniana
,, MacNabiana
,, oregonica
,, Lambertiana
Fitzroya patagonica
Juniperus japonica
,, tripartita
,, Schottii
,, vulgaris
,, chinensis
,, thurifera
,, recurva var.
Podocarpus andina
Prumnopitys elegans
Pinus Pseudo Strobus
,, Montezumæ
,, Lindleyi
Pinus radiata
,, Lambertiana
,, Ayacahuite
,, regalis
,, Buonapartea
,, macrocarpa
,, Bungeana
,, Jeffreyi
,, insignis
,, tæda
,, tuberculata
,, Gerardiana
,, muricata
,, edulis
,, rigida
,, inops
,, aristata
,, Banksiana
,, Pinea
,, Llavaiana
,, devoniensis
,, cocarpa
,, Parryana
,, ponderosa
,, Benthamiana
,, Bruttia
,, Halepensis
Taxus hibernica
,, baccata
Larix dahurica
,, Kæmpferi

The Flower Garden.

ROSE BUDDING, Etc.

PRICK off Wallflowers, Campanulas, &c., into nursery lines as soon as they are fit to handle. Let the soil be moderately rich. Any hardy perennials which have been overlooked should be sown forthwith. Violets will require their runners to be constantly removed, and they will require daily syringing to keep down red-spider, which is their chief enemy. The stocks for budding Roses on this season should be gone over, and all the weak growths and badly placed shoots removed, leaving only those which are in the best positions: three or more may be left for working. There is no set time for budding Roses; this must be determined by circumsstances. If too early performed there is a danger of the young buds pushing in the autumn to perish in the winter. Some state that the time of budding is determined by the ease with which the bark can be raised. In ordinary seasons July is the proper month in which to insert the buds. The operation is very simple. With a sharp knife make a longitudinal slit in the bark about 1 inch or 1½ inch in length. About a quarter of inch from the top a cross-cut should be made extending three-eighths of an inch on either side. With the reverse end of the budding-knife raise the bark on either side above and below the cross cut. Select a half-ripened shoot of the kind you propose putting on the Brier, remove the spines and all the leaves from the bud, reserving a portion of the leafstalk only; then, about a quarter of an inch above the bud, take off a slice of bark, remove the woody portion from the back, and slip the piece into the slits prepared for its reception. Be particular to have the bud exactly at the meeting of the cuts, then bind up with a piece of raffia, and the operation is complete. Tea and other Roses may now be struck readily from eyes. Select a half-ripened shoot, cut it into pieces, one eye to each, place them eye uppermost in a pan of sharp light soil. Plunge into a brisk bottom-heat, and, if carefully attended to, from 80 to 90 per cent. will root. When roots are formed, carefully lift them out, and pot into small 60 pots. They should be shaded constantly during sunny weather.

CARNATIONS AND PICOTEES.

These should be layered as soon as the grass is of sufficient size to have strong growths. Some prefer deferring this operation till the end of July or the beginning of August, and when they are rooted to lift the layers and pot them up or winter them laid in a cold frame. This, in my opinion, is double labour; they may as well be lifted as soon as sufficiently rooted and planted in the beds in which they are intended to remain. Have some nice sharp soil—sand, leaf-mould, and loam in about equal quantities—ready, clear off all the withered or unnecessary leaves from the stems of the young shoots to be layered, then with a sharp knife cut the shoot half way through at the back of a joint, run the knife up through the next joint; have some hooked sticks at hand, place one over the stem below the cut and fasten it in the ground. Take some of the soil and mound it up to the depth of from 3 to 4 inches round the young layers, making it moderately firm, and in the course of from four to six weeks the plants will have struck root. They must be attended to with water during the rooting season or else they will suffer, and be longer in rooting. They may also be struck from cuttings. The usual way is to have a slight bottom-heat bed, on this is spread a compost of leaf mould and river sand. Take off the young shoots with two joints, trim with a sharp knife the lower joint, and prick them into the frame 2 or 3 inches apart. Some strike them cold, and leave the cuttings from three to four joints long, but they do not strike root readily, as the wood used is much harder. *W. M. Baillie, Luton Hoo Gardens.*

Plants and their Culture.

CHRYSANTHEMUMS.

THE plants of the earliest batch should have their final shift, and should not be stopped after this shift if it is intended to have fine blooms; as only extra large blooms can be got by attention being given to this point. They may now be plunged to the depth of the pot in a bed of coal ashes. See that they stand in a light, partially sheltered situation, otherwise they will become drawn, as they certainly will if placed near high walls and trees. Later batches can be potted, and may have the shoots pinched. Place stakes to all plants as growth progresses, and as soon as the pots fill with roots liquid manure should be given freely, if the foliage is to be retained down to the pots.

FUCHSIAS.

Specimens of these will now be making rapid progress. Shift on young growing plants as they require it, and continue to stop specimens which are required for blooming in August and September. A good place is made for them, for some weeks to come, by taking some strips of deal, of two inches in breadth, with a few cross pieces to form a temporary roof supported on posts at the corners, with sides and ends open. This should be furnished with a roller to which canvas is fastened, to be let down during bright sunshine, and to break the force of heavy rains. The plants will require constant attention as to watering, liquid manure being given as the pots fill with roots. Keep the syringe well at work, morning and evening, to destroy insects and to keep the surroundings cool.

STOVE PLANTS.

The shoots of the trailing plants need regulating and tying-in, and if they are wanted for exhibition purposes they must be tied to wire trellises or upright stakes; but if not, they may be allowed to grow more freely. Most of the trailing plants can be used with advantage in the conservatory or greenhouse for the next six weeks or two months. Such plants as Bougainvillea glabra, Dipladenias, Clerodendrons, Allamandas, Passifloras, Stephanotis, Rondeletias, Gloriosa, and others of the same character, which are often kept in stoves the whole year, would be of service in keeping up the display in cooler structures, but to enable them to stand well and to preserve their bloom in good condition, and for the plants themselves to receive no injury they must be be previously prepared. This will not be done by admitting more air and reducing the shade for a week or two, but, as I have before pointed out, by keeping the plants near the glass and by using as thin a shading as possible from the first, it will then be found that this exposure to light during the early stages of growth will enable a great many stove plants to be used for the above purpose. After the removal to the cooler department, their supply of water must be much reduced (Tree Ferns, pot-bound Palms, and Pandanus excepted). *A. Evans, Lythe Hill.*

Fruits Under Glass.

VINERIES.

THE work to be done in this department from this date until the Grapes are cut will be chiefly of a routine character. As stated in my previous Vine Calendar, the lateral and sub-lateral growths will require to be pinched once or twice a week, leaving only sufficient shoots to furnish the trellis, and which can be duly exposed to the influence of light. The borders—inside borders and outside ones, too—in the absence of heavy rains, will require copious supplies of clear water, followed with liquid manure being given at the roots at least twice in three weeks, and the pathways, walls, &c., of houses in which Grapes are swelling should be damped over with the syringe and tepid water morning, mid-day, and afternoon at closing time (about 4 o'clock), when the temperature may be run up to 90°, with plenty of atmospheric moisture at the same time. In order to prevent the berries of such varieties as Lady Downe's, Muscat of Alexandria, Madresfield Court, &c., from being caught by the sun when covered with and full of moisture, air should be admitted to the house in which the varieties susceptible to scalding are growing somewhat earlier during the stoning period, and with the same object in view a rather free lateral growth should be allowed until the berries are stoned.

Fire-heat should now be reduced to a minimum, starting the fires only sufficiently early in the evenings of bright days to slightly warm the water in the pipes before banking them up for the night; but, should the weather happen to be wet or dull during the daytime, the fires, as a matter of course, should be pushed on first thing in the morning, so as to raise the temperature to 75°, with a little air admitted, and aim at a humid rather than an arid atmosphere, except in houses in which the fruit is ripe or ripening, in which case, by a diminution of atmospheric moisture, and a free circulation of fresh air, a buoyant atmosphere should be maintained. The bunches of late Grapes should be looked through, and any small berries that may happen to be in them removed carefully with a sharp-pointed pair of scissors, as their presence in perhaps otherwise symmetrical bunches is as undesirable as they are themselves useless.

RED-SPIDER.

Should this, the most troublesome of all pests that gardeners have to contend with in the forcing department, put in an appearance, as it is most likely to do, it is best to sponge the leaves thus affected with soft-soapy water, taking care that the upper and under sides of the leaves are well and carefully washed, and that bunches are not rubbed in doing the work. *H. W. Ward, The Gardens, Longford Castle.*

Hardy Fruit Garden

DESSERT CHERRIES.

THE trees will now be netted ever to protect the fruit from birds. From the time the fruit commenced to colour and syringing was discontinued, most probably a little black-fly will have established themselves unobserved, and if not examined in time will disfigure the fruit before fully ripe. As syringing forcibly with clean water or the further use of liquid insecticide is now out of the question, no better plan can be adopted than the temporary removal of the netting once a week, and a thorough examination under all the leaves and shoots in search of them. When detected under the foliage or amongst the bunches of fruit, as many as possible should be removed or crushed by hand, and where the aphides are abundant on the underside of the foliage the latter should be damped and the affected parts well dusted over with tobacco-powder. Black-fly on the dessert Cherry trees is not so bad here now as it was last year, the cause of which we attribute to a light syringing over the trees (before growth commenced) with thin whitewash mixed from freshly slacked lime.

MORELLO CHERRIES.

If the young shoots on these are infested (which will be principally on the points), it would be advisable to cleanse them as much as possible before proceeding to nail or peg-back the shoots. The main object at present should not be to get them fastened back merely for the tidy appearance of the trees, but to strive to maintain the growths healthy and free from insects, until the fruit is approaching the colouring stage, after which time there will be less danger of the points being injured or probably destroyed outright by this pest. Providing the shoots have not yet been fastened back, tobacco-powder will be found as good as anything to cleanse them with, choosing a calm day for dusting them over. I advised in a former calender to disbud the trees similar to Peaches, and if this has been done, less trouble will be experienced in keeping the trees and shoots clean. Any shoots yet remaining that will not be required for furnishing the tree with fruiting wood for next year, should be cut clean away and not be spurred back. Plenty of short spurs always form naturally, and these, in addition to the young wood annually nailed in, are ample to furnish the trees with foliage and fruit.

PEACHES.

All lateral shoots springing from the stronger shoots of this year's growth should be kept persistently pinched out, excepting on young strong growing trees which are desired as quickly as possible to cover a given space on the wall or trellis. In this case the most forward will be the most likely to ripen and stand a winter's frost, and these should be saved and nailed in to form part of the tree. Young trees generally have four or five strong leaders; where distance and space admits, the strongest of the lateral shoots will ripen quite as well, or better than the strong shoot from whence they spring, and an equally shapeable tree may be obtained. The shoots should now be pegged back as recommended in a former calendar. The state of the soil about the roots should be ascertained every fortnight or three weeks, and if it is found to be approaching dryness, a thorough soaking of water should be given.

All other wall trees should be gone over occasionally, in order to prevent the growth of too much foliage in the shape of laterals, &c. It is yet a little too early to spur back the breastwood on Apricots, Plums, and such like, but otherwise the foliage and useless shoots should be kept as thin as possible. *G. H. Richards, Somerley.*

APPOINTMENTS FOR THE ENSUING WEEK.

TUESDAY,	June 29	ROYAL HORTICULTURAL SOCIETY'S PROVINCIAL SHOW, IN THE BOTANIC GARDENS, WAVERTREE PARK, LIVERPOOL, and till July 5. Lewisham Horticultural Society's Show (two days). Twickenham Horticultural Society's Show. Sale of the Collection of Orchids, Stove Plants, &c., formed by C. E. Lyon, Esq., by Mr. J. C. Stevens, at Johnson Hall, Eccleshall. Sale of Orchids in Flower, at Protheroe & Morris' Rooms.
WEDNESDAY,	June 30	Farningham Rose and Horticultural Society's Show. Leeds Flower Show (two days). Royal Botanic Society, London: Evening Fete.
THURSDAY,	July 1	Shepperton and Thames Valley Horticultural Society's Show. Sale of the Collection of Orchids formed by J. T. Barker, Esq., at Stevens' Rooms. Sale of Rare Bulbs, from the Cape, &c., at Stevens' Rooms.
FRIDAY,	July 2	Sale of Imported Orchids, at Protheroe & Morris' Rooms.

APART from their direct influence on the development of botanical science as a special study, the writings of CHARLES DARWIN have exerted, and long will continue to exert, a most favourable impulse on the extension of botanical pursuits in general. A short time since, the eminent and philosophical surgeon, Sir JAMES PAGET, speaking of his early studies in botany remarked, that if he could trace no direct advantage to himself in his career as a practical surgeon from his early studies in botany, no words could exaggerate their indirect value to him as a mental discipline. These words, be it remembered, had reference simply to the Linnean system of botany—to a period when the vastly more philosophical and fecund natural system was struggling to make its way in this country, when vegetable physiology was at its lowest ebb, and when biology, as we now use the term, was unheard of. If the mere casual examination of flowers and their orderly classification, even upon so imperfect a method, was calculated to produce such results, what advantages may not be expected from the modern development of botany? The so-called natural system, connected as it is inseparably with the genealogical history of plants, opens up modes of thought and suggestions of practical utility which were impossible under the old system. Vegetable physiology, under the influence of DARWIN, has become not merely an affair of the laboratory, the microscope, and the balance, but a series of biographies, whose details have much the charm of romance added to the purer, serener satisfaction to be derived from the investigation of the truth.

To those of our readers engaged in the cultivation of plants there is no need to insist on the cardinal importance of a knowledge of how plants live and how they grow. A cultivator devoid of such knowledge would be like an engine-driver ignorant of the nature and properties of steam! But there is a still larger class of individuals who now find in the study of the habits of life—the life history of plants—a fascinating study affording a welcome relief to sterner duties, a pursuit in which the devotee is always coming across something new and interesting, and we may add something of value as regards the extension of knowledge and its application to utilitarian purposes. Such persons have much reason to venerate CHARLES DARWIN. Few persons, if any, have done more to remove the popular prejudice that botany is nothing but a vocabulary of hard words applied to the distinctions between tweedle-dum and tweedle-dee. Of DARWIN'S disciples no one has seized this feature of the great Master's teaching more happily than Sir JOHN LUBBOCK. Deeply impressed with the interest which such studies awaken and with their suitability as a means of intelligent recreation, he has not allowed his imagination to overshadow, if not to efface, his judgment, as some have done. Sir JOHN knows too well the value of accurate, sustained, sequential observation and judicious inference to allow his imagination to run away with him and carry him into the ranks of the romancists. An inspection of his latest book* will afford evidence of this. The earlier chapters refer to the interdependence of flowers and insects, a subject to which there is perhaps now-a-days a tendency to attach, if not too much, certainly too exclusive an importance. It is impossible to overlook, we had almost said to overrate the importance of insects to the fertilisation of some flowers, but it is too often overlooked that many flowers get on perfectly well without such assistance, and that very few indeed are at all times and seasons absolutely dependent on external aid. DARWIN himself was well aware



FIG. 182.—DIMORPHIC FOLIAGE OF ACACIA ELONGATA. (SEE P. 815.)

of these limitations, and was careful to call attention to them, but his disciples have not all been so cautious.

Fruits and seeds form another subject to which Sir JOHN LUBBOCK has directed his attention. He points out the adaptations of structure and form to purposes of dispersal, and, what will strike the reader as more novel, to purposes of protection against the assaults of predatory insects. The chapters on leaves contain some interesting observations on the arrangement and size of leaves in relation to the thickness of the stem upon which they are produced. Sir JOHN suggests *inter alia* that the narrow and needle-like form of the leaves of Conifers bears relation to the absence of the fibro-vascular bundles which are present in the stems of Dicotyledons. We confess we cannot quite grasp the author's meaning here, for a fibro-vascular bundle (sometimes two or more) run through the leaves of all Conifers known to us.

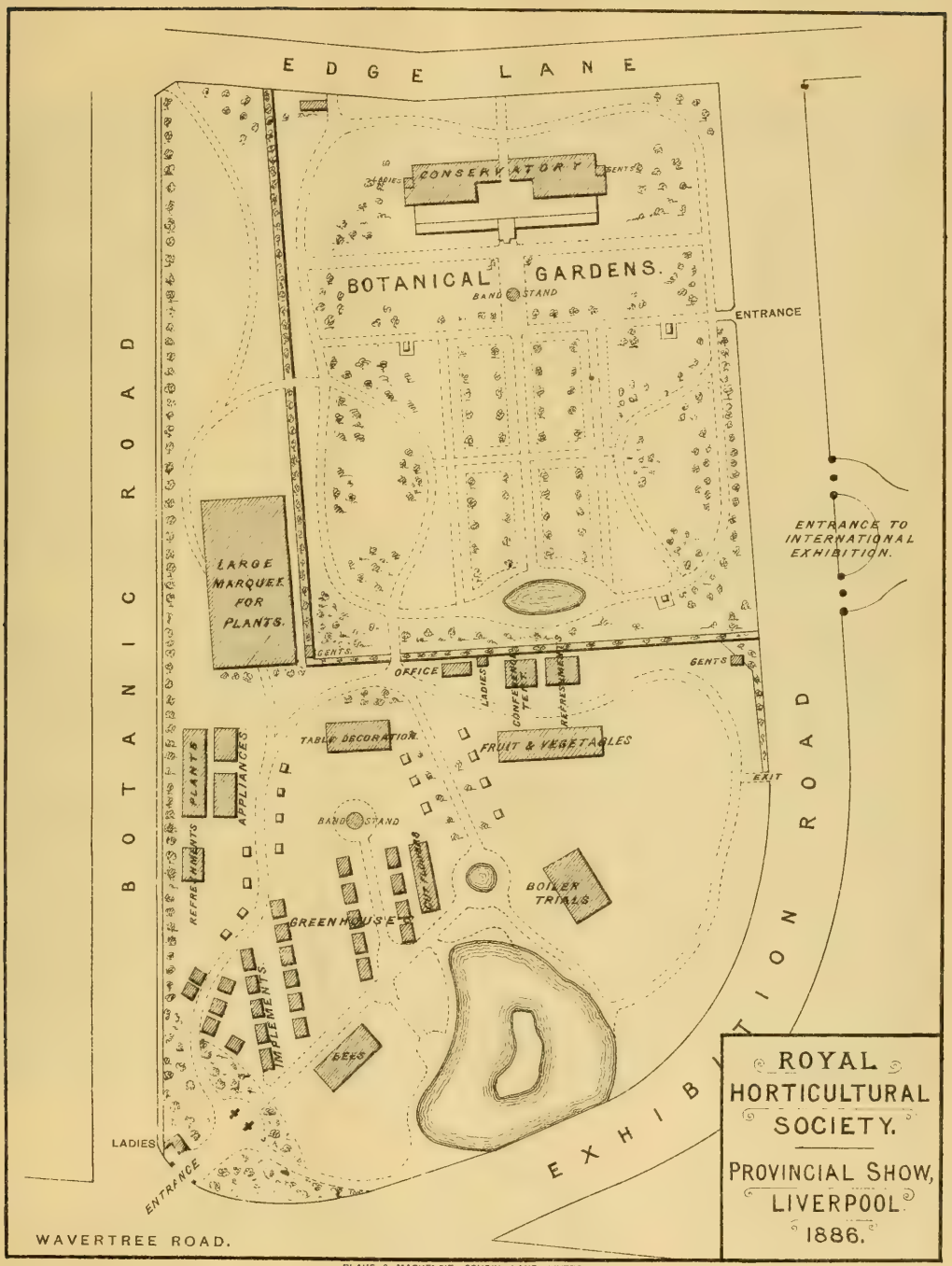
In treating of seedling plants the author shows the frequent gradual transition from the entire form of the cotyledons to the much-branched leaf, such as one sees in an Acacia or in an Umbellifer, and he draws the inference that the ancestral form of leaf was simple, and that in the progress of the ages divided and compound leaves have been developed in accordance with the exigencies of the plant and the influence of its surroundings. The simple must evidently precede the compound, so that, in this sense, the much divided leaf must be a later development than the simpler one; but we are inclined to think this sequence and arrangement to have reference more to the conditions and requirements of the plant than to any direct genealogical sequence and hereditary descent. A similar passage of simple to divided or compound may often be observed in the case of the bud-scales and leaves at the ends of the shoots of such plants as Clematis, Jasminum nudicaule, and other species; there the lowest scale-leaves, though the earliest formed on the individual shoot, are clearly degradations, abortive representatives of the ordinary type; and it is not till the shoot acquires its full vigour that the deeply divided leaf makes its appearance. In the young shoots of Osmanthus ilicifolius may be seen at this season an interesting transition between the imperfect bud-covers and the fully-developed leaf in the shape of two leaves, intermediate in form between the bud-scales and the full leaf. Imperfect leaves of this character are generally but by no means universally, retained at the base of the shoot among the rest of the covering scales, but in the case just mentioned they are carried up with the lengthening shoot, so that there is a long interval between the bud-scales proper and the true leaves—an interval bridged over by the presence in the middle of the two transitional forms we have alluded to. For other pertinent illustrations, we may refer to the article at p. 815.

* *Flowers, Fruits, and Leaves.* By Sir John Lubbock, Bart., &c. Macmillan & Co.

—— PRIZES TO YOUNG GARDENERS. — We are pleased to be able to state that the award of the prizes to young gardeners offered by the conductors of this journal will be made by the President of the Royal Horticultural Society, Sir TREVOR LAWRENCE, Bart., M.P., on the occasion of the Provincial Show at Liverpool on the 29th inst.

—— THE LIVERPOOL SHOW.—Politicians have their own affairs to see to next week, so have we, and they are centred in Liverpool. We are all hoping for a fine show, fine weather, and a fine time altogether. We have done our best for the last month to point out what there is worth seeing in and about Liverpool, but we have not exhausted our notes, and shall continue them from time to time. Meanwhile, we issue with the present number a plan of the showground, which will be useful to our readers in finding their way about. (See supplementary sheet.)

—— GARDENERS' ROYAL [BENEVOLENT INSTITUTION.—We are sorry to learn that up to the present time only one *bonâ fide* gardener has responded to Mr. SHERWOOD'S appeal for help out of the 6000 to whom a circular was sent! If each man sent a shilling there would be a sum of £300 added to the fund. Let us hope that before Friday next, July 2, gardeners will show their interest in their own affairs by a contribution, however small. Fortunately the response in other quarters promises to be satisfactory; but gardeners should practise the virtue of self-help, and not be contented to leave the work of charity to outsiders, who cannot hope to experience any benefit from their generosity. Gardeners may be assured that the Society is well managed, and without the possibility of undue favouritism. The



BLAKE & MACKENZIE, SCHOOL LANE, LIVERPOOL.

annual pensions, owing to the exertions made a year or two since, have been increased to £20 for men and £15 for women. The money is invested in Government securities, and more might be done if gardeners would do their part, as their forefathers did. Subscriptions, however small, may be sent to N. SHERWOOD, Esq. (HURST & CO), 152, Hounds-

spondent, Mr. ADLAM, has arrived in this country, bringing with him numerous specimens, living and dried, of the flora of Natal. Some of the living plants will, we are informed, be disposed of shortly by auction at STEVENS' Rooms. Readers of Mr. ADLAM's graphic account of his excursions in Natal will be interested in this announcement.

Mr. WATSON's determination. But as to the name Hubbardi there is no ground whatever for such a name. In a private establishment and for private purposes any one can do as he pleases, and call his plants what he likes, and no one has a right to interfere; but to endeavour to pass off such a name on the Floral Committee without authority is an outrage



FIG. 183.—THE DRACÆNA AVENUE AT MENABILLY. (SEE P. 818.)

ditch, E, and we shall be happy to forward any donations that may reach us. The number of pensioners at present on the list is 118. The statistics we gave on a former occasion amply show the extraordinary advantages the Society has and continues to offer to its subscribers, showing a rate of interest for money invested far beyond that which can be obtained by other means.

—— NATAL PLANTS.—We learn that our corre-

—— GARDEN NOMENCLATURE.—A very glaring instance of the abuse of nomenclature occurred on Tuesday last at the Royal Horticultural Society. A plant was shown under the name Protea Hubbardi. Many of those present recognised it as an old friend, or if they did not know the plant in substance they remembered its portrait, and at length Mr. WATSON, of Kew, referred it to P. cynaroides. The plant, figured in *Bot. Mag.*, t. 770 (Anno 1804) seems different in some slight particulars, but not sufficiently so to invalidate

which should be and was checked. The plant is very handsome, and in these days, when these magnificent plants are so wofully neglected, it was well to give it a "Botanical Certificate" for the purpose of encouraging the cultivation of these noble plants.

—— AZALEA OCCIDENTALIS.—Among the exhibits at the Royal Horticultural Society on Tuesday was a very distinct and pretty Azalea, brought by Mr. ANTHONY WATERER. It is like the Ghent Azaleas

but is abundantly distinct, and will be serviceable in extending the Azalea season, for now when Azaleas are over this is still opening its buds. We intend shortly to give an illustration of this beautiful and interesting new Californian species, and hence defer any further comment till the woodcut is prepared. A Botanical Certificate was awarded.

—— ROSA POMIFERA.—Mr. GEO. WALPOLE obligingly sends us excellent specimens of this Rose, of the handsome fruits of which we gave an illustration in our number for February 20 of the present year. Rigid purists will not accept it as truly British or Irish. No matter: Britons on this or on that side of the Irish Channel gladly recognise the charms of this lovely Rose, and will admit that if it is not wild it ought to be—at any rate, if not fit for a stand of twenty-fours it is just the thing for the woodland glade or wilderness walk. The fragrant leaflets are unusually elongate, downy beneath, and the large flowers are lilac-rose in colour. As for the handsome scarlet fruits, Mr. BURBIDGE's sketch at p. 237 is sufficient testimony to the value of the great Apple Rose.

—— SPIRÆA ASTILBOIDES.—We have said enough, but not too much, for Mr. BULL's Orchids; but Orchids are not to every one's taste, and very many could grow the plant mentioned at the head of this paragraph who would not venture upon an Orchid. The entrance to Mr. BULL's show is lined with plants of this species in full, bloom, and the effect against the dark Tree Ferns, Palms, and Cycads, as a background, is admirable. The plant is quite hardy, and ought to be cheap, at least it soon will be.

—— NORTH OF SCOTLAND HORTICULTURAL SOCIETY.—The last meeting of the session of the North of Scotland Horticultural Society was held on the evening of Friday, the 18th inst., in the Upper Hall, Christian Institute, Aberdeen. Mr. Peter Harper (Duthie Public Park), President, occupied the chair. There was a good attendance of members. Messrs. Milne, Ellon Castle; Arthur, Inverdon; and Archibald, Aberdeen, were admitted as members of the Association. Mr. A. Murray, Causewayend, read a most able and interesting paper on "Lichens," for which, after a short discussion, he was accorded a hearty vote of thanks. Several exhibits were adjudicated upon by the committee, and the following awards were made:—Calceolaria, shown by Mr. Taylor, Aberdeen (amateur), Cultural Certificate; Crassula, shown by Mr. A. Gregor, Vote of Thanks; Pelargoniums, shown by Messrs. James Mavor & Sons, Holboro, Vote of Thanks. The meeting concluded with a discussion of the paper read at the last meeting by Mr. Farquhar on "Peas." The usual votes of thanks terminated the proceedings.

—— CLEMATIS BEAUTY OF WORCESTER.—This is a new double blue-flowered variety of the florida section, raised by Messrs. RICHARD SMITH & CO., Worcester, and exhibited by them at the recent great Whitsun show at Manchester, when it was awarded a First-class Certificate of Merit. It is thought to have sprung from purpurea elegans × Countess of Lovelace, but whether this be so or not, it is an excellent addition to the double varieties. The colour is deep violet, approaching to blue; the centre petals take on a filbert-like shape, and as they have a white reverse the flowers appear to have a white centre; as the flowers age these centre petals unfold somewhat. It has a very free habit of growth. The plant shown was studded with flowers, and it is said to be an excellent bedder.

—— NEW HYBRID RHODODENDRON.—Under the name of R. roseum odoratum, Messrs. ISAAC DAVIES & SON, Brook Lane Nurseries, Ormskirk, exhibited at the Manchester Show, a new hybrid raised from R. Brayanum crossed with a dwarf-growing white American Azalea: the flowers are borne in good-sized trusses, the flower soft pink or delicate rosy-pink—the edges of the segments being distinctly margined with deep pink; much smaller than ordinary Rhododendron, and sweetly fragrant; the plant being perfectly hardy. It is an interesting hybrid, and was awarded a First-class Certificate of Merit.

—— CANTERBURY CHRYSANTHEMUM SHOW.—The Canterbury Gardeners' Mutual Improvement Society, which is affiliated with the National Chrysanthemum Society, will hold their ninth autumn show on November 12 and 13, in the Foresters' Hall, High Street. The classes are constituted to suit all sorts of exhibitors, comprising those for professional gardeners, amateurs, and cottagers. Many special prizes will be given, some of which are solely for the county of Kent.

—— ORCHID NOMENCLATURE.—We fear that the proposed discussion on this matter at Liverpool will once more fall through, as Professor REICHENBACH has signified his inability to be present. We hope, however, that arrangements may be made for a conference on things in general. It would be a good opportunity for discussing the future of the Society, and the burning question of its future habitation. Advantage might also be taken of the opportunity to ventilate the proposal for an "International" on a large scale. We were told that the project was in abeyance, not entirely dropped.

—— QUEENSLAND CONSERVATORY, COLONIAL EXHIBITION.—Amongst the noteworthy plants supplied to this structure by Mr. WILLIAM BULL, Chelsea, may be mentioned the Queensland Plum, Davidsonia pruriens; the Queensland Nut, Macadamia ternifolia; the Australian Banyan, Ficus macrophylla; the Moreton Bay Chestnut, Castanospermum australe; the upright fruiting Banana, Musa ceranoscopos; the citron-scented Eucalyptus, E. citriodora; Banya bunya, Araucaria Bidwillii. There are other characteristic plants to which we hope to allude on a future occasion. We believe that most of the large and handsome Tree Ferns, Gleichenias, Dracænas, &c., in the New Zealand Court have been supplied by Mr. BULL.

—— GHENT HORTICULTURAL SOCIETY.—At a meeting of the above Society held on the 14th inst., the following awards were made:—

First-Class Certificates.—To Mr. Ed. Pynaert-Van Geert, for Fagus atropurpurea tricolor; to Messrs. Jacob Makoy & Co., Liège, for Pandanus discolor, shown in flower for the first time on the Continent; to Mr. Aug. Van Geert, for Masdevallia macrura; to Mr. Jules Hye-Leysen for Cypripedium grande and Cattleya Mossiæ; to Messrs. Vervaet & Co., for Odontoglossum Pescatoriæ var., and Vanda insignis; to Mr. Ch. Van Geert, Antwerp, for Sambucus canadensis filicifolia.

Floral and Cultural Certificate.—To Mr. L. Desmet-Duvivier, for Odontoglossum vexillarium.

Commendations for Culture.—To Messrs. Jacob Makoy & Co., Liège, for Caraguata sanguinea; to Mr. Ed. Pynaert Van Geert, for Elæodendron (Aralia) Chabrieri; to Mr. Desmet-Duvivier, for Pavetta montana; to Mr. Bernard Spae, for Phœnix senegalensis.

Commendations for Novelty.—To Mr. Alex. Dallière, for Croton Gladstonei; to Messrs. Fr. Desbois & Co., for Ceanothus americana fl.-pl., to Mr. Aug. Van Geert, for Sobralia macrantha nana; to Messrs. Vervaet & Co., for Cattleya Mossiæ var.

—— THE WILD POTATO.—The last word has not been said yet, and to all appearance it will take long in the saying. We have before us a communication from M. ALPHONSE DE CANDOLLE, in which he contends for the specific identity of Solanum tuberosum and S. Maglia. M. DE CANDOLLE finally admits—1. SOLANUM BRIDGESII, to which he refers BAKER'S S. tuberosum (partly); and 2, S. TUBEROSUM of LINNÆUS, under which he includes as varieties, α, *chiloense*, from the island of Chiloe, and which he considers the nearest to the cultivated Potato; β, *cultum*, the cultivated variety (as a whole including numerous variations); γ, *Sabini*, the tuberosum of SABINE in *Trans. Hort. Soc.*, the S. Maglia of HOOK. fil., *Bot. Mag.*, t. 6756; δ, *Maglia* of BAKER and others, a Chilian maritime plant. 3. S. MANDONI, a species from the mountains of Bolivia. We shall revert to this interesting communication on another occasion.

—— BLACK SEA BOXWOOD.—It is satisfactory to learn that, in consequence of the Boxwood forests in the vicinity of Poti being exhausted, the Russian Government has late'y opened to cutters the forests of Abkassia. About 2000 tons were cut and exported during the year 1885 to the United Kingdom. This wood is of fine clean growth, good colour, and great thickness, many pieces being 15 inches in diameter.

—— GARDENING APPOINTMENTS.—Mr. H. W. PITCHER, who has been the last nine years Head Gardener to the late EDWARD COOK, Esq., Crix House, Hatfield Peverel, is now in charge of the gardens of Mrs. DUNNAGE, Allbury House, Surbiton, Surrey.—Mr. D. DOWDESWELL, late Foreman of Nash Court, Faversham, has been appointed Head Gardener to R. LAKE, Esq., Newlands, near Sittingbourn, Kent.

HOME CORRESPONDENCE.

Abies Pindrow.—Adverting to the editorial statement at the end of my remarks on Abies Webbiana (p. 788) to the effect that fig. 154 represents A. Pindrow as cultivated in Wales, I would point out in support of my opinion that this is an error; the fact is that Pindrow is a much longer-leaved plant than that represented, with the leaves always straight, and notched or bifid at the tip, and that therefore fig. 154 does not represent A. Webbiana in the extended sense in which I alluded to it, and still less like is it to the variety Pindrow. *J. D. Hooker.*

Choisya ternata.—This plant has grown and flowered freely here on the east coast of Scotland for six years. It is just now covered with white fragrant blossom, and is about 4 feet high and as much across. It is planted on the wall of the dwelling-house with a southern aspect, but has never had any extra protection or covering in winter. Ramondia pyrenaica var. alba is also flowering here with the deep purple and pale grey-purple varieties. *Gertrude Hope.*

Sweet Brier Hedge.—I am much obliged to you for the space you have allowed to this subject, and also to your correspondents for the trouble they have taken to fill it. As it is so awkward to have to turn to back numbers some of your readers may be glad to have in a few lines, with your leave, the net result of my inquiry. I asked:—1, Can Sweet Brier be grown permanently as a hedge? To this inquiry no answer has appeared. I asked 2, What is the age of the oldest Sweet Brier hedge known, and where is it? "E. V. B." (1), replying, knows one that was planted at Ellon Castle, Aberdeenshire, in 1852, was in perfect beauty in 1873, in the twenty-first year of its growth, but was killed by the frost in the winter of 1881-2. (2), Mr. John Richards, of Dolgelly, replying knows such a hedge near that town mixed with Thorn, of more than twelve years' growth. I may, perhaps, be allowed to add (3), that I had my hedge planted in the spring of 1871. It is certainly therefore in the fifteenth year of its growth, is 2 feet to inches high, but has lately had much sere wood thinned out of it. I asked, 3, Is any peculiar treatment necessary as regards soil and clipping? "C. D.," 1, recommends for Sweet Brier rich and moderately retentive soil, not under trees; after the third year that it be well manured every autumn with old hotbed manure 3 or 4 inches thick and 2 feet wide, as it requires plenty of good nourishing food to keep it in good condition. As regards clipping "C. D." advises no more clipping than is necessary, as it will not bear to be chopped about; "E. V. B.," however, quotes Gerard or Parkinson (no reference): "Cut your Sweet Brier hedge regularly like grass," *i. e.*, I presume, as frequently as you cut your grass plot. Is cutting with a knife less injurious to the plant than clipping with shears? While so much skill is bestowed in introducing novelties into our gardens, and so much success has crowned the efforts of gardeners to improve both fruits and flowers—*e.g.*, old favourites like the Pear, the Blackberry, the Gooseberry, the Lily of the Valley, the Violet, the Pansy, Mignonette, and the Rose—is it not time that something were attempted by specialists to produce a more compact growth, and especially to ensure the permanence of so desirable a fence as a hedge of Sweet Brier? *William H. Sewell, M.A., Yaxley Vicarage, Suffolk, June 21.*

Larix Griffithii.—I do not think there can be any question of it not being the true Larix Griffithii. My late master, C. Trelawny, Esq., bought and planted it, and his judgment and care with his collection of Conifers is too well known for him to be mistaken. We have here as good a collection as can be found anywhere, and he was justly proud of them. Should you require it, I could give you dimensions of several good varieties. *W. Nanscawen.* [We should be inclined to think it is some other species of Larch, on account of its size and probable date of introduction. Without the cones it is almost impossible to identify it. ED.]

Double Lilies.—Early in 1884 I received from a friend some stem bulbs of Lilium bulbiferum which were lying about on the surface of his Lily-bed, and which I planted. One or two gave solitary flowers last year, and this year all are flowering strongly. Amongst them I have been surprised to see the double flower which I send you. I fear it will reach you in bad condition, as it has been cut for some days. I should have sent it sooner, but have waited until I could ascertain from the donor whether he had any like it; as he assures me that he has no double Lily in his garden, and as I have none (except L. tigrinum) this seems a clear case of variation from a bulb, and I have thought it might be of interest to those of your readers who are discussing the doubling of Daffodils. The flower seems to me quite distinct

from the double Lily one sees sometimes in old-fashioned gardens, which I have always imagined to be a double form of L. croceum. *James Snow Whall.* [Your specimen arrived in very bad condition, but from what we can make out it appears to us to be rather Lilium elegans or L. Thunbergianum than L. bulbiferum. The bulbs have probably been accidentally mixed. ED.]

Red Rust on Rose Leaves.—Could you tell me the cause of the rust attacking the Rose so early in the season? I have known the rust very often to appear in the month of August, but it is quite new to me so early. Some people say it is cow manure that will breed it, and top-dressing will breed it—we have it just the same, top dressing or not. I attribute the cause of red rust to extreme climatic changes. *F. N. O.* [It is impossible for cow manure or top-dressing to "breed" this or any other fungus. All funguses grow from spores just as flowering plants grow from seeds. Over-manuring may in some instances predispose certain plants to fall before the attacks of fungi, and top-dressing, if it contains dead Rose leaves with the resting-spores (Phragmidium) of red rust, may start the disease in spring. The botanical name of red rust is Coleosporium pingue; it should be looked for in its early state, and hand-picked and burnt. The fungus is unusually common and early this season. Fungi vary in their time of growth, according to the season, just as flowering plants vary. *W. G. S.*]

Wall Fruits, &c., at Somerley Gardens, Hants.—The recent successful displays of produce on the exhibition tables—more especially in the vegetable line—so strengthened the desire I had long cherished of visiting these gardens as to cause me a few days ago to take the decisive step, and I was not disappointed. Vegetables there are, and good, too, but Peaches are infinitely better. Morello Cherries a near match for the Peaches, as indeed are all the so-called hardy fruits But to return to the Peaches. The trees on the open walls, which are about as perfect specimens as could be seen in the United Kingdom, are loaded with fruit, and there is not a blistered leaf or any fly on them. Mr. Richards has evidently discovered the proper mode of Peach culture, the chief items of which—so far as my observation went—being a stiff retentive loam, heavy manurial mulchings, free disbudding, and frequent washings of foliage with garden engine, and in dry weather abundant root watering. In a cool house, glazed on the Rendle system, there is indeed a feast of Peaches—I mean both of handsome, healthy trees and fine fruit. The trained trees are all on the back wall, which is from 12 to 14 feet in height, and though disbudded, as I think, far too severely, there is not a blank space on the wall. The trees in the front border of the house were once pot trees; indeed, some are still so, but the bulk are planted out, and all are alike good. Pinching or restriction of growth receives but scant attention from Mr. Richards, for though necessity, for want of head-room, compels a certain amount of pinching, he prefers to disbud extra severely, and, if needs be, tie down the branches away from the glass roof. As with the outdoor trees, a heavy mulching and plenty of water at the root and top are the principal articles in the creed of Mr. Richards, not only in respect of Peaches but of all fruits—yes, and of vegetables too, and, I was going to say, of forest trees too, for he has actually spread over the roots of a favourite Oak near the mansion a couple of loads of long stable litter by way of resuscitating its waning energies, which all will ardently wish may happen, to reward the labours of one of the most devoted sons of horticulture that I have ever met. I had no intention of making a note of my visit for the *Gardeners' Chronicle*, but having gone to see vegetables, and Peach and Morello Cherry trees, as it were, obstructing the sight of the vegetables, I thought your readers might be interested to know that your "Hardy Fruit" calendar writer is the right man in the right place. I would not, however, be understood to mean that vegetable cultivation is at a discount; anything but that, as the record of approaching exhibitions will most likely show, and afford another instance of the fallacy of the doctrine that exhibitors are persons of one idea. Somerley gardens are extensive, but labour and means limited; yet, notwithstanding these conditions, neither the owner—Earl Normanton—nor his gardener have cause to fear comparison with other gardens as to results obtained. *W. W.*

Strawberry King of the Earlies.—Twelve months ago I saw exhibited the second week in June, at Regent's Park, this Strawberry ripe from the open ground. Most people shook their heads and thought it too good to be true. Nothing daunted I ordered the kind, and to test its genuine qualities planted it on a south border beside Black Prince, and the result is that the King has proved itself earlier by a week or ten days; it is a good grower and a free setter, and will most likely be very useful for very early crops. I do not mean to say that it will compare with many later kinds in point of flavour, but with the earlier fruits we are not quite so fastidious about flavour as later on in the season. The King of the Earlies professes to be a very early eatable kind, and by planting some six or eight kinds of Strawberries in different aspects we shall now be able to produce fruits from the open ground for eight weeks in succession. I shall have something to say about The Captain and Pauline (both new kinds) later on. *J. Rust, Bridge Castle.*

Papaver orientale.—At the present time, and for the past two or three weeks, this large-flowering Poppy has been one of the most showy subjects we have in the herbaceous borders, and is deserving of a passing word of comment. For brilliancy of colour—intense scarlet—I do not know its equal amongst hardy plants; the flowers, too, which are of immense size, measuring in some instances fully 6 inches across, render it a very striking and attractive object when seen from a distance. As to soil, climate, and situation, it does not appear to be at all fastidious, and is increased by division. *J. H.*

Herbaceous Border in June.—The following amongst the occupants of our herbaceous border are now in flower, and may in some slight degree form a guide for future reference to those whose present collections are limited, but who contemplate a further increase:—Aster alpinus, Astrantia major, Asphodelus luteus, Aquilegia of sorts, one of them being chrysantha; Bupthalmum salicifolium, Clematis viorna, Erodium manescavi, Geranium platypetalum, G. pheum, Hieracium aurantiacum, Iris squalens, I. variegata, Polemonium coerulea, P. c. alba, Tradescantia virginica, T. rubra, Nepeta violacea, Lilium davuricum, Libertia ixioides, Ranunculus aconitifolius, Wm. Rollisson, Dianthus cæsius, Papaver orientale, Pyrethrums of sorts. Regarding the latter it may very truly be said, that no collection of herbaceous plants can be considered complete without them. *J. H.*

Rhubarb Stott's Monarch.—A veritable monarch! I recently noticed some plants at Chiswick, the characteristically fine "stick" being canopied by noble heads of foliage 4 feet across, reminding one of King Koffee's (Ashantee) umbrella. *J. B.*

Golden Elder.—About three years ago I had planted in the garden of the Lock Hospital in the Harrow Road, what may be said to be a specimen of the Golden Elder; however, the leaves appeared not golden, but were of a pale greenish colour, and have preserved this colour for three seasons. I mentioned this to Mr. Thompson, of the Chiswick Gardens, who informed me that a Golden Elder tree there had a precisely similar foliage; it was cut down, and cuttings of it planted which became quite yellow. I acted upon Mr. Thompson's advice, and had the one at the Lock treated in like manner, and there are now six cuttings which are of a golden-yellow. I should like to know how the change of colour is effected—the parent green in foliage, the offspring yellow. *John Colebrook.* [Our experience in the East of London is that cutting back does not secure the golden foliage. ED.]

Rhododendrons.—These have been very gay this year, but as the blossoms are now falling it will soon be time to be at the plants and picking off the seed-pods, which, if left on, distress them greatly, and would in all probability interfere with the growth and the setting of bloom. To assist them in both it is a good plan to mulch the ground above the roots, which helps to keep it cool and moist for when rain comes it soaks down and cannot be so quickly drawn out by evaporation, the action of the air on the surface being cut off, and the escape of moisture intercepted by the non-conducting material above. For forming a mulching among Rhododendrons there is nothing better than half-rotten leaves, which may with advantage be laid on quite thickly. as they will decompose and enrich the beds, and encourage the surface roots, or cause fresh ones to come round the collars of the plants, and thus add to their strength. In cases where half-rotten leaves cannot be obtained littery stable manure will be found a good substitute, and if a soaking of water can be given as soon as it is put on the plants will be set up for the season. *J. S.*

Orange Fungus on Roses.—This is a very tiresome pest when once it attacks a collection of Roses seriously. I believe much could be done to check these troublesome parasites — mildew and orange fungus—if they were destroyed on their first appearance. I grow several hundreds of the choicest hybrid perpetual and Tea-scented Roses, and have cultivated them for over twenty years, and I have never seen red rust on the leaves but once, it having been imported with a collection of new Roses from one of the largest Rose growers in the trade. On its first appearance I had every affected leaf cut off and destroyed by fire. The next operation was to thoroughly wash every plant with a strong solution of soft-soapy water, to which was added a quantity of flowers of sulphur. That was my first and last experience with orange fungus. It has never appeared on our Roses since, although that was about ten years ago. I never saw the Roses doing better, nor were they ever so clean as they are this season. What can be the reason of the remarkable freedom from greenfly this year? We are inclined to attribute it to the clouds of "lady-birds." Last autumn they swarmed in our dwelling-houses as well as out-of-doors. When the cold nights set in we brushed them from the walls in hundreds, and this was by no means a pleasant operation, owing to their offensive smell. There has not as yet been any mildew. It may be interesting to add that in 1884 5 the Plum trees were perfectly smothered with greenfly. This year they are as clean as the Roses. *J. Douglas.*

Broccoli May Queen.—No one has furnished any further particulars about this Broccoli, which is so highly spoken of by "R. D." on p. 694. From the description there given it appears to be the same variety as Gilbert's Victoria, which was originally named May Queen and distributed for trial; it was afterwards renamed Victoria by request, in order to avoid confusion with another variety. "R. D.'s" surmise as to its origin is, however, rather wide of the mark; it is not a selection from a Broccoli, but a cross between Chou de Burghley and Burghley Champion Broccoli. It is by far the best late Broccoli I am acquainted with. I have this season grown it side by side with Veitch's Model, Carter's Champion, and Cattell's Eclipse, &c. Cattell's Eclipse and Veitch's Model were both ready at the same time, viz., May 5, and lasted exactly a fortnight. Cattell's is entirely superseded by Veitch's Model, which is quite as late and has a great advantage in being white. The first heads of Victoria were ready May 19, and the last one on June 8. I have found none so late as this variety, nor so delicate in flavour. *W. H. Divers, Ketton Hall.*

Orchid Nomenclature.—In reference to Mr. O'Brien's remarks, I would like to say that no plants can be certificated by the Floral Committee unless they are named. This is a necessary rule, which cannot be departed from. The plant of Vanda cœrulescens was not distinguished by any varietal name; and as it was stated to be distinct, I suggested the appropriate name of "Vesta," which was unanimously agreed to. The plant received a First-class Certificate, and was entered in the Royal Horticultural Society's list of certificated plants as Vanda cœrulescens variety "Vesta." The same plant has evidently been sent to Dr. Reichenbach, who has named it Vanda cœrulescens var. Vipani, in compliment to Captain Vipan, the owner of the specimen in question. I would suggest that in future Orchids should not be sent to the Floral Committee for their opinion unless the owners of them agree to abide by its decision. The Vanda in question is described by Dr. Reichenbach in *Gardeners' Chronicle*, vol. xxv., n s., No. 650, p. 752. *J. Douglas.*

Successful Peach Growing.—I am pretty safe in saying that fruit growing is carried on more extensively in Earl Fortescue's gardens at Castle Hill than at any other Devonshire garden, the Pine-apples, Grapes, Peaches and Nectarines, and Figs commanding most attention there. One of the orchard-houses is 325 feet in length,. But it is of the earliest Peach-house I wish to speak. This house is a lean-to building, about 30 feet in length by 15 feet in width, and contains four trees, the back wall being clothed with a Dr. Hogg and an Early Alfred Peach, and the roof is almost covered with the growths of two dwarf standards of that good old variety, Royal George, which represent the perfection of training. I did not count the fruits on the back wall; suffice it to say there were abundance; but I had the curiosity to record those under the roof, and they numbered just 300, and fast ripening; I enclose one herein, together with some of the finest and healthiest Peach leaves I have ever seen. *W. Napper, Alphington Cross.* [A very fine fruit. ED.]

The Apiary.

ARTIFICIAL SWARMING.

THE present article will be exceedingly pleasant for me to write, because it will have something to do with—well, the weather. The kind of season we have hitherto had proves beyond the shadow of a doubt the immense advantages the modern beekeeper has over the old. It is well known to all beekeepers, that when bees have got the swarming fever they will not work. Therefore, if there is a hive full of bees, and

there is no means of giving the bees more room, and if in addition to this the weather is cool and showery, the bees will not swarm, and yet being in a condition to swarm, and not being able, the bee-keeper will lose his chances of profit, because the bees will not work, because they have no room to store. On any fine day an artificial swarm can be made in a very few minutes, with almost certain success, if certain conditions are attended to. The conditions of success are—1, honey coming in; 2, the presence of drones in the apiary; and 3, strong hives. Artificial swarming must not be practised with weak hives. Let A, B, C, represent three bar-framed hives. Let A and C be strong stocks of bees, but let B be an empty hive. Suppose C has ten frames of brood and bees. Take from C five frames of brood, and shake off all the bees back into the C hive. Put these frames of brood into hive B, and put five frames of foundation in hive C in place of the brood removed. Then simply change the places of A and B, taking care that is done in the middle of a fine warm day. The hives will then stand in this order—B, A, C. The following events will be sure to arrive, as a Frenchman says, or happen, as we say. The bees which are out will return to the old spot, and dart into the hive B. It is very interesting to watch them doing this. Finding things are different, and no young bees are about nor queen, they will fly out again, and go a little way off, then they will go in and out several times. At last they accept the inevitable, and go in and unload. Then they select worker eggs which have been laid three or four days, and raise up a queen, which will in due course fly out and mate with a drone, and all will be well, and much valuable time saved. It has been said that queens raised in this way are not equal to those raised in a natural way; but it is like the discrepancies which some people say they have found in the Bible—it has never been demonstrated, but rather the opposite. To return to A and C once more. All the younger bees and a few older ones will be left in A, and all the brood. This will soon hatch out, and make a good hive, and C will soon make up its loss of brood as it has lost no bees. Next time I hope to pursue the subject a little further. *Walter Chitty, Pewsey.*

NEW MOULD ON POTATOS.

PHYCOMYCES SPLENDENS.

ON June 8 Mr. Wills sent a Potato to the Scientific Committee, from the interior of which was growing a mass of black shining threads like a patch from a long black, highly glossy whisker. The same species of fungus was exhibited by me at the meeting held on May 12, growing upon Cocoa-nut refuse (see *Gardeners' Chronicle*, pp. 630 and 768). The fungus was first sent to me last October by a large firm of English plant merchants. I have had the fungus in my cellar for eight months, where it has grown well in sawdust, in cocoa-nut refuse, and other vegetable substances, including Potatos. For more than seven out of the eight months the fungus remained in the mycelium (spawn) condition, I being unable to induce it to perfect itself or produce fruit. At the meeting of the Scientific Committee held on June 8 Mr. Wills' plant appeared to be in fruit, but on an examination being made under the microscope the assumed fruit proved to be the common Mucor Mucedo (see *Gardeners' Chronicle*, December 12, 1885), growing upon decayed places on the Phycomyces.

On both occasions the exhibition of the fungus growth caused surprise and admiration, owing to the extraordinary brilliancy of the jet-black threads many of which were as thick as, or even thicker, than a horsehair. The metallic lustre was like the brilliant light seen on the black wing-cases of some exotic beetles. Under a lens, and still more so under a low power of the microscope, the splendour of this gloss was even more apparent. In places where the mycelium was twisted it exhibited prismatic colours like those seen on the wings and body of the dragon-fly.

During the last few days this beautiful spawn has thrown up a few patches of fruiting threads, and these patches have proved to be as remarkable as the mycelium from which they arose. One of these patches is shown natural size at A on the accompanying illustration (fig. 184), where it will be seen that the vertical threads were at least 4 inches high. It is remarkable that these threads, each of which was capped with a small black head, were all quite upright—*i.e.*, they were not in the least folded or twisted, but stood bolt upright as drawn. The slightest breath made them sway backwards and forwards, like stems of corn disturbed by the wind, but their elasticity prevented their breaking. A very slight concussion fractures the glassy sporangium, and sets the spores free.

A fragment of mycelium, part of a stem, and a head (or sporangium) are shown, enlarged 100 diameters, at B, C, D. In some instances the generally compressed mycelium was twice and even three times the diameter of the fragment shown. The Pear-shaped sporangium, or spore-case, seen at D is remarkable for its size and the vast number of its contained spores. It is nearly five times the diameter of the common Mucor Mucedo (see *Gardeners' Chronicle*, December 12, 1885, p. 757). The enormous spore production in Phycomyces splendens is astonishing: in Mucor Mucedo each sporangium contains at most but a few hundreds of spores, whereas in Phycomyces splendens each full-sized sporangium contains about 30,000. If growing in a Potato cellar it will be seen, therefore, that this fungus has ample

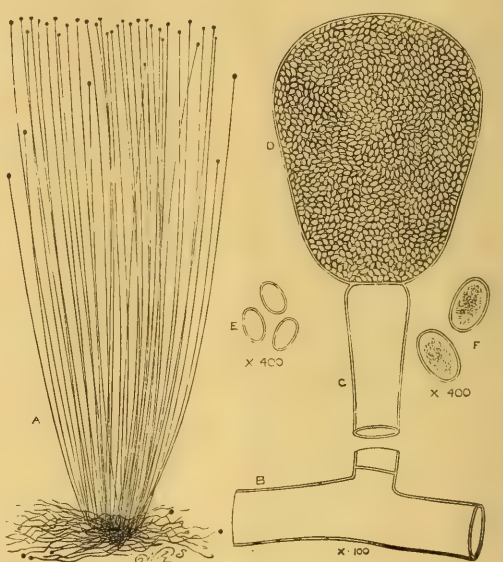


FIG. 184.—PHYCOMYCES SPLENDENS.

natural provision (under favourable conditions) for reproducing itself. The spores are shown enlarged 400 diameters at E.

In an allied species named P. nitens, Van Tieghem has described zygospores or resting-spores, and no doubt P. splendens produces similar bodies, although none such have yet been produced on the growing mycelium in my cellar. My mycelium has, however, produced a second class of fruit in the matrix, agreeing well with the smaller sporangia (sporangiola) of Mucor Mucedo. These small sized sporangia in Phycomyces have borne a much smaller number of considerably larger spores as shown at F; each of these latter spores has a thicker coat than the smallur ones, is yellowish-olive in colour, and filled with granular protoplasm.

Under the higher powers of the microscope, all parts of the Phycomyces look in colour as if diluted with writing ink. Both for its comparatively enormous size, and its extraordinary metallic brilliancy, it well deserves the name of splendens. Phycomyces splendens differs notably from Mucor in having no core or columella in the sporangia. The columella of Mucor is shown at G, fig. 120, and B, fig. 121, in the *Gardeners' Chronicle*, December 12, 1885. P. nitens, the only other known species of Phycomyces, differs considerably from the plant here described, as may be seen by reference to the memoir by Van Tieghem and le Monnier, in vol. xvii., 1873, *Annales des Sciences Naturelles*. Both the sporangium and spores differ in shape and size. Both species of Phycomyces appear to be very rare. *Worthington G. Smith, Dunstable.*

Reports of Societies.

ROYAL HORTICULTURAL: Tuesday, June 22.

THIS was one of those special exhibitions which the Society has established this season—Pelargoniums, Roses, and Gloxinias forming the competing division in flowers: and Messrs. J. Carter & Co.'s and Messrs. Sutton & Sons' prizes for Melons and Cucumbers, the corresponding fruit classes. Besides these were staged immense numbers of the showiest hardy flowers, such as Pæonies, Poppies, Irises, Pyrethrums, and Lilies. A few Orchids were shown, including a miscellaneous group from Mr. Measures, Camberwell.

Scientific Committee.

Dr. M. T. Masters in the chair.

PHYCOMYCES SPLENDENS.

Mr. W. G. Smith reported on the specimen sent to the last meeting by Mr. Wills, and found that Mucor Mucedo was growing on decayed parts of it; that it produced enormous sporiferous sacs, containing 30,000 spores; they were five times greater than those of M. Mucedo, and the supporting stems were 4 inches high. It is a very rare fungus, as far as is known at present. (See fig. 184.)

PERONOSPORA ARBORESCENS ON PAPAVER DUBIUM.

He exhibited specimens in which this fungus had attacked the peduncles, completely stripping off the epidermis in many places, and causing the stalks to be spirally or otherwise twisted with remarkable contortions.

CONIFEROUS SEEDLINGS ATTACKED BY FUNGI.

The following communication was read from Mr. Brace, near Salbris, Loir et Cher, France:—

"The few Pine seedlings forwarded to the Editor of the *Gardeners' Chronicle* are of this season's sowing, and



Fig. 185.—Berberis Neuberti × : a berberis with evergreen and dimorphic leaves on the same shoot. (see p. 815.)



Fig. 186.—Trifoliate leaf of berberis neuberti : a leaf deciduous like that of B. vulgaris, but compound like that of a mahonia. (see p. 815.)

are attacked by a virulent form of fungus, I would feel greatly obliged if you could kindly aid in identifying the fungus, and give me any information as to the cause of its appearance, &c. I attribute it chiefly to the unusually cold and wet season that we have had. It has been felt most severely in the seeds of P. Laricio, in which I have lost fully 25 per cent.; but it attacks also P. sylvestris and P. austriaca as well. At present it seems to be dying out, but I am still in great fear of its breaking out again. Now that a little dry weather has set in I am about to try the effect of flowers of sulphur out of a sulphurator, as the only remedy that I can think of as likely to succeed. A plant that is visibly attacked seldom shows signs of life after the third or fourth day. It does not attack transplanted seedlings. My partner, Mr. David Cannon, forwarded samples both to Paris and Versailles for identification, but it seems to be hitherto unknown."

Mr. Smith had examined the seedlings, and found the cotyledons and radicles thoroughly infested with fungus, which was bursting through the surface. The parasite had, no doubt, been derived from the parent tree when in fruit. The following were the fungi :—On Larch seedlings Cœoma Laricis ; on Pinus sylvestris C. pinitorquium ; and on Pinus Picea C. Abietis pectinatæ.

Morchella crassipes.'

Mr. Boulger mentioned the discovery of a fine specimen of this fungus, 1 foot in diameter, near Maidstone, in the Museum of which it has been preserved. It was new to Kent, though it had been found in Kew Gardens and several other places.

Humea elegans with Peronospora leptosperma.

Mr. Murray alluded to specimens of Humea sent to him for examination, and found that their decay and death was apparently due to that fungus.

Illustrations of Monstrous Orchids.

Mr. T. G. Hansen exhibited some beautifully executed drawings of Phaius grandifolius, Odontoglossum crispum, &c., showing variation in the structure of the flowers, mostly with three labella. The extra ones appeared to occupy the position of arrested stamens. In some the labellum was arrested, but two supplementary and apparently more or less rudimentary stamens occurred. A vote of thanks was given to Mr. Hansen for his communication.

Eucalyptus globulus Injured by Frost.

Mr. Smee inquired as to the experience of others upon the injury received by species of Eucalyptus during the late prolonged winter. He remarked that all his had perished excepting four trees. One of them was in a pot which had been completely frozen through. A second had been in a dry situation, but all that were planted in moist ground had perished. He noticed that those which were breaking again bore leaves similar to young ones, though they had previously produced the scimitar-shaped leaves. Mr. Lynch remarked that specimens of E. Gunnii were injured at Cambridge this year more from the prolonged period of cold than in previous winters with lower temperature.

Plants Exhibited.

Mr. Lynch brought the following plants from the Botanic Gardens, Cambridge :—Pterocarya caucasica. This derives an advantage from having more than the usually single axillary bud. There are two or three supra-axillary buds to each node, and the first shoots that grew this year were killed by the frost. Another bud, between the leaf-scar and the dead shoot, then arose from each node, and has developed to take the place of the one killed. Helicodeiros muscivorus (Arum crinitum). This plant had caught a great number of flies, which had perished round the base of the spathe without letting them go again. It "resembles Arum maculatum, but attracts carrion flies by means of its strong odour of putrid flesh. The smaller visitors are held fast by sticky hairs in the floral chamber and digested" (Müller, D'Arcy Thompson's translation, p. 564.) The hairs in the tube did not appear to dry up as in a A. maculatum, perhaps in consequence of this being a moist climate, so that the flies could not escape to fertilise other plants. Rhododendron myrtifolium (ponticum var.) from Gibraltar. This is an uncommon and distinct form, with very compact small trusses of bright pink flowers. Rosa punicea (R. lutea var.), South of France, and Austria, of a fine colour. Pyrethrum tanacetifolium. This is a rare plant and very pretty. Gunnera manicata, showing a remarkably fine inflorescence ; Dianthus, hyb. between D. barbatus and D. alpinus ; Linaria anticaria—the flowers exhibit a beautiful system of lines ; Primula Parryi, and Hedysarum multijugum.

Protea Cynaroides.

A very fine plant with a terminal inflorescence was exhibited by Mr. Hubbard, of Leonardslee, under the name of Protea Hubbardi, which, under the circumstances the Committee declined to recognise A botanical certificate was awarded.

ZYGOPETALUM OBTUSATUM.

Received from Messrs. Sander, of St. Albans. Mr. O'Brien observed that this was a rare Orchid, and formed the original type species of the "section" ending with Z. Gautieri. It is a native of Brazil. A Botanical Certificate was awarded for it.

AZALEA OCCIDENTALIS.

Fine sprays of this Californian species were received from Mr. Anthony Waterer, who obtained it from Professor Sargent. A botanical certificate was awarded. Professor MacOwan, who was present, remarked that species occurred in the Columbia Valley, but appeared to be different from the specimen in question.

CHIONANTHUS VIRGINICUS.

Specimens of flowering shoots from this hardy shrub from North America were received from Mr. Waterer. Dr. Masters remarked upon this as one of the several Japanese "representatives" to be found also on the eastern side of North America.

Floral Committee.

Present: J. O'Brien, Esq., in the chair; and Messrs. J. Douglas, E. Hill, H. Turner, A. F. Lendy, H. M. Pollett, J. Dominy, J. C. Noble, H. Herbst, W. Wilks, J. Walker, W. Bealby, H. Cannell, G. Paul, M. T. Masters, W. Holmes, Shirley Hibberd, H. Ballantine, H. Bennett, J. Hudson, and R. Dean.

OPEN CLASSES.

For not more than eighteen plants of show, decorative, and fancy Pelargoniums in 6-inch pots, the 1st and only group came from Mr. C. Turner, Royal Nurseries, Slough; they were well bloomed, medium-sized specimens. For zonal Pelargoniums shown under the same conditions the prize—a 2d—fell to Mr. F. J. Hill, gr. to H. Little, Esq., The Barons, Twickenham, for excellent plants covered with numerous trusses; the sorts were well known, of trustworthy scarlets, but there were two salmon-coloured ones of good form and pleasing tints, viz., Gustave Morlet and Sophie Birkins, worthy of special notice.

AMATEURS.

For nine zonal Pelargoniums, distinct, Mr. F. J. Hill was awarded the 1st prize, the specimens being well grown and of a useful medium size, 2 to 3 feet in diameter; some of the best were Royalty, Atala, J. Miller, Paul Charbonier, scarlet varieties; Emile Geran and Jules Simon, pink; and Miss Gordon, white. For much smaller plants a 3d prize was awarded to Mr. E. Chadwick, gr. to E. M. Nelson, Esq., Hanger Hill House, Ealing.

ROSES.

For a group of thirty Roses, in pots not exceeding 8 inches in diameter (nurserymen), the 1st prize went to Messrs. W. Paul & Son, Old Nurseries, Cheshunt, for a collection of mixed tall and dwarf grown varieties, among which were several beautifully bloomed Teas; the 2d prize was taken by Mr. W. Rumsey, Joyning's Nursery, Waltham Cross, whose plants were all dwarfs, well furnished with flowers, open and in bud.

For the best twenty-four Roses, cut blooms, distinct (open), the 1st prize was awarded to Mr. G. Prince, Market Street, Oxford, whose blooms were very beautiful, especially those of Princess of Wales, Reine Marie, Maréchal Niel; Messrs. W. Paul & Son, Cheshunt, took the 2d prize; and Mr. W. Rumsey the 3d.

MISCELLANEOUS OBJECTS.

These were more numerous than those in the competing classes, and foremost were the hardy flowers staged in great numbers by Messrs. Kelway & Son, Langport, whose Pæonies were magnificent, three of them were certificated, viz., Princess Beatrice, a large pinkish-cream-coloured double, with broad guard petals of a much deeper tint; Princess of Wales, also similar in colour, but more double, and with incurved petals; and Queen Victoria. Amongst the various species of hardy flowers observed in the Langport collection was Potentilla perfecta plena, a deep crimson, double flower, 2 inches across, of a semi-double form; and Abutilon vitifolium, a pure white open flower, the foliage woolly. A Silver-gilt Banksian was awarded for the collection.

Messrs. W. Paul & Son, Old Nurseries, Cheshunt, staged a great quantity of hardy flowers, amongst them being many plants as yet too little seen in gardens; varieties of Centaurea montana, Geranium platypetalum, Disa grandiflora, Geum coccineum plenum, and a new Doronicum Draytonensis, a flower having bright yellow florets, 1½ inch long, and a disc of orange colour, a showy border plant. The whole front of the group was bordered with the long flowering stems of Tropæolum polyphyllum. A Silver-gilt Banksian Medal was awarded.

Mr. T. Ware, Tottenham, had renewed the permanent exhibition, which he keeps up in the conservatory by the addition of many fine things in Pyrethrums, Lilies, Ranunculuses, Irises. Of lesser known plants may be mentioned Arum crinitum, Dietes compressa, a number of Papaver nudicaule, Veronica pinguifolia, a very dwarf spreading bush of white flowers that appear only on the ends of the shoots, making the plant very effective as a whole. A Silver-gilt Banksian Medal was awarded.

Messrs. P. Barr & Son, Covent Garden, had also enlivened their permanent exhibition in a similar manner, with flowers freshly cut of Spanish and other Irises; collections of Ranunculuses, Anemones, Papaver nudicaule, Ixias, Pyrethrums, Lilies, Pæonies, &c., the whole making an effective exhibit. A Silver Banksian Medal was awarded.

Messrs. E. H. Krelage & Son, Haarlem, showed a collection of herbaceous Pæonies in great variety, but smaller in size of blooms than ours. A Bronze Banksian Medal was awarded.

Messrs. Hooper & Co., Covent Garden and Twickenham, received a Bronze Banksian Medal for a large number of cut blooms of Gloxinias of great beauty, having amongst them a flower of a pure white. A plant of this variety was likewise shown a little advanced in bloom, but still with sufficient flowers to show off its fine character. Petunia Empress, a double flower of a lively pink colour and very free, was shown in this group. Although this plant had been shown before it was until this occasion passed over by the committee.

The scholars of the school at Harpenden are to be congratulated on possessing a master competent to impart to the pupils a knowledge of British wild flowers, the collections brought to this meeting affording ample proof of this. Six collections of thirty specimens, being well set up and for the most correctly named, were shown, the prizes going as follows:—1st, Frederick Willis; 2d, E. Guess; 3d, Frederick Deller; 4th, E. Skillman; 5th, Lawrence Brace; 6th, James Aldridge. A Bronze Medal was awarded to John Hersham, Esq., Harpenden.

A collection of British Orchises was shown by R. H. Measures, Esq., Camberwell.

Roses as cut flowers were well shown by Mr. G. Prince, Oxford; Anna Olivier, Madame Chedane, Rubens, Souvenir d'un Ami, Lady M. Fitzwilliam, Ma Capucine, with buds of red-bronze, were all particularly attractive. A Bronze Medal was awarded to this collection. Last year when a collection no better was exhibited, we are informed, that a higher award was made.

Messrs. W. Paul & Son, Waltham Cross, exhibited a number of baskets of young foliage plants, or of what are aptly called picture trees, such as Æsculus aurea purpurea, Acer Leopoldi, Prunus Pisardi, Castanea rosea foliis aurea, Ulmus Wredii, Corylus Avellana purpurea, Quercus concordia, pale yellow foliage; and Acer Webbiana. There were several basketfuls of Clematis blooms, one of the best of which was Robert Hanbury, a palish blue; Scotch Roses, Austrian Briers, and Delphiniums—the different subjects being mixed up with plants of Adiantums. A Silver Banksian Medal was awarded.

From the Royal Gardens, Kew, there were Exacum macranthum (Hook. f.), a biennial Gentian from Ceylon, introduced in 1853. The flowers are of a lovely shade of dark blue, and have yellow anthers of a large size, making a striking object. The other plant was Streptocarpus Dunnii (Hook. f.), introduced by seeds in November, 1884, by E. J. Dunn, Esq.; it is found on the Spitzkopf, in the Transvaal, at an elevation of 3000 feet. The plant has a single leaf 3 feet long and 2 feet wide, rugose, dark green, deeply marked or channelled over the ribs and veins, and a panicle of dull red tubular flowers.

Mr. R. Owen, The Nurseries, Maidenhead, showed a small collection of choice varieties of Pelargonium peltatum, Chrysanthemum segetum, Cloth of Gold, a soft lemon-yellow colour; and blooms of show and bedding Pelargoniums.

Mr. J. H. Beach, florist, Boro Green, Sevenoaks, showed a distinct white Gloxinia; it is said to be raised from seed, and is constant in character.

E. B. Foster, Esq., Clewer Manor, Windsor, showed a large smooth-flowered show Pelargonium named Corinna.

Mr. G. W. Wright, gr. to J. A. Whittand, Esq., Streatham Hill, staged an excellent example of Gymnogramma schzophylli gloriosa, with lace-like fronds of great beauty.

Mr. Stacey, The Nurseries, Dunmow, showed a collection of capital blooms of bedding Verbenas.

Mr. R. Dean, Ealing, showed single Petunias from the open ground, both striped and selfs.

Mr. Godefroy-Lebœuf, Argenteuil, Paris, showed Begonia Arthur Malet, with purplish-rose-coloured leaves, the ribs and veins of brown. The plant, which is pretty, is a cross between B. subpeltata and B. Rex.

Mr. Walter Slocock, nurseryman, Woking, showed a golden variegated form of Thuia borealis named lutea, the young growths of which are of a pale yellowish-gaeen tinge.

Mr. Sydney Ford, gr. to W. E. Hubbard, Esq., Leonardslee, exhibited a plant of Protea cynaroides. It has oval smooth leaves of great thickness, and a terminal head of flowers 9 inches in diameter surrounded by pointed silvery-red bracts.

ORCHIDS.

Messrs. F. Sander & Co., St. Alban's, showed Odontoglossum Chicquimensis, a flower with brown glossy sepals and petals, frilled at the edges, the base of each segment being yellow with brown spots; the lip is yellow as to its lower half, and red-brown at the upper portion.

M. Bleu, Avenue d'Italie, Paris, showed Cypripedium javanicum superbiens, with a tip brown lip, dorsal sepal white, with green stripes, other petals spotted with crimson on a greenish-white ground, foliage similar to that of C. Lawrenceanum.

Dr. Duke, The Glen, Lewisham (gr., Mr. A. Noakes), showed Odontoglossum vexillarium guttatum, a small flower with white spots on the lip, and of little beauty.

Mr. Hill showed Lælia purpurata var. Little, a strong plant with bright-coloured flowers, in which the lip is the strong feature.

Messrs. J. Veitch & Sons, Chelsea, showed a hybrid Thunia, with sepals and petals of white, faintly suffused purplish-rose; the tube is light purple, and has cilia and stripes in throat of a yellow colour. It is a cross between T. Marhsalli and T. Bensoniæ.

Mr. J. Douglas, gr. to F. Whitbourne, Esq., Great Gearies, exhibited cut flowers of Lælia majalis.

C. Hill, Esq., Arnot Hill, Arnold, Nottingham (gr., S. Davenport), showed Cattleya Mossiæ var. Arnoldi, a flower with white sepals and petals, lip purple, much frilled and spotted; C. Mossiæ pulchra, C. Reineckiana, and Odontoglossum vexillarium Cobbianum, a pale form.

Major Lendy, Sunbury, showed a plant of Cattleya Mossiæ of an immense size, with about eighty flowers thereon. A Bronze Banksian Medal was awarded.

R. H. Measures, Esq., Cambridge Lodge, Flodden Road, Camberwell, showed a large group of Orchids of various species and varieties, amongst which there were many good things, but little that calls for any special mention here. Masdevallia Harryana, with the lower half of the flower a dark crimson colour, was distinct and pretty; Ada aurantiaca was well bloomed; Cypripedium Stonei had several fine flowers open, and Cattleyas Mossiæ and Odontoglossum vexillarium were many and varied. A Silver-gilt Banksian Medal was awarded.

FIRST-CLASS CERTIFICATES.

To Messrs. Kelway & Son, for Pæony Princess of Wales.

To Messrs. Kelway & Son, for Pæony Princess Beatrice.

To Messrs. Kelway & Son, for Pæony Queen Victoria.

To Mr. C. H. Hill, for Cattleya Mossiæ var. Arnoldi.

To Messrs. Paul & Son, Cheshunt, for Doronicum Draytonene.

To Messrs. Hooper & Co., for Petunia Empress.

To M. Godefroy-Lebeuf, for Begonia Arthur Malet.

To Messrs. J. Veitch & Sons, for Thuria Veitchiana.

To Messrs. Slocock & Son, for Thuia borealis lutea.

To Mr. H. Ballantine, for Odontoglossum vexillarium radiatum.

BOTANICAL CERTIFICATES.

To W. E. Hubbard, Esq., Protea cynaroides.

To Mr. A. Waterer, for Azalea occidentalis.

To F. Sander & Co., for Zygopetalum obtusatum.

Fruit Committee.

Present: Harrison Weir, in the chair; and Messrs. W. Warren, T. Saltmarsh, G. T. Miles, G. Norman, W. Paul, J. E. Lane, A. Sutton, Phillip Crawley, T. B. Haywood, R. Hogg, F. Rutland, W. Denning, T. F. Rivers, J. Burnett, G. Bunyard, R. D. Blackmore, J. Woodbridge.

Messrs. J. Veitch & Sons, Chelsea, showed a plant of Fig Pingo de Mel, which was considered to be identical with Angelique.

SPECIAL PRIZES.

Messrs. J. Carter & Co.—For the best specimen of Carter's Blenheim Orange Melon: 1st, Mr. T. Lockie, The Gardens, Oakley Court, Windsor; 2d, Mr. H. W. Ward, The Gardens, Longford Castle, Salisbury. For the best brace of Carter's Model Cucumber: 1st, Mr. T. Lockie; 2d, R. Phillips, Esq., The Deodar, Meopham; 3d, Mr. Bolton, gr. to W. Spottiswood, Esq., Combe Bank.

Messrs. Sutton & Sons.—Melons.—For the best brace either of Sutton's Imperial Green-flesh, Sutton's Scarlet Invincible, or Sutton's Hero of Lockinge: 1st, Mr. T. Lockie; 2d, Mr. H. W. Ward; 3d, Mr. J. Douglas, Great Gearies, Ilford.

Sir Samuel Davenport, Commissioner for South Australia at the Colonial Exhibition, sent some specimens of Chinese Quinces of enormous size and great solidity of flesh; the form was oval.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,

FOR THE WEEK ENDING WEDNESDAY, JUNE 23, 1886.

MONTH AND DAY.	BAROMETER. Mean Reading Reduced to 32° Fahr.	BAROMETER. Departure from Average of 18 years.	TEMPERATURE OF THE AIR. Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 50 years.	Hygrometrical Deductions from Glaisher's Tables 7th Edition. Dew Point.	Degree of Humidity. Sat. = 100.	WIND. Average Direction.	RAINFALL.
June	In.	In.	°	°	°	°	°	°			In.
17	29 89	+0.11	57.5	46 5	11.0	49.1	—13.2	43 7	81	N. NW.	0.00
18	29 85	+0.06	52.2	48 0	4 2	49 4	—10 1	44 8	85	N. NW	0 03
19	29 63	—0.15	68.0	47.8	20.2	55 4	— 4.3	50 5	84	N.W.; N. NW.	0 08
20	29.82	+0.03	62.8	49 .7	14.1	55.3	— 4 6	46 4	71	N.; N.E	0 00
21	29 91	+0.11	57.0	45 2	11 8	50 3	— 9.8	45.0	82	N NW.	0 00
22	29 75	—0.05	63 0	52.1	10.0	56.1	— 4 3	49.0	77	N. NW; W.NW.	0.04
23	29.60	—0.21	67.6	53.0	14.6	60.1	— 0.6	44 9	58	W.	0.00
Mean	29 78	—0.01	61.2	48.8	12.4	55.7	— 6.3	46.3	77	N. NW.	0.12

June 17.—Dull, cold day.
— 18.—Dull, cold day.
— 19.—Rain falling in early morning till 10 A.M.; sun shining at times till 3 P.M.; overcast afterwards.
— 20.—Fine day: windy.
— 21.—Dull, cold day.
— 22.—Dull morning; sun shining at times in afternoon; slight rain falling all the evening.
— 23.—Very fine day; strong wind.

Answers to Correspondents.

BASTARD TRENCHING RETENTIVE SOIL: *A. T. B.* The usual price is 8*d.* per rod.

BERBERIS: *Littlebourne.* Dr. Lindley's monograph includes only the evergreen species. It is contained in the fifth volume of the *Journal of the Horticultural Society* (1850), p. 1.

BOOK ON BRITISH GRASSES: *G. P. British Grasses*, by Miss M. Plues, published by Reeves & Co., 5, Henrietta Street, Covent Garden, London.

BOOKS: *W. Nanscawen*, Gerard's *Herbal* may be obtained for £3.

CUCKOO-BUDS OF SHAKESPEARE: *S. Pullman.* In the *Plant-Lore and Garden-Craft of Shakespeare*, by Rev. Canon Ellacombe, there is the following concerning the flower in question:—

1. "'When Daisies pied, and Violets blue,
And Lady-smocks all silver-white,
And Cuckoo-Buds of yellow hue,
Do paint the meadows with delight.'
Love's Labours Lost, act. v., sc. 2.

2. "'He was met even now—
As mad as the vexed sea—singing aloud;
Crown'd with rank Fumiter and Furrow weeds,
With Burdocks, Hemlock, Nettles, Cuckoo-flowers,
Darnels, and all the idle weeds that grow
In our sustaining corn.' *King Lear*, act iv., sc. 4.

There is a difficulty in deciding what flower Shakespeare meant by Cuckoo Buds. We now always give the name to the Meadow Cress (Cardamine pratensis), but it cannot be that in either of these passages, because that flower is mentioned under its other name of Lady-smocks in the previous line (No. 1); nor is it 'of yellow hue;' nor does it grow among corn, as described in No. 2. Many plants have been suggested, and the choice seems to me to lie between two. Mr. Swinfen Jervis (*Dictionary of the Language of Shakespeare*, 1868) decides without hesitation in favour of Cowslips, and the yellow hue painting the meadows in springtime gives much force to the decision; but I think the Buttercup, as suggested by Dr. Prior, will still better meet the requirements."

DISEASED VINES: *J. C.* There is no fungus or insect on your Vine leaves except such as come as scavengers. We suspect there is something wrong at the roots. Probably your border is not sufficiently drained, but barbours stagnant moisture.

ERRATA.—At p. 784, "Round Liverpool", fourth line from commencement, read "trams at short intervals," &c., not trains; and at p. 785, col. *a*, fifteenth line from bottom, read "a good collection of Azaleas," not Dahlias.

INSECTS: *J. C.* The lawn is infested with one of the eighty species of solitary bees of the genus Andrena, the females of which make cylindrical burrows in the earth, at the bottom of each of which they deposit pollen and an egg. Water the lawn with gas-tar water, or lime and soap-suds.—*J. F.* Your young Larch trees have been destroyed by having the bark at the crown of the roots gnawed off, most probably by a weevil, Hylobius abietis, or one of the Otiorhynchi. Search the plants after dark with a lanthorn, and wash the roots of those not yet injured with gas tar water or lime and soap-suds. Sprinkle quicklime about the roots, or dress the stems above-ground with Davidson's composition, used to keep off rabbits. *J. O. W.*

NAMES OF PLANTS: *W. Wait.* 1, one of the varieties of German Ivy; 2, Iberis sempervirens; 3, Centaurea montana; 4, Geranium pratense.—*E. L.* Begonia leaves affected by thrips. The nature of the Bouvardia disease is not known.—*J. J. W.* 1, Claytonia perfoliata; 2, Hieracium aurantiacum; 3, not recognised.—*F. C.* 1, Hieracium sp. not known; 2, Geum rivale; 3, Ranunculus aquatilis; 4, Anthriscus vulgaris; 5, Oxalis sp.; 6, Saxifraga Hirculus.—*T. Woodward.* Cratægus coccinea.—*B. H.* Lonicera Ledebouri.—*G. O. P.* A white-flowered Lupine.—*J. Udale.* The scraps sent, with one exception, were so dried up on arrival as to be useless for purposes of identification. The box was also smashed to atoms. Send in a tin box and pack in damp moss.—*W. C. B.* 1, Calycanthus floridus; 2 and 3, Hesperis matronalis; 4, Dictamnus Fraxinella; 5, Clematis montana; 6, Polygonum cuspidatum; 7, Hemerocallis fulva; 8, Muscari comosum; 9, Spiræa aruncus.—*G. Payne.* 1, Ægopodium Podagraria; 2, Erysimum Alliaria; 3, Galium saxatile; 4, Stellaria graminea; 5, Potentilla Tormentilla; 6, Habenaria bifolia.—*J. Rogers.* 1, Cheiranthus Marshalli; 5, Symphytum patens; 2, 3, 4, and 6, indeterminable, not being in flower.—*Omega.* 1, Genista hispanica; 2, Abelia triflora; 3, Cotoneaster frigida; 4, Viburnum Opulus.—*C. W.* Barbarea vulgaris.—*E. Rogers.* 1, Hypolepis, not in fruit; 2, scrap of Clematis (inadequate); 3, Lysimachia nemorum; 4, Ficus pumila, apparently a creeping branch; 5, Inula glandulosa (too imperfect).

NOTICE TO QUIT: *T. L. S.* The answer to your first question will depend on the terms of the agreement, and whether the salary is paid as a yearly sum or otherwise. A notice to quit, to be satisfactory, should state the date on which the person is to leave.

OLD CAMELLIA: *T. Ireland.* It is not the time to cut back these plants, this being best done at the end of winter, or just after the flush of bloom is over. When it is intended to prune into the oldest wood, or to cut the branches back to the stem, the operation is best performed in November, afterwards keeping the plants moderately dry at the root. Plants so treated, and kept very cool, will bristle with young growth in the spring. The things to avoid are warmth and overmuch moisture.

PASSION-FLOWERS: *Littlebourne.* Dr. Masters' monograph is contained in Martius' *Flora Brasiliensis*, a large and costly publication. What you require is probably the list of cultivated speciespublished in the *Journalof the Royal Horticultur al Society*, vol. iv., 1877, p. 124.

PEACH TREES: *T.* The silver-leaf disease, so often spoken of in the *Gardeners' Chronicle.* Unfortunately, no one knows of a cause, and therefore of a remedy. We have seen good results from cutting away the branches right back. The new shoots next season may come healthy.

PEARS: *W. D.* The fruits have been frozen.

STRAWBERRY PAULINE: *J. H. Bowen.* The fruits sent may be said to be fairly good for out-of-doors produce at this early part of the season. It is as early and larger, but was not so well flavoured, as Cuthill's Black Prince.

VINE ROOTS: *Aspiro.* We cannot find any insects on the roots, but some of the small roots were dead, and had the appearance of having come into contact with some injurious substances. Have strong chemical manures been applied?

COMMUNICATIONS RECEIVED.—Cambria (next week).—H. J. C. (next week).—J. L. E.—W. H. R.—J. G. Baker.—Soixante.—T. B.—J. J. W.—T. W.—J. F.—J. Anderson.—J. R. J.—C. W. D.—M. T.—C. Woolford (next week)—J. D.—H. T.—W. M.—J. K.—"Chelsea."—Sig. Rovelli, Pallanza.—G. N.—E. P.—Hammond & Co.—W. W. (many thanks).—J. H. Krelage, Haarlem.—G. W., Wicklow.—Sir T. L.—W. S., Ashford.—G. S.—J. A.—I. O. W.—W. G.—J. U.—G. Hillier (next week).

Markets.

COVENT GARDEN, June 24.

MARKET still heavily supplied, with prices falling. Strawberries reaching us from the open in fair supply. Business somewhat better. *James Webber, Wholesale Apple Market.*

FRUIT.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Apples, Canadian, per barrel	8	0–21 0	Melons, each	1	0– 3 6
Figs, per dozen	2	0– 4 0	Peaches, per dozen	2	0–10 0
Grapes, per lb.	1	6– 3 0	Pine-apples, Eng., lb.	2	0– 3 0
Kent Cobs, 100 lb.	40	0– ..	— St. Michael, each	2	6– 8 0
Lemons, per case	18	0–36 0	Strawberries, per lb.	0	6– 1 0

VEGETABLES.—AVERAGE RETAIL PRICES.

	s. d.	s. d.		s. d.	s. d.
Artichokes, per doz.	4	0– ..	Mint, green, bunch	0	4– ..
Asparagus, Eng., per 100	2	0– ..	Mushrooms, punnet	1	0– 1 6
— French, bundle	1	6– 6 0	Mustard and Cress, do.	0	4– ..
Beans, Kidney, lb.	1	0– ..	Onions, per bushel	5	0– ..
Beet, red, per dozen	1	0– 2 0	Parsley, dozen bunch	2	0– 3 0
Carrots, per bunch	0	6– ..	Potatos, per cwt.	4	0– 5 0
Cauliflowers, per doz.	3	0– 9 0	— kidney, per cwt	4	0– 5 0
Celery, per bundle	1	6– 2 0	Shallots, per pound	0	3– 0 9
Coleworts, doz. bunch	8	0– ..	Spinach, per bushel	2	0– ..
Cucumbers, each	0	6– 1 0	Sprue Asparagus, per bundle	1	0– ..
Endive, per dozen	1	0– 2 0	Tomatos, per lb.	1	6– ..
Herbs, per bunch	0	2– ..	Turnips, bunch	0	9– ..
Leeks, per bunch	0	6– ..			
Lettuce, per dozen	1	0– 1 6			

POTATOS:—Best Kidneys, 12*s.*; Rounds, 8*s.* per cwt.

PLANTS IN POTS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Aralia Sieboldi, doz.	9	0–18 0	Ferns, in var., dozen	4	0–18 0
Bedding Plants, various, per dozen	1	0– 2 0	Foliage Plants, various, each	2	0–20 0
Begonias, per dozen	6	0–12 0	Fuchsias, dozen	6	0–12 0
Bouvardias, doz	12	0–18 0	Hydrangeas, doz.	9	0–18 0
Calceolarias, per doz.	3	0– 8 0	Lobelias, per dozen	4	0– 6 0
Cyperus, per dozen	4	0–12 0	Marguerite Daisy, per dozen	8	0–12 0
Dracæna terminalis, per dozen	30	0–60 0	Mignonette, per doz.	4	0– 8 0
— viridis, per doz.	12	0–24 0	Myrtles, per dozen	6	0–12 0
Ericas, various, per dozen	12	0–24 0	Nasturtiums, dozen	3	0– 6 0
Euonymus, in var., per dozen	6	0–18 0	Palms in var., each	2	6–21 0
Evergreens, in var., per dozen	6	0–24 0	Pelargoniums, doz.	6	0–18 0
Ficus elastica each	1	6– 7 0	— scarlet, per doz.	3	0– 6 0
			Petunias, dozen	5	0– 8 0
			Rhodanthes, dozen	6	0– 9 0
			Spiræa, per dozen	6	0–12 0

CUT FLOWERS.—AVERAGE WHOLESALE PRICES.

	s. d.	s. d.		s. d.	s. d.
Arum Lilies, 12 blms.	4	0– 6 0	Pelargoniums, per 12 trusses	0	9– 1 0
Bouvardias, per bun.	0	6– 1 0	— scarlet, 12 trusses	4	0– 6 0
Campanulas, 12 bun.	4	0– 6 0	Pinks, var., 12 bun	2	0– 6 0
Carnations, 12 blms.	1	0– 3 0	Primulas, double, per bunch	0	6– 1 0
Cornflowers, 12 bun.	2	0– 4 0	Pyrethrums, 12 bun.	2	0– 6 0
Eucharis, per dozen	4	0– 6 0	Ranunculus, 12 blms.	2	0– 4 0
Forget-me-Not, or Myosotis, 12 bun.	2	0– 4 0	Rhodanthes, 12 bun.	6	0– 9 0
Gardenias, 12 blooms	2	0– 4 0	Roses, Tea, per doz.	0	9– 2 0
Iris, various, 12 bl	0	6– 1 6	— red, per dozen	2	0– 4 0
Lapageria, red, 12 bl	1	0– 2 0	— outdoor, 12 bun.	4	0– 9 0
Lilium longiflorum, 12 blooms	1	0– 4 0	— Moss, 12 bun.	6	0–12 0
Marguerites, 12 bun.	3	0– 6 0	Spiræas, 12 bunches	6	0– 9 0
Mignonette, 12 bun.	3	0– 9 0	Stephanotis, 12 sprs.	1	6– 3 0
Pansies, 18 bunches	1	0– 3 0	Tropæolums, 12 bun.	1	0– 2 0
Pæonies, 12 blooms	1	0– 2 0	Tuberoses, 12 blms.	0	6– 1 6

COCOA-NUT FIBRE REFUSE
The same as supplied to the Royal Horticultural Society. Truck Load, loose, of 2 tons, 20*s.*; the same, in Sacks, 20, 14*s.*; 40, 25*s.*, Sacks included. All free on to Rail or Boat. Cash with all orders.
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"BELLICIDE,
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3-in.	3 9	5 8	7 6	11 3
2-in.	5 4	8 0	10 8	16 0
1½-in	6 6	9 9	13 0	19 6
1-in.	10 0	15 0	20 0	30 0



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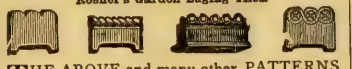
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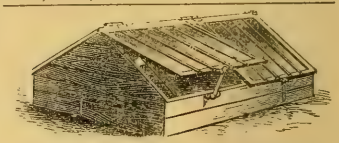
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The glass is nailed and puttied in.

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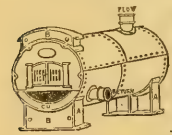
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SILVER, £5 5s. GOLD, £12 12s.
Invented for Rough Wear. *With Crystal Glass.*



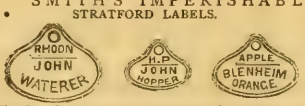
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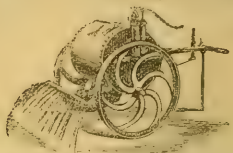
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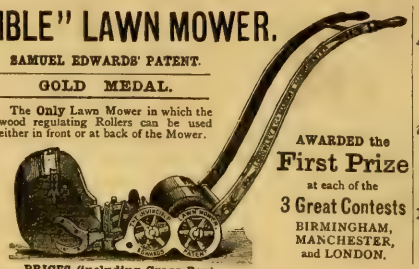
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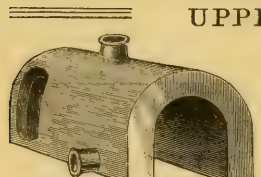
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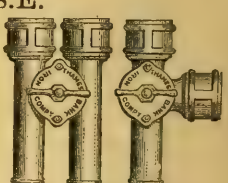


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